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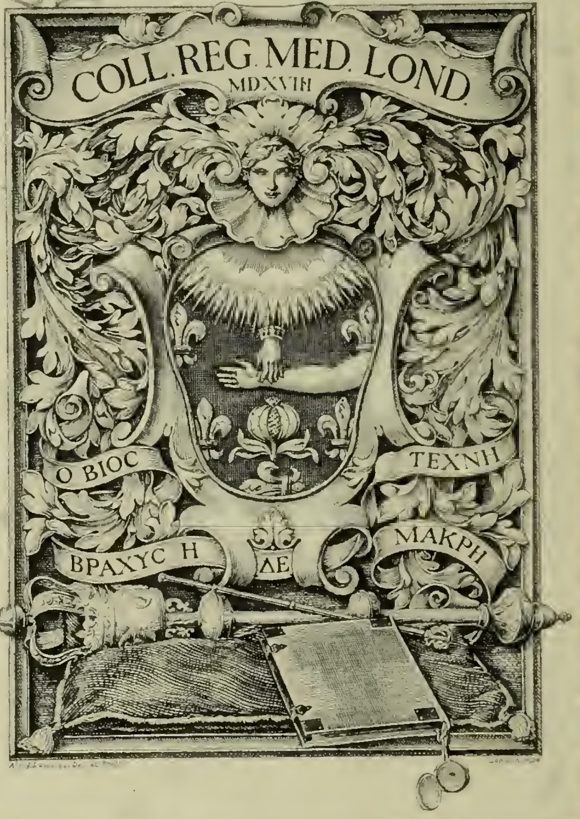

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THE

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OR,

Universal Dictionary

OF

ARTS, SCIENCES, AND LITERATURE.

VOL. XX.

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OF

Arts, Sciences, and Literature.

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WITH THE ASSISTANCE OF

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CYCLOPÆDIA:

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UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

KILN.

KILN, in *Agriculture*, a kind of oven or ſtove for admitting heat, in order to dry ſubſtances of various kinds, as corn, malt, hops, &c. It alſo ſignifies a fabric or building conſtructed for the purpoſe of burning lime-ſtone, chalk, and other calcareous ſtones, into lime. Kilns are of different kinds, and formed in different ways, according to the purpoſes for which they are deſigned.

KILN-*Aſhes*, the aſhes made in kilns where wood, ſtraw, furze, &c. are burnt. Theſe aſhes are uſeful as manure for almoſt any kind of ſoil, but eſpecially ſuch as poſſeſs much vegetable matter. In the weſtern diſtricts, the farmers ſift them over their corn and graſs; but this muſt not be done in windy weather, becauſe they are ſo very light, that they would eaſily be blown away and loſt. They are found to ſucceed beſt when laid on juſt before rain falls. See ASHES.

KILN, *Brick*. See BRICK-*Kiln* and BRICK.

KILN, *Hop*, a ſtove or kiln conſtructed for the purpoſe of drying or ſtoving hops. See HOP and OAST.

KILN, *Lime*, a ſort of kiln conſtructed for the purpoſe of burning various kinds of calcareous ſubſtances, ſuch as lime-ſtone, chalk, ſhells, &c. into lime. They are built of different forms or ſhapes, according to the manner in which they are to be wrought, and the kinds of fuel which are to be employed. It has been remarked, in a work on landed property, that, in places where materials are dear, from their being fetched from a diſtance, and where the fuel is coals, and alſo expenſive, the form of a kiln is moſtly that of an inverted cone, a form which has its inconveniencies; but in diſtricts where the art of burning lime is practiſed with ſuperior attention and correctneſs, the form has of late years been gradually changing from conical to elliptical. But, in his opinion, "the beſt form of a lime furnace, in the eſtabliſhed practice of the preſent day, is that of the egg placed upon its narrower end, having part of its broader end ſtruck off, and its ſides ſomewhat compreſſed, eſpecially towards the lower extremity; the ground plot or bottom of the kiln being nearly an oval, with an *eye*, or draft-hole, toward each end of it." It is ſuppoſed that "two advantages are gained, by this form, over that of the cone. By the upper part of the kiln being contracted, the heat does not fly off ſo freely as it does out of a ſpreading cone. On the contrary, it thereby receives a degree of reverberation, which adds to its intenſity." But the other, and ſtill more valuable effect is this: "when the cooled lime is drawn out at the bottom of the furnace, the ignited maſs, in the upper parts of it, ſettles down, freely and evenly, into the central parts of the kiln; whereas, in a conical furnace, the regular contraction of its width, in the upper as well as the lower parts of it, prevents the burning materials from ſettling uniformly, and levelling downward. They "hang" upon the ſides of the kiln, and either form a dome at the bottom of the burning maſs, with a void ſpace beneath it, thereby endangering the ſtructure, if not the workmen employed; or, breaking down in the centre, form a funnel, down which the under-burnt ſtones find their way to the draft-holes." And "the contraction of the lower part of the kiln has not the ſame effect; for, after the fuel is exhauſted, the adheſion ceaſes, the maſs looſens, and, as the lime cools, the leſs room it requires. It therefore runs down freely to the draft-holes, notwithſtanding the quick contraction of the bottom of the kiln or furnace."

And, laſtly, that, "with reſpect to the lime-furnace (which is, he thinks, entitled to the moſt ſedulous attention of agricultural chemiſtry), the fire requires to be furniſhed with

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with a regular ſupply of air. When a kiln is firſt lighted, the draft-holes afford the required ſupply. But after the fire becomes ſtationary, in the middle, or towards the upper part of the kiln (eſpecially of a tall kiln), while the ſpace below is occupied by burnt lime, the ſupply from ordinary draft-holes becomes inſufficient. If the walls of the kiln have been carried up dry or without mortar, the air finds its way through them to the fire. In large deep kilns that are built with air-tight walls, it is common to form air-holes in their ſides, eſpecially in front, over the draft-holes. But theſe convey the air, in partial currents, to one ſide of the kiln only, whereas that which is admitted at the draft-holes paſſes regularly upward to the centre, as well as to every ſide of the burning maſs; and, moreover, tends to cool the burnt lime in its paſſage downward, thereby contributing to the eaſe and health of the workmen. Hence he is of opinion, that the ſize of the draft-holes ought to be proportionate to that of the kiln, and the ſize of the ſtones taken jointly (air paſſing more freely among large than among ſmall ſtones), and that the required ſupply of air ſhould be wholly admitted at the draft-holes. By a ſliding or a ſhifting valve, the ſupply might be regulated, and the degree of heat be encreaſed or diminiſhed, at pleaſure," according to circumſtances.

The moſt ancient kind of lime-kiln is probably that which is made by excavating the earth in the form of a cone, of ſuch a ſize as may be neceſſary; and afterwards building up the ſides, or not, according to the circumſtances of the caſe: the materials being then laid in, in alternate layers of fuel and ſtone, properly broken, until the whole is filled up. The top is then covered with ſods, in order that the heat may be prevented from eſcaping; and the fire lighted at the bottom, and the whole of the contents burnt, in a greater or leſs ſpace of time, in proportion to the nature of the ſtone, and the quantity that is contained in the kiln. From the circumſtance of the top parts of theſe kilns, in ſome diſtricts, being covered over, and the ſides ſometimes built up with ſods, they are termed *ſod-kilns*, in order to diſtinguiſh them from the other ſorts. When the whole of the contents of ſuch kilns are grown cold, they are drawn or taken out from the bottom; and the kiln again filled, if neceſſary. Theſe kilns are obviouſly intended for burning only one kiln-full at a time. But as the burning of lime in this way is tedious and uneconomical, other methods and forms of kilns have been had recourſe to. Where lime is much wanted, either for agriculture or other purpoſes, they therefore uſe perpetual kilns, or what are more generally known by the name of *draw-kilns*. Theſe, as all lime-kilns ought to be, are, the author of Modern Agriculture ſays, ſituated by the ſide of a riſing bank, or ſheltered by an artificial mound of earth. They are generally built either of ſtone or brick; but the latter, as being better adapted to ſtand exceſſive degrees of heat, is conſidered as preferable. The outſide form of ſuch kilns is ſometimes cylindrical, but more generally ſquare. The inſide ſhould be formed in the ſhape of a hogſhead, or an egg, opened a little at both ends, and ſet on the ſmalleſt; being ſmall in circumference at the bottom, gradually wider towards the middle, and then contracting again towards the top. In kilns conſtructed in this way, it is obſerved, fewer coals are neceſſary, in conſequence of the great degree of reverberation which is created, above that which takes place in kilns formed in the ſhape of a ſugar-loaf reverſed. Near the bottom, in large kilns, two or more apertures are made: theſe are ſmall at the inſide of the kiln, but are ſloped wider, both at the ſides and the top, as they extend towards the outſide of the building. The uſes of theſe apertures are for admitting the air neceſſary for ſupplying the fire, and alſo for permitting the labourers to approach with a drag and ſhovel, to draw out the calcined lime. From the bottom of the kiln within, in ſome caſes, a ſmall building, called a horſe, is raiſed in the form of a wedge, and ſo conſtructed as to accelerate the operation of drawing out the burned lime-ſtone, by forcing it to fall into the apertures which have been mentioned above. In other kilns of this kind, in place of this building, there is an iron grate near the bottom, which comes cloſe to the inſide wall, except at the apertures where the lime is drawn out. When the kiln is to be filled, a parcel of furze or faggots is laid at the bottom; over this a layer of coals; then a layer of lime-ſtone, which is previouſly broken into pieces, about the ſize of a man's fiſt; and ſo on alternately, ending with a layer of coals, which is ſometimes, though ſeldom, covered with ſods or turf, in order to keep the heat as intenſe as poſſible. The fire is then lighted in the apertures; and when the lime-ſtone towards the bottom is completely calcined, the fuel being conſiderably exhauſted, the lime-ſtone at the top ſubſides. The labourers then put in an addition of lime-ſtone and coal at top, and draw out at bottom as much as they find thoroughly burned; and thus go on, till any quantity required be calcined. When lime-ſtone is burned with coals from 2½ to 3½ buſhels, on a medium, 3 buſhels of calcined lime-ſtone are produced for every buſhel of coals uſed in the proceſs.

A lime-kiln of this ſort is deſcribed in count Rumford's Eſſays, which is in poſſeſſion of the Dublin Society, as well as the principal objects that ought to be had in view in conſtructing of the kiln pointed out: the firſt of which is, "to cauſe the fuel to burn in ſuch a manner as to conſume the ſmoke, which has here been done by obliging the ſmoke to deſcend and paſs through the fire, in order that as much heat as poſſible might be generated. Secondly, to cauſe the flame and hot vapour, which riſe from the fire, to come in contact with the lime-ſtone by a very large ſurface, in order to economize the heat, and prevent its going off into the atmoſphere; which was done by making the body of the kiln in the form of a hollow truncated cone, and very high in proportion to its diameter; and by filling it quite up to the top with lime-ſtone, the fire being made to enter near the bottom of the cone.

"Thirdly, to make the proceſs of burning lime perpetual, in order to prevent the waſte of heat which unavoidably attends the cooling of the kiln, in emptying and filling it, when, to perform that operation, it is neceſſary to put out the fire.

"And, fourthly, to contrive matters ſo, that the lime in which the proceſs of burning is juſt finiſhed, and which of courſe is ſtill intenſely hot, may, in cooling, be made to give off its heat in ſuch a manner, as to aſſiſt in heating the freſh quantity of cold lime-ſtone with which the kiln is repleniſhed, as often as a portion of lime is taken out of it.

"To effectuate theſe purpoſes, the fuel is not mixed with the lime-ſtone, but is burned in a cloſe fire-place, which opens into one ſide of the kiln, ſome diſtance above the bottom of it. For large lime-kilns on theſe principles, there may be ſeveral fire-places all opening into the ſame cone, and ſituated on different ſides of it; which fire-places may be conſtructed and regulated like the fire-places of the furnaces uſed for burning porcelain.

"At the bottom of the kiln there is a door, which is occaſionally opened to take out the lime.

"When, in conſequence of a portion of lime being drawn out of the kiln, its contents ſettle down or ſubſide, the empty ſpace in the upper part of the kiln, which is occaſioned by this ſubtraction of the burned lime, is immediately filled up with freſh lime-ſtone.

“ As ſoon as a portion of lime is taken away, the door by which it is removed muſt be immediately ſhut, and the joinings well cloſed with moiſt clay, to prevent a draft of cold air through the kiln. A ſmall opening, however, muſt be left, for reaſons which are explained below.

“ As the fire enters the kiln at ſome diſtance from the bottom of it, and as the flame riſes as ſoon as it comes into this cavity, the lower part of the kiln (that below the level of the bottom of the fire-place) is occupied by lime already burned; and as this lime is intenſely hot, when, on a portion of lime from below being removed, it deſcends into this part of the kiln, and as the air in the kiln, to which it communicates its heat, muſt ariſe upwards in conſequence of its being heated, and paſs off through the top of the kiln, this lime, in cooling, is by this contrivance made to aſſiſt in heating the freſh portion of cold lime-ſtone, with which the kiln is charged. To facilitate this communication of heat from the red-hot lime juſt burned to the lime-ſtone above in the upper part of the kiln, a gentle draft of air through the kiln, from the bottom to the top of it, muſt be eſtabliſhed, by leaving an opening in the door below, by which the cold air from without may be ſuffered to enter the kiln. This opening (which ſhould be furniſhed with ſome kind of a regiſter) muſt be very ſmall, otherwiſe it will occaſion too ſtrong a draft of cold air into the kiln, and do more harm than good; and it will probably be found beſt to cloſe it entirely, after the lime in the lower part of the kiln has parted with a certain proportion of its heat.”

The height of the kiln, which is repreſented in *Plate* (*Kiln*) *Agriculture*, *fig.* 1. is on a ſcale of 15 feet: its internal diameter below, two feet; and above, nine inches. In order more effectually to confine the heat, its walls, which are of brick, and very thin, are double, and the cavity between them is filled with dry wood-aſhes. To give greater ſtrength to the fabric, theſe two walls are connected in different places by horizontal layers of brick, which unite them firmly: *a* is the opening by which the fuel is put into the fire-place: through this opening the air deſcends which feeds the fire. The fire-place is repreſented nearly full of coals, and the flame paſſing off laterally into the cavity of the kiln, by an opening made for that purpoſe at the bottom of the fire-place. The opening above, by which the fuel is introduced into the fire-place, is covered by a plate of iron, moveable on hinges; which plate, by being lifted up more or leſs by means of a chain, ſerves as a regiſter for regulating the fire. A ſection of this plate, and of the chain by which it is ſupported, are ſhewn in the figure: *b* is an opening in the front wall of the fire-place, which ſerves occaſionally for cleanſing out the fire-place, and the opening by which the flame paſſes from the fire-place into the kiln. This opening, which muſt never be quite cloſed, ſerves likewiſe for admitting a ſmall quantity of air to paſs horizontally into the fire-place. A ſmall proportion of air, admitted in this manner, has been found to be uſeful and even neceſſary in fire-places, in which, in order to conſume the ſmoke, the flame is made to deſcend. Several ſmall holes for this purpoſe, fitted with conical ſtoppers, may be made in different parts of the front wall of the fire-place.

The bottom of the fire-place is a grate conſtructed of bricks placed edgeways, and under this grate there is an aſh-pit; but as no air muſt be permitted to paſs up through this grate into the fire-place, the aſh-pit door, *c*, is kept conſtantly cloſed, being only opened occaſionally to remove the aſhes: *d* is the opening by which the lime is taken out of the kiln; which opening muſt be kept well cloſed, in order to prevent a draught of cold air through the kiln. As only as much lime muſt be removed at once as is contained in that part of the kiln which lies below the level of the bottom of the fire-place, to be able to aſcertain when the proper quantity is taken away, the lime, as it comes out of the kiln, may be directed into a pit ſunk into the ground in front of the opening by which the lime is removed; this pit being made of a proper ſize to ſerve as a meaſure for it. And while the lime is removing from the bottom of the kiln, freſh lime-ſtone ſhould be put into it above; and during this operation, the fire may be damped by cloſing the top of the fire-place with its iron-plate. Should it be found neceſſary, the fire, and the diſtribution of the heat may, in burning the lime, be further regulated by cloſing more or leſs the opening at the top of the lime-kiln with a flat piece of fire-ſtone, or a plate of caſt-iron. The double walls of the kiln, and the void ſpace between them, as alſo the horizontal layers of bricks by which they are united, are clearly and diſtinctly expreſſed in the figure in the plates.

This method of conſtructing lime-kilns, though ingenious and philoſophical, is probably much too expenſive for general uſe.

It is a common practice to burn lime-ſtone with furze in ſome places. The kilns which are made uſe of in theſe caſes are commonly known by the denomination of *flame-kilns*, and are built of brick; the walls from four to five feet thick, when they are not ſupported by a bank or mound of earth. The inſide is nearly ſquare, being twelve feet by thirteen, and eleven or twelve feet high. In the front wall there are three arches, each about one foot ten inches wide, by three feet nine inches in height. When the kiln is to be filled, three arches are formed of the largeſt pieces of lime-ſtone, the whole breadth of the kiln, and oppoſite to the arches in the front wall. When theſe arches are formed, the lime-ſtone is thrown promiſcuouſly into the kiln to the height of ſeven or eight feet, over which are frequently laid fifteen or twenty thouſand bricks, which are burned at the ſame time with the lime-ſtone. When the filling of the kiln is completed, the three arches in the front wall are filled up with bricks almoſt to the top, room being left in each ſufficient only for putting in the furze, which is done in ſmall quantities, the object being to keep up a conſtant and regular flame. In the ſpace of thirty-ſix or forty hours, the whole lime-ſtone, about one hundred and twenty, or one hundred and thirty quarters, together with the fifteen or twenty thouſand bricks, are thoroughly calcined. Kilns conſtructed in this way may be ſeen near Wellingborough, in Northamptonſhire, and other places in the northern parts of the kingdom. And in many of the northern counties of Scotland, which are ſituated at a great diſtance from coal, it is alſo a common practice to burn lime-ſtone with peat; and, conſidering the rude ill-conſtructed kilns which are uſed for the purpoſe, it is aſtoniſhing with what ſucceſs the operations are performed. In ſome of theſe diſtricts, it is ſtated that lime-ſtone is ſufficiently calcined with peats, laid *ſtratum ſuper ſtratum*, in kilns formed of turf; but, owing to the quantity of aſhes which fall from the peat, the quality of the lime is conſiderably injured; and from the open and expoſed ſituation of many of theſe kilns, the waſte of fuel is immenſe. But the moſt common method of burning lime-ſtone with peat, is in kilns conſtructed ſomewhat ſimilar to thoſe in the diſtricts where furze is uſed as the only fuel. There are in general only two arches, or fire-places, and the peats are thrown into the bottom of theſe archſe, the fronts of which are ſeldom cloſed up, by which means the wind has often great influence in retarding the operation, and frequently prevents the complete calcination of the lime-ſtone. An improvement might, it is ſuppoſed, be made on theſe kilns at a very trifling expence: if an iron grate were laid acroſs the bottom of the arch, with a place below for the aſhes to fall down, and the front of the arch cloſed up by a door made of caſt-metal, one-third of the fuel might be ſaved, and the operation performed in a ſhorter time, and with a much greater certainty, than by the method now practiſed in ſuch kilns.

In the Communications to the Board of Agriculture, Mr. Rawſon aſſerts, that he has produced a conſiderable ſaving in the burning of lime, by conſtructing his kiln in the manner ſhewn at *fig.* 2. "It is made twenty feet in height; at the bottom a metal plate is placed one foot in height, intended to give air to the fire; over this plate the ſhovel that draws the lime runs. The ſloped ſides are ſix feet in height, the breadth at the top of the ſlope is eight feet, the ſides are carried up perpendicular fourteen feet, ſo as that every part of the inſide, for fourteen feet, to the mouth, is exactly of the ſame dimenſions. On the mouth of the kiln a cap is placed, built of long ſtones, and expeditiouſly contracted, about ſeven or eight feet high. In the building of the cap, on one ſide of the ſlope, the maſon is over the centre of the kiln, ſo that any thing dropping down will fall perpendicularly to the eye beneath. He is here to place an iron door of eighteen inches ſquare, and the remainder of the building of the cap is to be carried up, until the hole at the top be contracted to fourteen inches. The kiln is to be fed through the iron door, and when filled, the door cloſe ſhut. The outſide wall muſt be three feet at the bottom to batter up to two feet at top, and made at ſuch a diſtance from the inſide wall of the kiln, that two feet of yellow clay may be well packed in between the walls, as every kiln built without this precaution will certainly ſplit, and the ſtrength of the fire be thereby exhauſted. At eight feet high from the eye of the kiln, two flues ſhould be carried through the front wall, through the packed clay, and to the oppoſite ſides of the kiln, to give power to the fire." It is obſerved, that with this kiln, he has produced one-third more lime from a given quantity of fuel; and ſtones of bad quality will be here reduced into powder, and may be put into the kiln without the neceſſity of being broken ſo ſmall as is uſual. As many ſituations will not admit of building a kiln twenty feet high, while other ſituations may allow of its being built thirty or even forty feet (for it cannot be made too high), the diameter of the kiln ſhould be proportioned to the height to which it is carried up.

And it is further ſtated, as another application of this ſort of contrivance, that "for ſeveral years he has made uſe of a ſmall kiln in an outſide kitchen, the height nine feet, the diameter three feet and a half. In the ſide of the kiln next the fire, he had three ſquare boilers placed, one of them large, containing half a barrel, with a cock, which ſupplied the family with conſtant boiling water; for the two others, he had tin veſſels made to fit the inſide with cloſe covers, in which meat and vegetables with water were placed and put into the two ſmaller boilers, which never had any water, but had cloſe covers. The tin boilers were heated ſooner than on the ſtrongeſt fire, and when the meat, &c. were ſufficiently dreſſed, the whole was taken out of the metal boilers. At one ſide he had an oven placed for roaſting and boiling meat; the bottom was metal of twenty-ſix inches diameter, and one inch and a half thick, a flue from the fire went underneath. Even with the bottom of the oven, a grating nine inches ſquare was placed, which opened a communication between the oven and the hot fire of the kiln. The height of the oven was fourteen inches, ſhut cloſe by a metal door of eighteen inches ſquare, and the top, level with the mouth of the kiln, was covered by another metal plate of half an inch thick, on which was placed a ſecond oven; the heat which eſcaped through the half-inch plate, though not near the fire, was ſufficient to do all ſmall puddings, pies, breakfaſt-cakes, &c. &c. The meat in the large oven was placed on an iron frame which turned on a pivot and ſtood on a dripping-pan, and was turned by the cook each half hour. And over the kiln he had a tiled ſtage for drying corn, and a chimney at one ſide, with a cawl on the top, which carried off all ſteam and ſulphur: a large granary was attached to the building. It is added, that the lime, if ſold, would more than pay for fuel and attendance; and he has frequently had dinner dreſt for fifty men, without interfering with his family buſineſs in any great degree.

There is another form of lime-kiln, which anſwers extremely well for general uſe, repreſented at *fig.* 3. in the ſame plate. This is capable of being built without any very conſiderable expence.

It has been found, by experience, in ſome of the northern diſtricts, that lime-kilns are rendered much leſs liable to crack and burſt by having the outſide walls carried up in a ſquare manner, than on the uſual circular plan.

KILN, *Malt*, a ſort of kiln contrived for the purpoſe of drying malt or any kind of grain upon. In the conſtruction of kilns of this ſort many improvements have lately been made. A deſcription of a kiln of this kind by Mr. Pepper, of Newcaſtle-under-Line, has been given, in which *fig.* 4. is the ground plan, ſuppoſed to be twenty feet ſquare, but, if required larger or ſmaller, by following the ſame proportion, it may be made to any ſize or ſituation. The dark ſhaded walls riſe four feet high, to put the reflector upon over the fire, and alſo what the ſide arches ſtand upon, the brick piers, that carry the ſpark-ſtone, and bearers that the tiles lie upon. Letter *a*, the fire-grate, which lies nine inches below the bottom edge of the reflector; *b*, bottom edge of the reflector; *c*, *c*, *c*, *c*, brick pillars nine inches ſquare, that carry the ſpark-ſtone; *d*, *d*, *d*, *d*, *d*, *d*, brick pillars nine inches ſquare, that carry the bearers for the floor tiles to lie upon; *e*, ſhews the bottom of the ſide arches on each ſide of the kiln; *f*, exhibits the ſpace between the fire-place and the ſide arches, for the man to go round to clean the kiln; *g*, the wall on each ſide of the kiln, that the ſide arches ſtand upon. *Fig.* 5. is a ſection of it; *g*, ſhews the ſection of the wall which the ſide arches ſtand upon; *h*, the door to go to the fire-place; *i*, the reflector of caſt iron that covers the fire; *k*, ſmall door in the reflector to feed the fire; *l*, *l*, the ears of the reflector that the iron pipes are fitted upon, which convey the ſmoke, &c. from the reflector round the kiln, to the chimney; *m*, what is commonly called the ſpark-ſtone; it prevents the kiln from being too hot in the middle, and aſſiſts in ſpreading the heat to the outſides; *n*, bearers of caſt-iron or wood, that carry the kiln floor; *o*, *o*, ſhew the ends of the ribs that carry the tiles; *p*, the kiln tiles, that the malt lies upon; *q*, the ſteam-pipe that conveys the ſteam from the malt; *c*, *c*, brick pillars nine inches ſquare, that carry the ſpark-ſtone; *d*, *d*, brick pillars nine inches ſquare, that carry the bearers for the floor tiles to lie upon; *e*, *e*, ſhew the arches on each ſide the kiln; *u u*, denotes the ſituation of the pipes under the floor. And *fig.* 6. is a plan of the kiln floor, and ſhews the ribs that the kiln-tiles lie upon; *o*, *o*, the caſt iron or wood ribs that the tiles lie upon; *n*, *n*, the bearers that carry the ribs; *d*, *d*, the tops of the brick pillars that carry the bearers, &c.; *b*, the reflector that covers the fire, which is of caſt iron, about an inch thick, hollow, and on a ſemicircular plan, as ſhewn in the figures; *r*, *r*, the iron pipes that convey the ſmoke and heat from the reflector, round the kiln, to the chimney, which lies about three feet under the kiln floor, and about the ſame diſtance from the ſide walls, which are ſupported by iron ſtays from the ſide arches; *ſ*, *ſ*, the ends of the iron pipes that go into the chimney; *t*, *t*, regiſters to regulate the draught and heat of the kiln; and *fig.* 7. is a ſection of the chimney.

It is noticed that in the plate the pillars, bearers, &c. that belong to the ſame thing, are marked with the ſame letters in all the different figures.

Another kiln of the ſame ſort, invented by Mr. Joſeph Coppinger, of Harbour View, near Cove, Ireland, is repreſented at *fig.* 8. This is ſtated to be particularly adapted to the uſe of farmers, who, in wet ſeaſons, often loſe quantities of grain for want of ſuch convenience. The advantages it appears to poſſeſs above the kilns now in common uſe, are many; firſt, it may be erected for one-tenth of the expence, if the value of the ſeparate buildings be taken in, which are now almoſt invariably allotted for this purpoſe; ſecondly, any kind of fuel may be uſed without prejudice to the malt or corn to be dried in it: thirdly, the heat (by the conſtruction of the flues) will be more regularly and evenly diſtributed without any waſte, as at preſent: fourthly, the health of the people attending, will not, as at preſent, be expoſed to certain injury, by always breathing and ſleeping in a heated and unwholeſome atmoſphere, as their beds will be placed in a ſhed on the outſide of the building. This, in his mind, is the moſt important part of the plan, and highly worthy the attention of every humane and conſiderate employer in this way: fifthly, this conſtruction of a kiln may be erected on a loft or ground floor. If in the latter ſituation, ſufficient elevation ſhould be given to the fire-place, ſo as not to impede the draught. Theſe are the principal advantages that occur to the writer. If the experience of others confirm them, he will be highly gratified: *a*, the main walls; *b*, the flues; *c*, the chimnies; in each of which may be placed a metal damper to regulate the heat. It is recommended, in the caſe of a new building, to carry up the flues of the chimnies in the thickneſs of the walls. In a houſe already built, they may be carried up either inſide or outſide the building: *d*, the fire-place, which may be divided, or in one, juſt as deſired, by which the half or the whole may be heated, as is moſt convenient.

It is ſtated that kiln tiles eighteen inches ſquare, and two inches thick in the ſolid, with a lapping of half an inch broad and one inch deep round the edge of each tile, are propoſed for covering the flues, which, if fairly caſt, may be laid dry, without mortar. If it ſhould be difficult, or too expenſive, to procure tiles of eighteen inches, nine inches can be made to anſwer. The flues are propoſed to be divided by a brick, on edge, ſo as that every eighteen-inch tile will cover two flues. The breadth of the flues may be ſix inches and a half, and ten inches high. This proportion, it is hoped, will be found to anſwer in moſt caſes; but it may be varied according to the better judgment of the party erecting. The ſides and bottoms of the flues ſhould be plaſtered. The platform of this kiln ſhould, in all caſes, be well rammed with earth, and made perfectly level before laying out the flues. Iron grate-doors are intended to be hung on hinges, in a receſs, at the mouth of each flue, to prevent them being choked with large pieces of cinder, or other ſubſtances. It is alſo intended that theſe doors ſhould ſhut and open at pleaſure, as may be found neceſſary in carrying on the buſineſs.

Kiln *Tiles*, in *Rural Economy*, the name of that ſort of tiles which are employed in malt and other ſimilar ſorts of kilns.

Kiln *for tin-ore.* The place where the tin-ore is roaſted in order to burn away the mundic, and other ſulphureous matters that are mixed with it, is called the *tin-kiln*. This is of a very plain ſtructure; its hearth or floor is made of one large ſtone, and this is covered with another, ſupported at ſix inches height above it. The uppermoſt has a hole in the middle, through which the ore is poured on the under one; and when it is diſtributed over it in a bed of three or four inches thick, it is burnt by means of a fire of furze buſhes kept underneath, and communicating with the ſpace between the two ſtones by an aperture behind; the lower ſtone not reaching the wall by ſix inches.

When the ſulphur is all burnt away by the fire, and the flame is no longer blue, the whole bed of roaſted ore is thruſt off the ſtone by the rake into the aperture behind, through which it falls into the open fire. The fire is kept up with new buſhes, and there is a new bed of ore thrown in at the hole above. Thus the fire is kept up day and night, and ſupplies of freſh ore made through the hole by the black tin brought from the buddles of waſhing troughs. When the lower part of the furnace is filled up with the ore thrown into it, there is a hole behind the kiln, through which this ore, and the coals and aſhes, are all raked out together, and left in the open air to cool; and the whole maſs thus raked out, will ſometimes be ſeveral days in cooling, the mixture of coals among it keeping it red-hot for a conſiderable time. When it is taken away from behind the furnace, it is waſhed again before it is put into the melting furnace. It is obſerved, that the different ores require for this laſt operation a different proportion, and different ſort of fuel. The moor-tin, that is, ſuch ore as is dug up in the moory countries, melts beſt with moor-charcoal charred; but that dug on the hills is found to run beſt with a mixture of charcoal and peat in equal quantities. The ſtones uſed for the kilns are always moor-ſtone. Phil. Tranſ. N° 69.

Kiln, in *Ship Building*, a convenience for boiling or ſteaming planks to make them pliable. A boiler-kiln is either made of ſheet-copper, bottom and ſides rivetted together, or the bottom of ſheet-copper and the ſides of lead, rivetted and ſoldered together. This is fixed in a body of brick-work, and under each end, or in the middle, are furnaces to cauſe the water to boil after the planks are in. The upper part, to preſerve the ſteam and facilitate the boiling, is incloſed by ſhutters, opening by hinges and ſmall tackles.

Dimenſions of a Copper Boiler.

	feet.	*in.*
Long - - - - -	40	0
Broad at the ends - - -	4	3
———— middle - -	6	0
Deep - - - - -	2	10

And weighed 53cwt. 3ſt. 14lb.

A ſteam-kiln is a trunk compoſed of deals grooved and tongued together edgeways, and is from three to four feet ſquare, and from 40 to 60 feet long, and has a door at each end. It is confined together by bolts driven through the ſides at certain diſtances, which anſwer the purpoſe of bearers, whereon the planks reſt while ſteaming. It is ſupported, about four feet above the ground, upon a ſtrong framing of wood. Underneath it, in the middle, is fixed, in brick-work, a large copper or iron boiler, or, which is better, one towards each end; the ſteam from the boilers, iſſuing into the trunk wherein it is confined, enters into the pores of the plank, and renders it very pliable.

KILONDA, in *Geography*, a town of Africa, in the kingdom of Benguela; 15 miles S. of Benguela.

KILONGO, a province of Loango, the ſoil of which is fertile. It was formerly an independent kingdom: the governor is abſolute, and is elected by the people, without conſulting the king of Loango. The chief article of trade is elephants' teeth. Kelingo, the capital, is ſituated on the coaſt; 30 miles N.W. of Loango. S. lat. 4° 25′.

KILPATRICK, *Old* and *New*, two pariſhes in the weſt of Scotland, and county of Dumbarton. Old Kilpatrick is ſituated on the banks of the river Clyde, about five miles eaſt from Dumbarton, and within one mile of Bowling bay, where the great canal, or Forth and Clyde navigation, falls into the Clyde. It is one of the moſt pleaſantly ſituated villages in Scotland, being directly oppoſite to the pleaſure grounds of Erſkine-houſe, the reſidence of lord Blantyre, the ſuperior of the pariſh. The parochial ſtipend being paid in grain is conſidered to be one of the beſt in Scotland. The church is a very ancient building of the Gothic kind, and here are ſaid to be depoſited the remains of the tutelar ſaint of Ireland, from whence the village takes its name. There is an extenſive manufactory of rolled and malleable iron conducted here, and there are two large cotton mills in the neighbourhood. The ſpinning of woollen by machinery was attempted, but did not ſucceed. Thoſe engaged in the cotton manufacture are employed from Glaſgow and Paiſley. New Kilpatrick is about four miles diſtant from Old Kilpatrick. There is no manufacture of any importance about it, excepting ſome large flour mills upon the river Kelvin, which are the property of ſir Ilay Campbell, of Garſcube, bart. lord preſident of the Court of Seſſion.

KILSYTH, a town of Dumbartonſhire, bordering on Stirlingſhire, in Scotland, about thirteen miles north-eaſt from Glaſgow, upon the old or north road from Edinburgh to Glaſgow, and near the banks of the great canal, or Forth and Clyde navigation. The country about Kilſyth is level to the ſouth, eaſt, and weſt, but very mountainous to the north. The valley is in general fine arable land, and the cultivation is now extremely good and moſt rapidly improving, for which there are the greateſt facilities afforded by the inexhauſtible ſupplies of coal and lime, which are found in every part of the neighbourhood. Kilſyth is of no importance as a commercial or manufacturing place, its chief manufacturing trade being confined to the labour of operative tradeſpeople in weaving, tambouring, and ſewing muſlins for the manufacturers of Glaſgow. There are, however, ſome extenſive printfields at no great diſtance. Kilſyth gave the title of an earl to an ancient and noble family of Scotland, but the title and eſtate were forfeited by the rebellion, in the year 1715. Cumbernauld-houſe, in the neighbourhood, is the reſidence of lord Elphinſtone, the chief perſon of rank in this quarter, and lord lieutenant of the county. A very great proportion of the adjoining lands, formerly attached to the earldom, now belong to ſir Charles Edmonſtone, of Dunleath.

KILTZESTI, a town of Walachia, on the Tiſmana; 12 miles S.S.W. of Tergoſyl.

KILWARA, a town of Hindooſtan, in the circar of Rantampour; 32 miles S. of Suiſopour.

KILWINNING, a ſmall town and pariſh in Ayrſhire, upon the coaſt, about two or three miles from Irvine. It contains but little population, and is not remarkable for any particular art or manufacture. The lands around it are chiefly the property of the earl of Eglintown, whoſe ſuperb caſtle is in the immediate vicinity. Kilwinning is chiefly remarkable for the attention paid in it to the order of freemaſonry, the lodge of Kilwinning claiming precedency, in point of antiquity, to every other lodge in Scotland, which, in their turns, aſſert their antiquity to be greater than thoſe of England; the Scottiſh maſons aſſuming the title of *ancient* as a mark of their priority, and refuſing to acknowledge or receive thoſe whom they denominate modern maſons until they have qualified themſelves to be received, by undergoing certain ceremonies of initiation only known to the brethren. The claim of the Kilwinning maſons is ſo far admitted, that many of the lodges of Scotland receive charters of conſtitution from them in place of the grand lodge of Scotland. Theſe lodges generally diſtinguiſh themſelves by adding the word Kilwinning to the title which they have aſſumed. They are numerous through every part of the country, and the circumſtance alluded to creates no kind of rivalry or diſſention between them and thoſe conſtituted by the authority of the grand lodge.

KILY Harbour, a bay on the W. coaſt of the iſland of Celebes. S. lat. 1° 33′. E. long. 110° 20′.

KIMALISHA, an iſland of Ruſſian Lapland, lying between the mouths of the rivers Shuya and Soroka, off the coaſt of the White ſea; where the granite veins of micaceous earth are richly mixed with a beautiful brown, frequently glandulous, with granites and green tranſparent ſhorl.

KIMBOLTON, a ſmall market town in the hundred of Leightonſtone and county of Huntingdon, England, is ſituated 10 miles from Huntingdon, and 63 from London. In the population return of 1800, the number of houſes was ſtated to be 252; of inhabitants 1266. A weekly market is held on Fridays; and here are two annual fairs. The only object in the town of particular import is Kimbolton-caſtle, a ſeat of the duke of Mancheſter, which is of unknown, but very remote origin. Leland ſays, "the caſtle is double diked, and the building of it metely ſtrong: it longed to the Mandevilles, erles of Eſſex. Sir Richard Wingfield built new, fair lodgyns and galleries upon the old foundation of the caſtle. There is a plotte now clene deſolated, not a mile by weſt from Kimbolton, called Caſtle-hill, where appear ditches and tokens of old buildings." This caſtle was the jointure, and became the retirement, of queen Catherine, after her divorce from Henry VIII. Henry, firſt earl of Mancheſter, expended large ſums in making it a comfortable reſidence; and his grandſon Robert, the third earl, made very conſiderable alterations and many additions. It is a quadrangular building; the inſide is moſt ſuperbly fitted up, and decorated with numerous paintings. Beauties of England, vol. viii.

KIMBULA, in *Zoology*, the name of a ſpecies of crocodile found in the iſland of Ceylon, and of a very beautiful variegation of colours, being mottled all over with extremely elegant black ſpots ſhining with the gloſs of black velvet.

KIMCHI, David, in *Biography*, a learned rabbi, who acquired high reputation as a ſcripture commentator, was a native of Spain, and flouriſhed in the twelfth and thirteenth centuries. His father, Joſeph, was a bitter enemy to Chriſtians, and wrote ſome ſevere treatiſes againſt them, but the ſubject of the preſent article ſpeaks of Chriſtians with moderation, and he is highly celebrated for his philological labours, which reflect luſtre on his name. His works are held in the higheſt eſtimation by the Jews, who maintain that there is no true ſcience without Kimchi. Moſt of his commentaries have been incorporated in the great bibles of Venice and Baſil; and Pfeiffer, in the "Critica Sacra," remarks, that his grammar is like the Trojan horſe, from which crowds of Chriſtian grammarians have iſſued forth, of whom thoſe have ſhewn themſelves moſt learned who have been moſt perfectly acquainted with Kimchi. He took a decided part in the controverſy concerning the writings of Maimonides, and ſo far moderated the temper of the contending parties, as to produce a revocation of the ſentences of excommunication on both ſides. It is not known at what particular period he died. His commentaries extend to the greater number of the books of the Old Teſtament, and from the bibles of Venice and Baſil have been tranſplanted into the labours of Catholic and Proteſtant commentators, and have unqueſtionably afforded much valuable aſſiſtance in illuſtrating the true ſenſe and meaning of the Hebrew text. Kimchi's philological works conſiſt of a Hebrew Grammar, called "The Book of Perfection;" and of a Hebrew Dictionary, intitled "The Book of the Roots." They were firſt publiſhed at Conſtantinople, but have been ſeveral times reprinted. Buxtorf made theſe works the foundation of his "Theſaurus Linguæ Hebrææ," and his "Lexicon Linguæ Hebrææ." Several of Kimchi's letters may be found in a volume of "The Letters of Maimonides," publiſhed at Venice in the year 1545.

KIMEDY, in *Geography*, a town of Hindooſtan, in the circar of Cicacole; 30 miles N.W. of Cicacole.

KIMI. See KEMI.

KIMITO, a town of Sweden, in the government of Abo; 23 miles S.E. of Abo.

KIMKIM, a town of Walachia; 55 miles N. of Buchareſt.

KIMLASSA, a town of Hindooſtan, in the country of Malwa; 35 miles S. of Chanderee. N. lat. 24° 15'. E. long. 78 42'.

KIMMOO. See KEMMOO.

KIMMOUL, a town of Hindooſtan, in Oriſſa; five miles N. of Sonepour.

KIMNIK, a town of Walachia, on the Alaut; 44 miles E.S.E. of Tergoviſta.

KIMOS, a lake of Ruſſia, in the government of Olonetz; eight miles N.W. from lake Nuk, with which it communicates by a ſmall river. N. lat. 64° 45'. E. long. 30° 14'.

KIMOSSES, or QUIMOSSES, a name given in the language of Madagaſcar to a race of pigmies, or human beings of a diminutive ſize, who inhabit the interior parts of the iſland, and there form a conſiderable national body. M. de Commerſon, cited by M. Rochon in his "Voyage to Madagaſcar," gives the following account of them: "The natural and diſtinctive character of theſe little men is to be white, or, at leaſt, of a paler complexion than all the different blacks ever known, to have very long arms, ſo that their hands reach below the knee, without bending the body; and that of the women, to have ſcarcely any breaſts, except when they nurſe their infant offspring; ſo that many of them are obliged to have recourſe to cow's milk, for feeding their new-born infants. As to intellectual faculties, the Kimoſſes ſurpaſs all the reſt of the Malegaſhes, who are known to be very ingenious and adroit, though abandoned to the greateſt indolence; but the Kimoſſes are more active, and alſo more warlike; ſo that their courage being, as it were, double in proportion to their ſize, their neighbours have not been able to oppreſs them, they have attacked them by a ſuperiority of number amounting to 10 to 1. Attacked as they have been by unequal weapons, (for they do not uſe gunpowder and muſkets, like their enemies,) they have always fought courageouſly, and ſupported their independence among their rocks, which being difficult of acceſs, have, without doubt, contributed to their preſervation. There they live upon rice, different fruits, vegetables, and roots, and rear great number of cattle, (bullocks with bunches on their backs, and ſheep with long, broad, fat tails,) which ſerve them as part of their food. They have no intercourſe with the different tribes of Malegaſhes, who ſurround them, neither by trade, nor by any other method, becauſe they derive all they want from the territory they inhabit. As all the little ſkirmiſhes or wars which take place between them and the other inhabitants of the iſland, have no other object than to carry off ſome cattle or ſlaves, the diminutive ſize of the Kimoſſes exempts them from the latter injury. In order to compromiſe the former, they contrive, when from the ſummits of their mountains they perceive preparations for war in the plain, to take all the ſuperfluous cattle they can ſpare, and tie them to the openings of the defiles which muſt be paſſed by the enemy in penetrating into their mountains, of which, they ſay, they make a voluntary ſacrifice to the indigence of their elder brethren; but they proteſt, at the ſame time, to fight to the laſt drop of blood, if they ſhould penetrate further into their territories by force of arms. Their arms are the lance and the arrow, which they dart in the moſt maſterly manner. At three days march from fort Dauphin, the natives ſhew, with great complaiſance, little elevations of ground reſembling graves, which owe their origin, as they affirm, to a great maſſacre of the Kimoſſes, who were defeated in the open field by their anceſtors." M. de Commerſon ſays further, that he is able to certify, as an ocular witneſs, that in the voyage which he made to fort Dauphin, about the latter end of the year 1770, count de Modeve, the late governor, who communicated to him part of the preceding obſervations, gave him the ſatisfaction of ſhewing to him, among his ſlaves, a Kimoſs woman, about 30 years of age, three feet ſeven inches high, whoſe complexion was one of the cleareſt and brighteſt he ever ſaw among the natives of the iſland. He remarked, that notwithſtanding her low ſize, ſhe was very ſtrong-limbed, not reſembling a ſlender diminutive perſon, but rather a woman of common proportion, her defect of height excepted; her arms were long, and reached, without ſtooping, the knee-pan; her hair was ſhort and woolly; her phyſiognomy tolerably good, and more like that of the Europeans than of the people of Madagaſcar. She ſeemed conſtantly to ſmile, her temper was ſweet and complaiſant, and ſhe ſeemed, from the tenor of her conduct, to be poſſeſſed of much good ſenſe. Her breaſts were flat; but this circumſtance of itſelf is far from being ſufficient to eſtabliſh an exception from the general law of nature. The deſire of recovering her liberty, as much as the fear of inſtant embarkation, made the little ſlave eſcape by running away into the woods. This ſhortneſs of ſize, as Commerſon farther obſerves, compared with that of the Laplander, is almoſt graduated in both; the Laplander and the Kimoſs inhabiting the moſt frigid zones, and the moſt elevated mountains on the globe. Thoſe which form the retreat of the Kimoſſes at Madagaſcar, are from 16 to 18 hundred fathoms above the level of the ſea. The productions of the vegetable kingdom, which naturally grow on theſe high mountains, ſeem to be abortive: *e.g.* the pine, the birch, and many other trees, appear like creeping buſhes or ſhrubs. M. de Modeve alſo gives an account of this race of beings, who inhabit the centre of the iſland, in the 22d degree of latitude. The middling ſize of the men, he ſays, is three feet five inches, and they have a long round beard; the ſize of the women is ſomewhat ſhorter than that of the men. The Kimoſſes are thick and ſtrong-limbed; the colour of their ſkin is leſs tawny than that of the other natives, and their hair ſhort and woolly. They forge iron and ſteel, of which they make lances and arrows; which are the only arms they uſe. In other particulars he confirms the account already given of their mode of ſelf-defence.

From other reports, he informs us, that the valley of the Kimoſſes is rich in cattle and other proviſions. Theſe dwarfs are laborious, and very good huſbandmen. Their chief has an authority more abſolute and more reſpected than that of the other chiefs of the different diſtricts of Madagaſcar. The extent of the valley which they inhabit he was not able to aſcertain; but he knew, that it was ſurrounded by very high mountains, and that its ſituation is 60 leagues N. W. from fort Dauphin, and weſtward it is bounded by the country of Mantanata. Their villages are erected on little eminences, whoſe ſteep ſides are the more inacceſſible, ſince they have multiplied the obſtacles which forbid approach to them.

KIMOZERSKAIA, a town of Ruſſia, in the government of Olonetz, on the lake Kimos; 88 miles N. of Kemi.

KIMPINA, a town of Walachia; 36 miles S. of Cronſtadt.

KIMPOLUNG, a town of European Turkey, in Moldavia; 116 miles W.N.W. of Jaſſy. N. lat. 47° 42'. E. long. 25 8'.

KIMPOUR, a town of Bengal; 27 miles E.N.E. of Purneah.

KIMSLA, a town of Sweden, in Eaſt Gothland; ſeven miles S.S.W. of Nordkioping.

KIM-TCHA, a town of Thibet; 15 miles W.N.W. of Tchaſircong.

KIM-TCHEOU, a town of Chineſe Tartary. N. lat. 44 3. E. long. 126 26'.

KIN, a town of Perſia, in the province of Segeſtan, ſituated at the foot of a chain of mountains near the lake Zurrah; the air is pure, and the ſoil of the environs fertile, eſpecially in fruit; 127 miles W. of Candahar.—Alſo, a town of Arabia, in the province of Nedsjed; 153 miles N.E. of Hajar.

Kin-*bote*, compenſation for the ſlaughter of a kinſman. See Bote.

KINAKINA Aromatica, in the *Materia Medica*, a name by which ſome authors have called the *cortex eleutherii*.

KINASKA, in *Geography*, a town of Ruſſia, in the government of Irkutſk; 28 miles W. of Nertchinſk.

KINASSO, a town of Africa, in Congo; 30 miles S.E. of Pango.

KINATJURA, a town of Japan, in the iſland of Niphon; 94 miles S.W. of Meaco.

KINBURN, a fortreſs of Ruſſia, in the government of Ekaterinoſlaf, on a bay of the Black ſea, at the mouth of the Dnieper. It ſtands cloſe to the frontiers, oppoſite the Turkiſh fortreſs Otchakov, which being a place of ſuperior ſtrength, muſt, while it continues in the hands of the Turks, obſtruct, in caſe of a rupture, the navigation of the Dnieper. Kinburn was intended for the principal corporation of the merchandize ſent from the provinces bordering on the Dnieper; but as the harbour, on account of its quick-ſand, affords no ſecurity for anchorage, the town of Kherſon or Cherſon is at preſent the great emporium for trade: 16 miles S.E. of Otchakov. N. lat. 46 35'. E. long. 31° 36'.

KINCARDINE, a town of Perthſhire, Scotland, is ſeated on the banks of the river Forth, in a ſmall tract of the county, which is nearly ſurrounded by Clackmannanſhire. It was formerly called Weſt-Pans, from the number of ſalt-pans uſed here. In 1780, there were 15, but at preſent theſe are reduced to two or three. The houſes are moſtly well built, and the ſtreets aſſume a regular appearance. Here are two weekly markets, and ſeveral annual fairs. A valuable ſalmon-fiſhery is eſtabliſhed on the Forth, at this place; and here is a commodious harbour: nearly oppoſite the town is an excellent roadſtead, where 100 veſſels, or more, may be anchored in ſafety. Ship building is carried on to a conſiderable extent, and veſſels from 200 to 300 tons burden are often built here. In the year 1792, there were 75 veſſels belonging to this port, to which were annexed 300 ſailors. In 1793, the town contained about 900 inhabitants.

KINCARDINESHIRE, or the county of Mearns, a diſtrict of Scotland, is ſurrounded by the counties of Aberdeen, Angus, and the Britiſh ocean. The area thus encloſed is nearly of a triangular form, and extends along the coaſt from the bay of Aberdeen, to the North-Eſk river, an extent of about thirty miles; and from Dunnottar caſtle, to mount Battack, nearly 20 miles. The ſuperficial contents of lands, are 191,576 Scottiſh, or 243,444 Engliſh miles. The ſea-coaſt is partly flat, and partly rocky; at the north-eaſtern corner of the county, terminates the chain of Grampian hills. Here they run into the ſea, and form what is called the Girdle-Neſs, which preſent to the ſea a bold face of rock, from 60 to 80 feet high. The northern part of this county conſiſts of a mountainous territory formed by the tract of the Grampians, on the ſouth of which is a low diſtrict, provincially termed the How or Hollow of the Mearns. On the ſouthern ſide of the county, the ſurface is much diverſified with hill and dale, particularly on the banks of the North-Eſk, which ſeparates this county from that of Angus, on the ſouth. Here the continuation of the Sidlaw hills runs under different names, from the banks of the North-Eſk, to the neighbourhood of Stonehaven, and bounds Strathmore on the ſouth, or ſouth-eaſt. The line or valley of Strathmore, was the tract formerly purſued by all the invaders of Scotland, who, on account of the mountainous ridge between the two kingdoms, muſt either have entered by Berwick on the eaſt, or by Dumfries on the weſt, where the mountains terminate before reaching the ſea.

Among the Grampians, ſome are of very conſiderable height. That of the greateſt altitude is mount Battack, in the pariſh of Strachan, which is ſaid to be 1150 yards above the level of the ſea. Kerlock, in the ſame pariſh, is 1890 feet high, and Kloachnabane 2370 feet. To the northward of the Grampians, only a ſmall ſtripe, or ſpots and glens, of no great extent of cultivated land, are to be found in this county. The Grampian hills are either covered with heath or moſs, and afford but very little paſturage. In the glacis and vallies, and on the ſides and towards the bottoms of the hills, where cultivation has taken place, the ſoil is either light or gravelly, and full of ſmall ſtones; but on the banks of the brooks and ſtreams, loam commonly prevails. In the level part of the county, the ſoil is generally clay. That ſtripe of fine fertile land, lying along the ſea-coaſt from North-Eſk river, to Stonehaven, is chiefly a deep ſtrong loam on a clay bottom, but in ſome places obſtinate clays occur. The ſoil in the valley of Strathmore is ſimilar to that along the coaſt: but in practice it is found, that the clays in Strathmore do not carry beans, even after being properly limed; although the lands along the coaſt, when manured with lime, ſea-weeds, or dung from the fiſhing towns, produce abundant crops; the reaſon of which ſeems to be, that in the interior part of the county the land is of a lighter nature, lying upon a cold clay. The coaſt land is a rich loam, fit for wheat and beans.

The mineralogy of this county is of no great importance. In many places, however, there are lime quarries; and as the ſtone is of the beſt quality, abundance of fuel only is wanting to render them of great value. They are wrought in the pariſhes of Ecclesfcraig, Laurencekirk, and others. In the pariſh of Arbuthnot, and on the ſea-ſhore near St. Cyrus, beautiful pebbles and fine jaſpers are found. A great part of the coaſt, which is bold and dangerous, conſiſts of rocks of that ſingular character called *Breccia*, or "plumb-pudding ſtone," having the appearance of looſe ſtones bound together by an artificial cement. In the north-eaſtern part of the county, near Aberdeen, granite quarries are wrought for exportation.

In this county is only one royal borough, Inverbervie, or Bervie; but there are ſeveral populous villages, of which Stonehaven, Johnſhaven, and Laurencekirk, are the chief.

The principal rivers connected with this county, are thoſe of the North-Eſk on the weſt and ſouth, and the Dee on the north. The other ſtreams, which are but of little note, are called the Dye, the Cowie, the Carron, the Bervie, and the Luther.

The moſt remarkable remnant of antiquity in Kincardineſhire, is Dunnottar caſtle. It ſtands on the eaſtern coaſt, on a rock projecting into the ſea, acceſſible from the land on the weſt ſide, and that only by a narrow, ſteep, and winding path, over a deep gully, by which it is connected with the main land, and which ſerves as a kind of natural foſſe or ditch, the adjacent rock having been ſcarped and rendered inacceſſible by art. Here are various buildings and conveniences neceſſary for a garriſon; ſuch as chapel, barracks, a baſon or ciſtern of water twenty feet in diameter, a bowling-green, and a forge, ſaid to have been uſed for caſting iron-bullets. On this rock, notwithſtanding its difficulty of acceſs, the church and burial-place of the pariſh were originally ſituated; the building now called the chapel being formerly the pariſh-church. In this caſtle, the regalia of Scotland, (the crown, ſceptre, and ſword,) were depoſited in the year 1651, to preſerve them from the Engliſh army, which overran this country during the civil wars of that period.

In the pariſh of Eccleſcraig, are the ruins of a fortreſs, formerly a place of great ſtrength, being erected on a perpendicular and peninſulated rock ſixty feet above the ſea. In the pariſh of Fettercairn is a ruined building, called Fenella's caſtle, ſaid to be the place where Kenneth III. was aſſaſſinated. In Fordun pariſh a houſe ſtill remains, called St. Palladius's chapel, where the image of the ſaint was kept, and to which pilgrimages were performed from the moſt diſtant parts of Scotland. In the pariſh of Arbuthnot, was born the celebrated Dr. Arbuthnot, phyſician to queen Anne. He formed a diſtinguiſhed literary triumvirate with Mr. Pope and Dr. Swift.

In the population return to parliament in the year 1801, Kincardineſhire was ſtated to contain 5990 houſes, and 26,349 inhabitants.

KINCHA, a river of Aſia, which riſes in Thibet, paſſes through the Chineſe province of Se-tchuen, and enters the province of Hou-quang, where it changes its name to Yang-tſe, after which it croſſes the province of Kiang-nan, and runs into the ſea, N. lat. 31° 55′. E. long. 112° 44′.

KINDELBRUCKEN, a town of Saxony, in Thuringia, on the Wipper; 21 miles N.E. of Erfurt. N. lat. 51° 16′. E. long. 11° 10′.

KINDERHOOK, a poſt-town of America, in Columbia county, New York, on the E. ſide of Hudſon's river, containing 50 dwelling-houſes and a Dutch church; 13 miles N. of Hudſon's city. The townſhip contains 4248 inhabitants, of whom 483 are ſlaves. N. lat. 42° 25′. W. long. 73° 34′.

KINDRED, in *Law*, are a certain body of perſons of kin, or related to each other. See ADMINISTRATION, AGNATI, COGNATI, CONSANGUINITY, and DEGREES.

KINE, in *Zoology*. See BULL and COW.

KINESCHMA, in *Geography*, a town of Ruſſia, in the government of Koſtrom, on the Volga; 40 miles S.E. of Koſtrom.

KINETON, or KINGTON, a market town and pariſh in a hundred of the ſame name, and county of Warwick, England, was formerly poſſeſſed by the kings of England, and it is ſaid that Edward the Confeſſor, and William the Conqueror, held this town and manor. King John kept his court here, at a caſtle N.E. of the town. In the fourth year of king Henry III. Stephen de Legrave, obtained the king's charter for holding a weekly "Mercate," or market here on Tueſdays; and afterwards the ſame king granted an annual fair for two days. A church was built here about the beginning of Edward II.'s reign. In the year 1800, the town contained 165 houſes, and 779 inhabitants. In the vicinity of Kineton, to the S.E. is Edge hill, where a ſignal battle was fought in the year 1642, between the armies of Charles I. and thoſe of the parliament. Jago has commemorated the place, and the event, in an intereſting poem, entitled, "Edge-hill." Dugdale's "Antiquities of Warwickſhire illuſtrated," fol. 1656.

KING, a monarch, or potentate, who rules ſingly and ſovereignly over a people,

Camden derives the word from the Saxon *cyning*, which ſignifies the ſame; and that from *can*, *power*, or *ken*, *knowledge*, with which every monarch is ſuppoſed to be inveſted. The Latin *rex*, the Scythian *reix*, the Punic *reſch*, the Spaniſh *rey*, the French *roy*, come all, according to Poſtel, from the Hebrew ראש, *roſch*, *chief*, *head*.

Kings, both among the ancient Greeks and Romans, were prieſts as well as princes. Virgil, ſpeaking of Anius, king of Delos, ſays,

> "Rex Anius, rex idem hominum, Phœbique ſacerdos."

As to the Romans, Livy and Dionyſius are expreſs; they ſay, that though Numa inſtituted a great number of orders of prieſthood, yet ſome he diſcharged himſelf, and in perſon. After the expulſion of the kings, they were obliged to create a *rex ſacrorum*, a king of the ſacrifices, for the adminiſtration of the prieſtly part of the royalty.

Lawyers ſay, the king of England is a mixed perſon, a prieſt as well as a prince: at his coronation he is anointed with oil, as the prieſts and kings of Iſrael were, to intimate, that his perſon is ſacred.

Among the Greeks, the king of Perſia had anciently the appellation of the *great king*; the king of France lately had that of the *moſt Chriſtian king*, and the king of Spain has that of *Catholic king*. See CATHOLIC.

The king of the Romans is a title formerly belonging to the emperor of Germany; but lately conferred on the infant ſon of Bonaparte.

The kings of England, by the Lateran council, under pope Julius II. had the title of *Chriſtianiſſimus* conferred on them; and that of *defender of the faith* was added by pope Leo X. though it had been uſed by them ſome time before.

The title of *grace* was firſt given to our kings about the time of Henry IV. and that of *majeſty* firſt to Henry VIII. before which time our kings were called grace, highneſs, &c.

In all public inſtruments and letters, the king ſtyles himſelf *nos*, *we*; though till the time of king John, he ſpoke in the ſingular number.

The Hungarians formerly gave the name king to their queen Mary, to avoid the infamy which the laws of that country caſt upon thoſe who are governed by women: accordingly ſhe bore the title of king Mary, till her marriage with Sigiſmund, at which time ſhe took the title of queen.

By our laws the ſupreme executive power of theſe kingdoms is veſted in a ſingle perſon, the king or queen: for it matters not to which ſex the crown deſcends: but the perſon entitled to it, whether male or female, is immediately inveſted with all the enſigns, rights, and prerogatives of ſovereign power, as is declared by ſtatute 1 Mar. ſt. 3. c. 1. (See Queen.) As the executive power of the Engliſh nation is veſted in a ſingle perſon, by the general conſent of the people, manifeſted by long and immemorial uſuage, it is become neceſſary to the freedom and peace of the ſtate, that a rule, uniform, univerſal, and permanent, ſhould be laid down, in order to make out, with preciſion, who is that ſingle perſon, to whom are committed (in ſubſervience to the law of the land) the care and protection of the community; and to whom, in return, the duty and allegiance of every individual are due. Accordingly our conſtitution has not left the deciſion of this important queſtion dark or doubtful. It has marked out the right of ſucceſſion in characters ſufficiently obvious. See the article *Right of* Crown.

The king's title having been aſcertained, the next point of principal importance is the aſſiſtance which the law has provided for him in the diſcharge of his duties, the maintenance of his dignity, and the exerciſe of his prerogative. For this purpoſe a diverſity of councils has been eſtabliſhed: ſuch are, the high court of parliament, the peers of the realm, the judges of the courts of law, and more eſpecially the privy council, generally called, by way of eminence, "the council." (See Parliament, Peers, Judges, and Privy Council.) The next object of conſideration will be the duties incumbent on the king by our conſtitution; with a view to which his dignity and prerogative are eſtabliſhed by the laws of the land: it being a maxim in the law, that protection and ſubjection are reciprocal. (7 Rep. 5.) Theſe reciprocal duties are, according to the ſtatement of judge Blackſtone, what were meant by the convention in 1688, when they declared that king James had broken the original contract between king and people. (See *Original* Contract.) The principal duty of the king is to govern his people according to law. "Nec regibus infinita aut libera poteſtas," was the conſtitution of our German anceſtors on the continent. (Tac. de Mor. Germ. c. 7.) And this is not only conſonant to the principles of nature, of liberty, of reaſon, and of ſociety, but has always been eſteemed an expreſs part of the common law of England, even when prerogative was at the higheſt. "The king," ſays Bracton, (l. 1. c. 8.) who wrote under Henry III. "ought not to be ſubject to man, but to God, and to the law; for the law maketh the king. Let the king, therefore, render to the law what the law has inveſted in him with regard to others; dominion and power; for he is not truly king, where will and pleaſure rule, and not the law." And again, (l. 2. c. 16. § 3.) "the king alſo hath a ſuperior, namely, God, and alſo the law by which he was made a king." Forteſcue, alſo having well diſtinguiſhed between a monarchy abſolutely and deſpotically regal, introduced by conqueſt and violence, and a political or civil monarchy, which ariſes from mutual conſent, ſuch as he ſuppoſes the government of England to be, lays it down as a principle, that "the king of England muſt rule his people according to the decrees of the laws thereof; inſomuch that he is bound by an oath at his coronation to the obſervance and keeping of his own laws." Moreover, it is expreſsly declared by ſtatute 12 and 13 W. III. c. 2. "that the laws of England are the birthright of the people thereof; and all the kings and queens who ſhall aſcend the throne of this realm ought to adminiſter the government of the ſame according to the ſaid laws; and all their officers and miniſters ought to ſerve them reſpectively according to the ſame; and therefore all the laws and ſtatutes of this realm, for ſecuring the eſtabliſhed religion, and the rights and liberties of the people thereof, and all other laws and ſtatutes of the ſame now in force, are ratified and confirmed accordingly." The terms of the original contract between king and people, the learned judge apprehends to be now couched in the *Coronation* Oath; which ſee.

In order to enable the king to maintain the executive power in due independence and vigour, and to diſcharge with honour to himſelf, and benefit to his ſubjects, the duties of his high ſtation, the conſtitution and laws have inveſted him with a variety of prerogatives, ſome of which are *direct* and others *incidental.* (See Prerogative.) The former, or direct and ſubſtantive prerogatives may be diſtributed into three kinds; ſuch as regard, firſt, the king's royal *character;* ſecondly, his royal *authority;* and laſtly, his royal *income.* Theſe are neceſſary to ſecure reverence to his perſon, obedience to his commands, and an affluent ſupply for the ordinary expences of government. We ſhall refer to the article *Revenue,* what relates to the royal income; and here content ourſelves with enumerating ſome particulars that pertain to the king's political character and authority; or, in other words, his dignity and regal power; to which laſt the term prerogative is frequently reſtricted. In order to exhibit and ſupport the royal dignity, the law aſcribes to the king, in his high political character, not only large powers and emoluments, which form his prerogative and revenue, but likewiſe certain attributes of a high and tranſcendent nature; by which the people are led to conſider him in the light of a ſuperior being, and to pay him that awful reſpect, which may enable him with greater eaſe to carry on the buſineſs of government. *Firſt* of all, the law aſcribes to the king the attribute of *ſovereignty,* or pre-eminence. "Rex eſt vicarius," ſays Bracton, "et miniſter Dei in terra. Omnis quidem ſub eo eſt, ipſe ſub nullo niſi tantum ſub Deo." He is ſaid to have *imperial* dignity; and in charters before the conqueſt, is frequently ſtyled *baſileus* and *imperator,* the titles reſpectively aſſumed by the emperors of the Eaſt and Weſt. His realm is declared to be an *empire,* and his crown *imperial,* by many acts of parliament, particularly the ſtatutes 24 Hen. VIII. cap. 12. and 25 Hen. VIII. cap. 28, which at the ſame time declare the king to be the ſupreme head of the realm in matters both civil and eccleſiaſtical, and conſequently inferior to no man upon earth, dependent on no man, and accountable to no man. (See alſo 24 Geo. II. cap. 24. 5 Geo. III. cap. 27.) Hence it is that no ſuit or action can be brought againſt the king, even in civil matters; becauſe no court can have juriſdiction over him. Hence it is likewiſe, that by law the perſon of the king is ſacred, even though the meaſures purſued in his reign be completely tyrannical and arbitrary; for no juriſdiction on earth has power to try him in a criminal way; much leſs to condemn him to puniſhment. If any foreign juriſdiction had this power, as was formerly claimed by the pope, the independence of the kingdom would ceaſe; and if ſuch a power were veſted in any domeſtic tribunal, there would ſoon be an end of the conſtitution, by deſtroying the free agency of one of the conſtituent parts of the ſovereign legiſlative power. It may be aſked, however, are the ſubjects of England totally deſtitute of remedy, in caſe the crown ſhould invade their rights, either by private injuries, or public oppreſſion? To this, ſays judge Blackſtone, we may anſwer, that the law has provided a remedy in both caſes. As to private injuries; if any perſon has, in point of property, a juſt demand upon the king, he muſt petition him in his court of chancery, where his chancellor will adminiſter right as a matter of grace, though not upon compulſion. (Finch. L. 255.) And this is entirely conſonant to what is laid down by the writers on natural law. See Puffendorff's Law of Nature, b. 8. c. 10. Locke on Gov. p. 2. § 205.

As to caſes of ordinary public oppreſſion, where the vitals of the conſtitution are not attacked, the law hath alſo aſſigned a remedy. For as a king cannot miſuſe his power, without the advice of evil counſellors, and the aſſiſtance of wicked miniſters, theſe men may be examined and puniſhed. The conſtitution has therefore provided, by means of indictments, and parliamentary impeachments, that no man ſhall dare to aſſiſt the crown in contradiction to the laws of the land. As to ſuch public oppreſſions as tend to diſſolve the conſtitution, and ſubvert the fundamentals of government, theſe are caſes, which the law will not, out of decency, ſuppoſe; being incapable of diſtruſting thoſe, whom it has inveſted with any part of the ſupreme power; ſince ſuch diſtruſt would render the exerciſe of that power precarious and impracticable. The ſuppoſition of law, ſays judge Blackſtone, is, that neither the king nor either houſe of parliament (collectively taken) is capable of doing any wrong; ſince in ſuch caſes the law feels itſelf incapable of furniſhing any adequate remedy. For which reaſon all oppreſſions, which may happen to ſpring from any branch of the ſovereign power, muſt neceſſarily be out of the reach of any *ſtated rule*, or *expreſs legal* proviſion; but, if ever they unfortunately happen, the prudence of the times muſt provide new remedies upon new emergencies. It is found, indeed, by experience, that whenever the unconſtitutional oppreſſions, even of the ſovereign power, advance with gigantic ſtrides and threaten deſolation to a ſtate, mankind will not be reaſoned out of the feelings of humanity; nor will ſacrifice their liberty by a ſcrupulous adherence to thoſe political maxims, which were originally eſtabliſhed to preſerve it. And therefore, though the poſitive laws are ſilent, experience will furniſh us with a very remarkable caſe in which nature and reaſon prevailed. When king James II. invaded the fundamental conſtitution of the realm, the convention declared an abdication, by which the throne was rendered vacant, which induced a new ſettlement of the crown. After all, it muſt be left to future generations, whenever neceſſity and the ſafety of the whole ſhall require it, to exert thoſe inherent (though latent) powers of ſociety, which no climate, no time, no conſtitution, no contract, can ever deſtroy or diminiſh.

II. Beſides the attribute of ſovereignty, the law alſo aſcribes to the king, in his political capacity, abſolute *perfection*. The king can do no wrong; by which ancient and fundamental maxim we are not to underſtand, that every tranſaction of government is of courſe juſt and lawful, but that whatever is exceptionable in the conduct of public affairs is not to be imputed to the king, nor is he anſwerable for it perſonally to his people; and farther, that the prerogative of the crown extends not to do any injury; it is created for the benefit of the people, and therefore cannot be exerted to their prejudice. (Plowd. 487.) In the king there is no folly or weakneſs; no injuſtice or error; and, therefore, if the crown ſhould be induced to make an improper grant of any franchiſe or privilege, the law declares that the king was deceived in his grant, and thereupon ſuch grant is rendered void, merely upon the foundation of fraud and deception, either by or upon thoſe agents whom the crown had employed. Yet, notwithſtanding this perſonal perfection which the law aſcribes to the ſovereign, the conſtitution has allowed a latitude of ſuppoſing the contrary, in reſpect to both houſes of parliament; each of which, in its turn, hath exerted the right of remonſtrating and complaining to the king even of thoſe acts of royalty, which are moſt properly his own; ſuch as meſſages ſigned by himſelf, and ſpeeches delivered from the throne; nevertheleſs, for the ſake of freedom of debate, theſe acts of ſtate are uſually ſuppoſed to proceed from the advice of the adminiſtration. In the king likewiſe there can be no negligence or *laches*, and, therefore, no delay will bar his right: *nullum tempus occurrit regi.* (Finch. L. 89. Co. Litt. 90.) In the king alſo there can be no infamy, ſtain, or corruption of blood. By his crown he is, *ipſo facto*, cleared of all attainder; no non-age or minority is allowed in him; and his very grants of lands, though held in his natural capacity, cannot be avoided by non-age.

III. Nay more, the law aſcribes a kind of *perpetuity*, or *immortality* to him. *Rex Angliæ non moritur.* Henry, Edward, or George, may die; but the king ſurvives them all. His death is termed his *demiſe*, becauſe the crown is thereby demiſed to another. He is ſaid not to be liable to death, being a corporation of himſelf, that lives for ever. There is no interregnum, but the moment one king dies, his heir is king, fully and abſolutely without any coronation, ceremony, &c.

IV. To theſe it may be added, that the law attributes a kind of *ubiquity* to the king; he is in a manner every where, in all courts of judicature, which he alone has the right of erecting, and therefore cannot be nonſuited. In the exertion of lawful prerogative, ſays judge Blackſtone, the king is and ought to be abſolute; that is, ſo far abſolute, that there is no legal authority that can either delay or reſiſt him. He may reject what bills, may make what treaties, may coin what money, may create what peers, may pardon what offences he pleaſes; unleſs where the conſtitution hath expreſsly, or by evident conſequence, laid down ſome exception or boundary; declaring that thus far the prerogative ſhall go and no farther.

Some things there are which the king cannot do; *viz.* he cannot diveſt himſelf, or ſucceſſors, of any part of his regal prerogative, authority, &c. There are ſeveral things alſo which he cannot do *ſalvo jure, ſalvo juramento, & ſalva conſcientia ſua*: in particular, there are two things which he cannot do without the conſent of parliament; *viz.* make new laws, or raiſe new taxes.

In the exertion of thoſe prerogatives, which the law has given him, the king is irreſiſtible, and abſolute, according to the forms of the conſtitution, and yet, if the conſequence of that exertion be manifeſtly to the grievance or diſhonour of the kingdom, the parliament will call his adviſers to a juſt and ſevere account. For prerogative conſiſting, as Mr. Locke has well defined it, (On Govern. 2. § 166.) in the diſcretionary power of acting for the public good, where the poſitive laws are ſilent, if that diſcretionary power be abuſed to the public detriment, ſuch prerogative is exerted in an unconſtitutional manner. Thus the king may make a treaty with a foreign ſtate, which ſhall irrevocably bind the nation; and yet when ſuch treaties have been judged pernicious, impeachments have purſued thoſe miniſters, by whoſe agency or advice they were concluded.

The king, with regard to foreign concerns, is the delegate or repreſentative of his people; and as ſuch, he has the ſole power of ſending ambaſſadors to foreign ſtates, and receiving ambaſſadors at home. See EMBASSADOR.

The king has power, by his prerogative, without any act of parliament, to make war or peace, to conclude leagues, treaties, and alliances with foreign ſtates, and to grant ſafe-conducts. The king is conſidered as the generaliſſimo, or the firſt in military command, within the kingdom: and in this capacity he has the ſole power to give commiſſions for raiſing and regulating fleets and armies, as well as for erecting, manning, and governing forts, and other places of ſtrength, to appoint ports and havens, to erect beacons, light-houſes, and ſea-marks, to prohibit the exportation of arms or ammunition out of the kingdom, diſpoſe of magazines, caſtles, ſhips, public moneys, &c. He convokes, adjourns, prorogues, and diſſolves parliaments; and may refuſe his aſſent to any bill paſſed by both houſes, without giving his reaſons for it.

In domeſtic affairs the king is conſidered as the fountain of juſtice and general conſervator of the peace of the kingdom. However, by the fountain of juſtice the law does not mean the *author* or *original*, but only the *diſtributor*. Juſtice is not derived from the king, as from his *free gift;* but he is the ſteward of the public, to diſpenſe it to whom it is *due*. (Bract. l. 3. tr. 1. c. 9.) In this capacity the king alone has the right of erecting courts of judicature; and all juriſdictions of courts are either mediately or immediately derived from the crown; their proceedings run generally in the king's name; they paſs under his ſeal, and are executed by his officers. In early times, our kings, probably in perſon, often heard and determined cauſes between party and party. But by the uniform uſage of many ages, they have delegated their whole judicial power to the judges of their ſeveral courts, which are the grand depoſitaries of the fundamental laws of the kingdom, and have gained a known and ſtated juriſdiction, regulated by certain and eſtabliſhed rules, which the crown itſelf cannot now alter but by act of parliament. (2 Hawk. P. C. 2.) In criminal proceedings it would be in the higheſt degree abſurd, if the king perſonally ſat in judgment; becauſe in regard to theſe he appears in another capacity, that of "proſecutor." But though the king is not perſonally preſent in his courts of law; yet he is underſtood to be virtually preſent; his judges are the mirror by which the king's image is reflected; ſo that it is the regal office, and not the royal perſon, that is always preſent in court, always ready to undertake proſecutions, or pronounce judgment, for the benefit and protection of the ſubject. See COURT and JUDGE.

As the king is the fountain of juſtice, the prerogative of iſſuing proclamations is veſted in him alone. (See PROCLAMATION.) The king is likewiſe the fountain of honour, of office, and of privilege. Accordingly he is entruſted with the ſole power of conferring dignities and honours, ſo that all degrees of nobility, knighthood, and other titles, are received by immediate grant from the crown; either expreſſed in writing, by writs or letters patent, as in the creation of peers and baronets; or by corporeal inveſtiture, as in the creation of a ſimple knight. And as the king may create new titles, ſo he may create new offices, but with this reſtriction, that he cannot create new offices with new fees annexed to them, nor annex new fees to old offices; for this would be a tax upon the ſubject, which cannot be impoſed but by act of parliament. (2 Inſt. 533.) The king has alſo the prerogative of conferring privileges upon private perſons; ſuch as granting place or precedence to any of his ſubjects (4 Inſt. 361.); ſuch is alſo the power to enfranchiſe an alien, and make him a denizen. Such is likewiſe the prerogative of erecting *corporations;* which ſee.

The king is alſo the arbiter of commerce. Under this branch of the prerogative he has power to eſtabliſh public marts, or places of buying and ſelling; ſuch as markets and fairs, with the tolls belonging to them; and likewiſe to regulate weights and meaſures; to give money, which is the medium of commerce, authority, or to make it current; and the coining of money is the act of the ſovereign power, and the ſettling of the denomination or value for which the coin is to paſs current. The king may alſo at any time decry or cry down any coin of the kingdom, and make it no longer current. Among the incidental prerogatives belonging to the king, and which are exceptions, in favour of the crown, to thoſe general rules that are eſtabliſhed for the reſt of the community, we may mention the following. Debts due to him are always to be ſatisfied in the firſt place, in caſe of executorſhip, &c., and till his debt is diſcharged, he may protect the creditor from the arreſts of others. He may diſtrain for the whole debt on a tenant that holds but part of the land; is not obliged to demand his rent as others are; may ſue in what court he pleaſes, and diſtrain where he liſts. In all doubtful caſes, *ſemper præſumetur pro rege:* no ſtatute reſtrains him, unleſs he be particularly named. In all caſes where the king is plaintiff, his officers may enter with an arreſt; and, if entrance be denied, break open a houſe, and ſeize the party; though in other caſes a man's houſe is his caſtle, and has a privilege to protect him againſt all arreſts. Moreover no coſts ſhall be recovered againſt the king; and the king can remove a joint-tenant.

He has alſo cuſtody of the perſons and eſtates of idiots and lunatics; he is *ultimus hæres regni*, and to him revert all eſtates, when no heir appears. All treaſure-trove (*i. e.* money, plate, or bullion, found, and the owners not known) belongs to him; ſo all waifs, eſtrays, wrecks, lands recovered from the ſea, gold and ſilver mines, royal fiſhes, &c belong to him. See REVENUE.

The king is conſidered by the laws of England as the head and ſupreme governor of the national church. (26 Hen. VIII. cap. 1. 1 Eliz. cap. 1.) In virtue of this authority, he convenes, prorogues, reſtrains, regulates, and diſſolves, all eccleſiaſtical ſynods or convocations. See CONVOCATION.

He has the ſupreme right of patronage, called *patronage paramount*, over all the eccleſiaſtical benefices in England.

From this prerogative of being the head of the church ariſes the king's right of nomination to vacant biſhoprics, and certain other eccleſiaſtical preferments. As head of the church, the king is likewiſe the "dernier reſort" in all eccleſiaſtical cauſes; an appeal lying ultimately to him in chancery from the ſentence of every eccleſiaſtical judge; which right was reſtored to the crown by ſtatute 25 Henry VIII. c. 19. The king can unite, ſeparate, enlarge, or contract the limits of biſhoprics, or eccleſiaſtical benefices, and by his letters erect new biſhoprics, colleges, &c. See REGALIA.

He can diſpenſe with the rigour of the eccleſiaſtical laws, except thoſe which have been confirmed by act of parliament, or declared by the bill of rights; as, for a baſtard to be a prieſt, for a biſhop to hold a benefice in commendam, &c. He has alſo power to diſpenſe with ſeveral acts of parliament and penal ſtatutes, by a non-obſtante, where himſelf alone is concerned; to moderate the rigour of the law, according to equity; to pardon a man condemned by law; except in appeals of murder, and in caſe of impeachments by the houſe of commons; and to interpret by his judges, in ſtatutes and caſes not defined by law.

KING, *Champion of the.* See CHAMPION.

KING, *Charters of the.* See CHARTER.

KING, *Committee of the.* See COMMITTEE.

KING's *Councils.* See KING, *ſupra.*

KING's *Counſel.* See COUNSEL.

King's *Courts*. See Court.

King's *Death, Compaſſing the*. See Treason.

King, *Peace of the*. See Peace.

King, *Quarantain of the*. See Quarantain.

King, *Revenue of the*. See Revenue.

King, *Succeſſion of the*. See Crown, *Right of*.

King, *Tenant of the*. See Tenant.

King, *Widow of the*. See Widow.

King *of the Romans*. See Romans.

King, among the *Hebrew Grammarians*, is an appellation given to a ſpecies of accents anſwering to our colon. See Accent.

King *of the Mullets*. See Mullus *imberbis*.

King *of the Quails*. See Rallus *crex*.

King *of the Sacrifices*, *rex ſacrificulus*, or *ſacrorum*, was a title of an ancient prieſt, or miniſter of religion, at Rome; who was ſuperior to the flamen dialis, but inferior to the pontifex maximus.

He was created at the comitia centuriata, or aſſembly of the centuries, and was at firſt choſen out of the number of the patricians. He could not, during his office, hold any magiſtracy, nor harangue the people. He preſided at all the ſacrifices, proclaimed the feaſts, &c.

His wife bore the title of *queen of the ſacrifices*, *regina ſacrorum*; and had herſelf a part in the ſacred ceremonies.

King *at Arms*, or *of Arms*, is an officer of great antiquity, and anciently he was of great authority; his buſineſs is to direct the heralds, preſide at their chapters, and have the juriſdiction of armory.

The origin of this title is doubtful. Some of the French writers imagine that it was given to heralds becauſe they attended upon and regulated military ceremonies. Others attribute to them the ſtyle of kings, becauſe they governed and preſided in ceremonies of tournaments, in like manner as the maſter of the ceremonies at Athens was ſtyled βασιλεα. Others again aſcribe the title to them, becauſe in aſſigning arms, as expreſſions of honour to any perſon, they reſembled the kingly prerogative. But this ſuppoſes that the cuſtom of granting arms by the kings of heralds is as ancient as their titles: whereas Mr. Edmondſon obſerves, in his "Complete Body of Heraldry," that it doth not any where appear that theſe kings had anciently the addition *armorum* given to them, they being then called, as they truly were, *reges heraldorum*; which for the moſt part continued till about the reign of Henry IV., when they began to be entitled *reges armorum*, although their primitive appellation was alſo uſed for ſome ages. The latter title of *reges armorum* was attributed to them before ſuch times as thoſe officers made any grant of arms.

Sir Henry Spelman is of opinion, that the title of king of arms was attributed to ſuch officers in England as belonged immediately to the king's majeſty; whilſt thoſe who appertained to princes of the blood royal, or to the nobility, were ſtyled ſimply heralds. The moſt probable conjecture is, that this denomination "king of heralds," of later times called "king of arms," was given to that perſon who was the chief, or principal officer preſiding over the heralds of any kingdom, or of any particular province, uſually termed by heraldic writers "the marches," or of any order of knighthood; and owing its riſe probably to the French dialect. Among the French, the word *roy*, or king, and from them in their and our hiſtories and records, the Latin word *rex* hath been frequently referred to the principal, the governor, the judge, the viſitor, the ſupreme, the preſident, or chief, of many profeſſions, arts, or communities. In the moſt ancient writers, theſe officers are ſtyled merely "kings of heralds," without the addition of any title of office; but in courſe of time they became diſtinguiſhed by the appellations of their different provinces.

In England we have three kings of arms; *viz.* Garter, Clarenceux, and Norroy.

Garter, principal King at Arms. See Garter.

The two laſt are alſo called *provincial* heralds, becauſe they divide the kingdom between them into two provinces, which are ſeparated by the river Trent.

Theſe, by charter, have power to viſit noblemen's families, to ſet down their pedigrees, diſtinguiſh their arms, appoint perſons their arms, and, with *Garter*, to direct the other heralds.

Anciently the kings at arms were created, and ſolemnly crowned, by the kings of England themſelves; but of later days the earl marſhal has a ſpecial commiſſion, at every creation, to perſonate the king. See Clarenceux, and Norroy.

To theſe may be added Lyon King at Arms, for Scotland, who is the ſecond king at arms for Great Britain; he is inveſted and crowned with great ſolemnity. To him belong the publiſhing the king's proclamation, marſhalling funerals, reverſing arms, &c. And alſo Ulſter, king of arms, in Ireland.

Ulſter was ſubſtituted, as ſome ſay, in the room of Ireland king of arms, by Edward VI.; though the king himſelf in his journal takes notice of it as a new inſtitution. "There was a king of arms made for Ireland," ſays he, "whoſe name was Ulſter, and his province was all Ireland; and he was the fourth king of arms, and the firſt herald of Ireland." The patent paſſed under the great ſeal of England, with an ample teſtimony of the neceſſity and dignity of the office. Whether Ulſter was ſubſtituted in the room of Ireland king of arms, or elſe was newly erected, ſuch an officer of the crown of England, on which Ireland is dependent, ſtill continues, and may execute his heraldic order in this kingdom, though out of his province, in as extenſive a manner as either Clarenceux or Norroy may do without the limits of either of their marches. We here add, that each of the military orders of knighthood eſtabliſhed in England, *viz.* the *Garter* and the *Bath*, give titles to kings of arms. Garter has been already mentioned. (See Garter.) *Bath* king of arms was created in the eleventh year of king George I. for the government of the order of the "Bath," then newly created, by virtue of letters patent, bearing date at Weſtminſter, May the 18th, in that year. In conformity to the ſtatutes pertaining to this order, he was nominated and created, by the great maſter of the order, with the ceremonies uſually obſerved in the creation of other kings of arms, to continue in his ſaid office during good behaviour, denominated *Bath*, and enjoined ſeduouſly to attend the ſervice of the order. His habit and ſervice are particularly preſcribed. In the year 1725, his majeſty, by ſign manual, conſtituted and ordained, the then Bath king of arms, "Glouceſter king of arms, and principal herald of the parts of Wales;" and letters patent paſſed the great ſeal, granting to him the ſaid office of "Glouceſter," empowering him to grant arms and creſts to perſons reſiding within the dominions of Wales; and alſo perpetually conſolidating the office of "Glouceſter" with that of "Bath" king of arms: ordering, moreover, that in all aſſemblies, and at all times, he ſhould take precedency above and before all other provincial kings of arms. See College *of Heralds*, and Herald.

King's *Band*, in *Muſical Hiſtory*, a royal houſhold eſtabliſhment. In the reign of king Edward IV., Muſic, after leading a vagrant life in our country, and being paſſed from pariſh to pariſh, ſeems at length, by the favour of this monarch,

narch, to have acquired a ſettlement ; for it appears by his letters patent, under the great ſeal of his realm of England, bearing date the 24th of April, 1469, in the ninth year of his reign, that this prince did incorporate certain minſtrels, and give them a charter.

The original charter is preſerved in Rymer's Fœdera : and in the eleventh year of Charles I., when that monarch was petitioned to grant a new patent to the profeſſors of the art and ſcience of muſic, the form of that which had been from Edward IV. was made the ground-work of the new charter. For a further account of this inſtitution, ſee Chapel *Royal Eſtabliſhment.*

The ſplendid robes and gorgeous attire of bards and minſtrels at all times are upon record. The flowing veſt of Orpheus in the triple capacity of prieſt, legiſlator, and muſician, is ſpecified by Virgil ; Arion is related by Herodotus to have leaped into the ſea in the rich veſtments he uſually wore in public ; Suidas ſpeaks of the ſaffron robe and Mileſian ſlippers worn by Antigenides ; and the performers in the tragic chorus, which uſed to be furniſhed at the expence of ſome wealthy citizen of Athens, wore alſo a ſplendid and coſtly uniform.

Indeed the cuſtom of preſenting ſtate muſicians with ſuperb and expenſive dreſſes during the fourteenth century, ſeems to have travelled into England from the continent, and to have continued here till after the eſtabliſhment of the king's band of four-and-twenty performers ; part of their preſent ſalary being ſtill paid at the wardrobe-office, as an equivalent for the annual dreſs with which they uſed to be furniſhed at his majeſty's expence. The children of the king's chapel ſtill continue to wear the ſcarlet uniform of the original eſtabliſhment. And the waits, or muſicians who attend the mayor and aldermen of our cities and incorporate boroughs, are ſtill furniſhed with ſplendid cloaks. See Minstrels and Waits.

King's *Bench.* See Court *of King's Bench.*

King's *Evil.* See Evil and Scrofula.

King's *Exchange.* See Exchange.

King's *Houſhold.* See Houshold, Greencloth, Cofferer, and Revenue.

King's *Library.* See Library.

King *of the Minſtrels*, in *Muſical Hiſtory.* Dr. Plot, in his Hiſtory of Staffordſhire, has minutely related the origin of an ancient and curious, though barbarous, privilege in favour of Engliſh minſtrels, granted by John of Gaunt, duke of Lancaſter, at his caſtle of Tutbury, in the year 1381, at the inauguration of the firſt king of the minſtrels.

Du Cange gives ſeveral more early inſtances of minſtrels having arrived at the honour of ſovereignty in France : particularly Jean Charmillons, rex juglatotorum at Troyes, in Champagne, 1296. Robert Cavaron, roi des meneſtriers du royaume de France, 1338 ; and others in 1357, and 1362. Copin de Brequin, roi des meneſtriers du royaume de France. Computum de auxiliis pro redemptione regis Johannis, A.D. 1367. Pour une couronne d'argent quil donna le jour de la tiphaine au roi des meneſtriers. And one about ſix years later than John of Gaunt's inſtitution is mentioned in Rymer, tom. vii. p. 555, where John Caunz, king of the minſtrels, condeſcends to ſupplicate for leave to viſit foreign countries.

"During the time in which ancient earls and dukes of Lancaſter, who were ever of the blood royal, great men in their time, and had their abode, and kept a liberal hoſpitality here, at their honour of Tutbury, there could not but be a general concourſe of people from all parts hither ; for whoſe diverſion all ſorts of muſicians were permitted likewiſe to come to pay their ſervices ; amongſt whom, being numerous, ſome quarrels and diſorders now and then ariſing, it was found neceſſary, after a while, they ſhould be brought under rules, divers laws being made for the better regulating of them, and a governor appointed them by the name of a *king*, who had ſeveral officers under him to ſee to the execution of thoſe laws, full power being granted them to apprehend and arreſt any ſuch minſtrels appertaining to the ſaid honour, as ſhould refuſe to do their ſervices in due manner, and to conſtrain them to do them ; as appears by the charter granted to the ſaid king of the minſtrels, by John of Gaunt, king of Caſtile and Leon, and duke of Lancaſter, bearing date the 22d of Auguſt, in the fourth year of the reign of king Richard II., entitled "Carta le Roy de Minſtralae," which is as follows :

"John, by the grace of God, king of Caſtile and Leon, duke of Lancaſter, to all them who ſhall ſee or here theſe our letters, greeting—Know ye, we have ordained, conſtituted, and aſſigned to our well-beloved the king of the minſtrels in our honour of Tutbury, who is, or for the time ſhall be, to apprehend and arreſt all the minſtrels in our ſaid honour and franchiſe, that refuſe to do the ſervices and minſtrelſy as appertain to them to do from ancient times at Tutbury aforeſaid, yearly on the days of the Aſſumption of our Lady ; giving and granting to the ſaid king of the minſtrels, for the time being, full power and commandment to make them reaſonably to juſtify, and to conſtrain them to do their ſervices, and minſtrelſies, in manner as belongeth to them, and as it hath been there, and of ancient times accuſtomed. In witneſs of which thing we have cauſed theſe our letters to be made patent. Given under our privy ſeal, at our caſtle of Tutbury, the 22d day of Auguſt, in the fourth year of the reign of the moſt ſweet king Richard II." For a further account of this eſtabliſhment, ſee Burney's General Hiſtory of Muſic, vol. ii. p. 361, &c. and the article Minstrels.

King's *Palace.* The limits of the king's palace at Weſtminſter, extend from Charing Croſs to Weſtminſter Hall, and ſhall have ſuch privileges as the ancient palaces. (28 Henry VIII.) If any perſon ſhall ſtrike another in the king's palace, he ſhall have his right hand cut off, be impriſoned during life, and alſo be fined. 32 Henry VIII. cap. 12.

King's *Prerogative.* See Prerogative, and King.

King's *Privy-council.* See Privy-*council.*

King's *Seal.* See Seal.

King's *Silver*, the money due to the king in the court of common pleas, *pro licentia concordandi*, in reſpect of a licence there granted to any man for levying a fine of lands, or tenements, to another perſon. See Fine.

King's *Spear*, in *Botany.* See Asphodelus.

King's *Thanes.* See Thanes.

King's *War.* See War.

King's *Wardrobe.* See Wardrobe.

King-*fiſh*, in *Ichthyology.* See Opah.

King-*fiſher*, *iſpida*, in *Ornithology.* See Alcedo *iſpida.*

King-*piece*, in any *Buildings*, is a piece of timber ſtanding upright in the middle, between two principal rafters, and having ſtrutts or braces going from it to the middle of each rafter.

King Charles I. in *Biography.* See Charles.

King Charles II. See Charles.

King *of Pruſſia*, Frederic. Among German dilettanti in muſic, his late Pruſſian majeſty is entitled to the firſt place, in talents as well as rank. This heroic and accompliſhed prince having had Quantz early in life for his maſter on the German flute and in compoſition, played no other pieces than his own and thoſe of his maſter, which were never allowed to be printed. His majeſty, during more than forty years of his buſy reign, when not in the field, allotted four hours a day to the ſtudy, practice, and performance of muſic. All the German maſters allowed him the firſt place among dilettanti compoſers, as well as performers on the flute. Fiſcher, however, who was ſome time in his ſervice before he firſt came to England, did not ſeem to like his muſical productions, thinking them, even then, ſomewhat dry and old faſhioned. This prince had certainly great profeſſors in his ſervice, though he was never partial to Emanuel Bach, the greateſt of them all. His majeſty, beſides a great number of pieces for the flute, and ſome for the harpſichord, compoſed ſometimes for the voice; particularly in the paſtoral opera of “Galatea et Alcides,” in 1747, of which the overture and recitatives were Graun's, and the airs by the king jointly with Quantz and Nichelmann. Sometimes, the day before performance, his majeſty would ſend a new ſong to the maeſtro di cappella to be introduced in an opera, and this was univerſally believed to be his own production in all its parts. During the laſt years of his life, according to his chapel-maſter, Reichardt, his Pruſſian majeſty having loſt ſome of his front teeth, not only diſcontinued the practice of the flute, but his evening concerts, and became totally indifferent to muſic: a proof that his majeſty's chief pleaſure in the art was derived from his own performance.

King, Charles. Of this choral muſician, ſir John Hawkins, who ſeems to have known him perſonally, gives the following account in the fifth volume of his hiſtory:

“Charles King, bred up in the choir of St. Paul's under Dr. Blow, was at firſt a ſupernumerary ſinger in that cathedral, for the ſmall ſtipend of 14*l.* a-year. In the year 1704, he was admitted to the degree of bachelor in muſic in the univerſity of Oxford; and upon the death of Jeremiah Clark, whoſe ſiſter was his firſt wife, was appointed almoner and maſter of the children of St. Paul's, continuing to ſing for his original ſtipend until the 31ſt of October, 1730, when he was admitted a vicar choral of that cathedral, according to the cuſtoms and ſtatutes thereof. Beſides his places in the cathedral, he was permitted to hold one in a pariſh church in the city, being organiſt of St. Bennet Fink, London; in which ſeveral ſtations he continued till the time of his death, which happened on the 17th of March, 1745. With his ſecond wife he had a fortune of ſeven or eight thouſand pounds, which was left her by the widow of Mr. Primatt, the chemiſt, who lived in Smithfield, and alſo in that houſe at Hampton, which is now Mr. Garrick's. But notwithſtanding this acceſſion of wealth, he left his family in but indifferent circumſtances. King compoſed ſome anthems, and alſo ſervices to a great number, and thereby gave occaſion to Dr. Greene to ſay, and indeed he was very fond of ſaying it, as he thought it a witty ſentiment, that “Mr. King was a very *ſerviceable* man.” As a muſician he is but little eſteemed. His compoſitions are uniformly reſtrained within the bounds of mediocrity; they are well known, as being frequently performed, yet no one cares to cenſure or commend them, and they leave the mind juſt as they found it. Some who were intimate with him ſay, he was not void of genius, but averſe to ſtudy; which character ſeems to agree with that general indolence and apathy which were viſible in his look and behaviour at church, where he ſeemed to be as little affected by the ſervice as the organ-blower.”

King, William, organiſt of New college, Oxford, ſet to muſic Cowley's “Miſtreſs,” and publiſhed it with the following title, “Poems of Cowley and others, compoſed into Songs and Ayrs, with a Thorough-baſe to the Theorbo, Harpſicon, or Baſe-violl,” fol. Oxford, 1668.

King, Robert, bachelor in muſic, of Cambridge, 1696, one of the royal band of William and Mary. He compoſed ſeveral of the airs that were printed in the “Tripla Concordia;” as well as many of the ſongs that were publiſhed in the “Theatre of Muſic.”

King, John Glen, an Engliſh divine, was born in the county of Norfolk about the year 1732. He completed his youthful ſtudies at Caius college, Cambridge, where he took his degrees of B. A. and M. A. in the years 1752 and 1763, and at ſubſequent periods he was admitted to the degree of D. D., and received a member of the Royal Society, and of the Society of Antiquaries. In 1764, he obtained the appointment of chaplain to the Engliſh factory at Peterſburg. In this ſituation he was led to inquire into the ceremonies of the Ruſſian church, which he continually ſaw practiſed, and determined to give a faithful deſcription of the ſame in his own language. He accordingly publiſhed, in 1772, in a handſome quarto, illuſtrated with engravings, a work, entitled “The Rites and Ceremonies of the Greek Church in Ruſſia; containing an Account of its Doctrine, Worſhip, and Diſcipline.” In 1778, he wrote and publiſhed a letter to the biſhop of Durham, containing ſome obſervations on the climate of Ruſſia, and the northern countries, with a view of the flying-mountains at Zarſko Sello, near St. Peterſburg. Soon after his return to his native country, he was preſented to the rectory of Wormley, in Hertfordſhire, in 1783, and 1786 he purchaſed the chapelry of Spring Garden, in which he officiated as preacher. While he reſided at Peterſburg, the empreſs of Ruſſia had appointed him her medaliſt, and he was engaged in a medallic work at the time of his death, which happened Nov. 3, 1787, when he was about fifty-five years of age. Beſides the works already mentioned, Dr. King was author of “Obſervations on the Barberini Vaſe,” which are printed in the eighth volume of the Tranſactions of the Antiquarian Society. Gen. Biog.

King, Peter, baron of Ockham, was born in the year 1669, at Exeter, of which city his father was a conſiderable tradeſman. He was intended to ſucceed in the buſineſs, but having a ſtrong inclination for reading, he purchaſed books, and ſpent all the time he could command in improving his mind. He was related to the celebrated John Locke, who, diſcovering the bent of his inclinations, adviſed that he ſhould be ſent to Leyden for literary improvement. At this period his attention was chiefly turned to theology, and in 1691 he publiſhed “An Inquiry into the Conſtitution, Diſcipline, Unity, and Worſhip of the Primitive Church, that flouriſhed three hundred Years after Chriſt; faithfully collected out of the extant Writings of thoſe Ages.” In the firſt volume, only three of the ſubjects were treated on, and he afterwards publiſhed a ſecond part on worſhip. The chief object of this work was to prepare the way for that comprehenſion of the diſſenters within the pale of the eſtabliſhed church, which the revolution was ſuppoſed likely to effect. After his return from Leyden, he was perſuaded by Mr. Locke to make choice of the law for his profeſſion, and he accordingly entered himſelf of the Inner Temple. He now employed all his powers in acquiring an extenſive knowledge of the laws and conſtitution of his country, and obtained a reputation which introduced him into the houſe of commons in 1699. This ſituation he held during ſix ſucceſſive parliaments, but his legal and political avocations did not allow him to abandon his former theological ſtudies; but having been led by his inquiries to examine the origin of the Apoſtles' Creed, he publiſhed, in 1702, a volume, intitled “The Hiſtory of the Apoſtles' Creed, with critical Obſervations on its ſeveral Articles." Mr. King's employment as a lawyer increaſed with his general reputation, and in 1708 he was choſen recorder of London, and about the ſame time he received the honour of knighthood: in the following year he was appointed by the houſe of commons to be one of the managers on the trial of Dr. Sacheverel, and in 1712 he boldly appeared as gratuitous counſel for Mr. Whiſton, on his proſecution for hereſy before the court of delegates, and, in the end, obliged the biſhops and civilians to deſiſt. On the acceſſion of George I. he was appointed to the lord chief-juſticeſhip of the common pleas, and was ſworn of the privy council. In 1725, the judge was raiſed to the peerage by the ſtyle and title of lord King, baron of Ockham, in Surrey, and was created lord-chancellor in the room of the earl of Macclesfield: the labours of this high office being too great for his ſtrength, in 1733 he reſigned the ſeals, and in a few months afterwards, *viz.* July 1734, departed this life, leaving behind him a character of great virtue and humanity, and of ſteady attachment to civil and religious liberty. Biog. Brit.

King, William, a miſcellaneous writer, born in London about the year 1663, was educated at Weſtminſter ſchool under Dr. Buſby, whence he was removed to Chriſt-church college in Oxford. He took his degree of M. A. in 1688, and in that year made his appearance as an author in a refutation of Varilla's account of Wickliffe, in his "Hiſtory of Hereſies." About this time he began the profeſſional ſtudy of the civil law, in which he took a doctor's degree, and obtained a large practice as advocate in Doctor's Commons. In 1694, he publiſhed, in anſwer to lord Moleſworth's account of Denmark, his "Animadverſions upon the pretended Account of Denmark," which were ſo highly approved by prince George of Denmark, that he was appointed ſecretary to the princeſs, afterwards queen Anne. In ſome ſubſequent years he publiſhed ſeveral works of the humorous kind, ſuch as "A Journey to London," intended as a burleſque on Dr. Martin Liſter's journey to Paris; and a ſatire on ſir Hans Sloane and the Royal Society. His habits were now become adverſe to every exertion of regular induſtry, he deſerted all his profeſſional proſpects, and, in 1702, he accepted an offer to go to Ireland, where he had ſeveral appointments under government, by which he might have been fully employed, and derived wealth and even affluence. He returned to England in 1708, but by no means improved in his fortune, and retired to his ſtudent's place in Chriſt-church college, where he finiſhed his largeſt poem in imitation of Ovid's Art of Love, and compoſed ſeveral other pieces. He cloſely connected himſelf with the Tory party, and wrote in defence of Sachevrel. He was concerned in the periodical paper, intitled "The Examiner:" and ſuch were his ſervices to his party, that he obtained the place of gazetteer; but the duties attached to the office were more than he liked to perform, and he reſigned it in a ſhort time. He died on Chriſtmas-day, 1712. As a proſe writer he is forgotten, but his account of ancient mythology was long a popular book in the ſchools. His works have been collected and publiſhed in three vols. 8vo., under the title of "Original Works in Proſe and Verſe." Biog. Brit. Johnſon's Lives of the Poets.

King, William, a learned Iriſh prelate, was born at Antrim, in the province of Ulſter, in the year 1650. From the grammar ſchool, in which he had made great progreſs, he was ſent to Trinity-college, Dublin, in 1667; here he was remarkable for his attention to the ſtudies of the place, and took his degrees in 1670 and 1673, and in the latter of theſe years he was ordained deacon. In the following year he was admitted to prieſt's orders, and was patronized by Dr. Parker, archbiſhop of Tuam, who appointed him his chaplain in 1676. From this period eccleſiaſtical honours and preferments began to flow rapidly upon him, till at length, in 1688, he was elected dean of St. Patrick's. He had already publiſhed three tracts on the controverſy between the Papiſts and Proteſtants, and no ſooner had the revolution taken place in England, than the dean became active in promoting the ſame eſtabliſhment in Ireland, both before and after the landing of king James there in 1689. That prince, fully ſenſible of the dean's influence, and of the weight of his oppoſition, confined him twice in the tower of Dublin caſtle on that account. This did not prevent him taking the degree of D. D. the ſame year; but the Jacobite party continued ſo inveterate againſt him, that they threatened to take away his life, and actually made two or three unſucceſsful attempts for the purpoſe. Upon the flight of king James into France, after the battle of Boyne, in the year 1690, and the appointment of a day of thankſgiving for the preſervation of king William's perſon, the dean preached the ſermon on the occaſion, at St. Patrick's cathedral, and, in 1691, his zeal and activity in favour of the revolution were rewarded with the biſhopric of Derry. He now publiſhed "The State of the Proteſtants in Ireland under the late King James's Government, &c." This treatiſe was ſo well received, that a third edition of it was called for in a few months, and biſhop Burnet obſerves, that it was univerſally acknowledged to be as truly as it was finely written, referring to it, in the "Hiſtory of his own Time," as a full and faithful account. When public tranquillity was reſtored, the biſhop applied himſelf very diligently to the immediate duties of his paſtoral care, and was exceedingly deſirous of converting the Preſbyterian party to the epiſcopal forms. With this view, he publiſhed, in 1694, a treatiſe, entitled "The Inventions of Men in the Worſhip of God:" this drew him into a controverſy with Mr. Joſeph Boyſe, a diſſenting miniſter of Dublin, which terminated without effecting the object which the learned prelate had at heart. In 1702, biſhop King publiſhed at Dublin his celebrated work, entitled "De Origine Mali," which was reprinted the ſame year at London. The object of this work is to ſhew in what way the ſeveral kinds of evil with which the world abounds, are conſiſtent with the goodneſs of God, and may be accounted for without the ſuppoſition of an evil principle. The biſhop was attacked by Bayle, Leibnitz, and others, upon different parts of his work; but he did not make any public reply during his life-time, being unwilling to enter again into the liſts of controverſy. He was not, however, an inattentive obſerver of the arguments adduced againſt him, but left behind him a great number of MSS., in which he conſidered their ſeveral objections to his ſyſtem, and laboured to vindicate it from the leaſt cavil: the ſubſtance was afterwards given to the public. In 1702, Dr. King was tranſlated to the archbiſhopric of Dublin, and, in 1709, he publiſhed a ſermon, preached before the Iriſh houſe of peers, entitled "Divine Predeſtination and Fore-knowledge conſiſtent with the Freedom of Man's Will," in which he maintained that the moral attributes of God were different from the moral qualities of the ſame name in man. This doctrine was attacked by Dr. John Edwards and Mr. Anthony Collins, to neither of whom did the archbiſhop reply, though he had prepared anſwers, which were found among his MSS. at his death. In the year 1717, archbiſhop King was appointed one of the lords juſtices of Ireland, and he held the ſame office in the years 1721 and 1723. He died in May 1729, when he had nearly completed his 79th year. He was a prelate of great learning, and ſteadily attached to the principles of the Revolution ; zealous for the proſperity of the eſtabliſhed church, to which he belonged ; and of an unblemiſhed and exemplary moral character. He was ambitious of the primacy of Ireland, which was refuſed him, under the pretence of his being too old to perform the duties of the office. This reaſon, it is ſaid, was as little agreeable as the refuſal itſelf ; and when the new primate called upon him after his elevation, archbiſhop King received him in his own houſe, without riſing from his chair, making this apology, in a ſort of ſarcaſtic manner, " My lord, I am certain your grace will forgive me, becauſe you know I am too old to riſe." After his death, the papers which he left were put into the hands of Mr. Law, afterwards biſhop of Carliſle, who publiſhed a tranſlation of his work " De Origine Mali," corrected and enlarged from the author's notes, to which were added two ſermons on the Divine Preſcience, and the Fall of Man, 2 vols. 8vo. Biog. Brit.

King, or *Kin-yuen*, in *Geography*, a town of China, of the firſt claſs, in the province of Quang-ſi. N. lat. 24° 21′. E. long. 108°.

King, a town of Africa, in the kingdom of Cacongo ; 40 miles S.E. of Eſſena.

King's, a maritime county of New York, in the United States, containing that part of the ſtate that is bounded E. by Queen's county ; N. by New York county ; W. partly by Hudſon river, and partly by the ocean ; and S. by the Atlantic ocean, including Coney iſlands. This fertile tract of land, ſituated on the W. end of Long iſland, and ſeparated from Staten iſland by the Narrows, ſerves very much to the ſupply of the New York market with butter, vegetables, fruit, &c. It is divided into ſix townſhips, and contains 5740 inhabitants, including 1479 ſlaves. Its chief towns are Brooklyn, and Flatbuſh.—Alſo, a county of Nova Scotia, comprehending the iſlands on the S.W. and S. ſides of the baſin of Minas. The rivers Habitant, Canaid, and Cornwallis, are navigable to ſome diſtance. The lands on theſe rivers afford arable and paſture ſoil ; the rivers abound with fiſh ; and in the baſin of Minas are fine codfiſh, haddock, and different kinds of flat fiſh.

King's, or *Pearl Iſland*, a ſmall iſland in the bay of Panama ; belonging to Spain, and famous for its pearl-fiſhery. N. lat. 7° 12′. W. long. 81° 36′.

King's *Bay*, a bay on the S.E. coaſt of Nova Scotia. N. lat. 44° 32′. W. long. 59° 10′.

King's *Bridge*, a poſt-town of New-York, 15 miles N. of New York city. The bridge connects New York iſland with the main land.

King's *County*, a county of Ireland, part of the old diſtrict of Ophaley, which, having been confiſcated in the reign of the firſt Mary, was called the King's county, and its chief town Philip's-town, in compliment to her huſband, Philip II. of Spain. It has Weſtmeath and Meath on the N. ; Kildare and the Queen's county on the E. ; Tipperary on the S. and S.W. ; and part of Galway and Roſcommon on the W. Its chief natural boundary is the Shannon, which ſeparates it from Galway. The little Broſna and the Barrow ſerve, each of them, to mark its limits for a few miles. Its breadth, in the northern and broadeſt part, is 32 Iriſh miles (39 Engliſh), but it contracts very much as it ſtretches to the ſouthward. In this part of the country it extends 34 Iriſh (43 Engliſh) miles from N. to S. It contains 282,200 acres, which make upwards of 440 ſquare miles, equal to 453,370 acres, or 707 ſquare miles Engliſh. There are 52 pariſhes and 25 churches, and, according to Dr. Beaufort, a population of about 74,500. The completion of the grand canal has, however, tended much to increaſe the population of this county. The only mountains in it are the Sliebh-bloom, in the S.E. which extend into the Queen's county. Theſe run in a range of about 15 miles, having but one paſs, called the gap of Glendine, which is very difficult of approach, ſteep and craggy, and not five feet wide. The ſoil in the northern part is moſtly argillaceous, and requires a great deal of lime to make it arable. The rocks are red argillite and freeſtone, which interſect each other. In the centre there are various ſoils, light ſandy loam, ſtiff yellow clay, gritty ſhallow gravel, and deep brown earth. In this part of the range the land is often fertile in paſture, and grazed throughout the year with numerous flocks of ſheep and young cattle : limeſtone is thickly interſperſed, and the bottom is a ſtiff clay, where abundant crops of corn are yielded. In another part we find a cold, ſpongy clay, and at the foot, where the declivity vaniſhes, a deep irreclaimable bog, which can be approached only in very dry ſeaſons. The mineral productions of this mountainous diſtrict have not been yet aſcertained. In the arable parts of the county, we are informed that the ſoil is not naturally fertile, and is only rendered ſo by manures, and proper attention to a rotation of crops. The quality of the ſoil is either a deep moor, or a ſhallow gravelly loam ; the moiſt ſeaſon being moſt favourable to the produce yielded by the latter, and the moors very productive in dry ſummers. There is every where abundance of lime-ſtone and lime-ſtone gravel, which is found the beſt manure. The paſtures, though not luxuriant, are kind and fattening, and well adapted for ſheep-walks, where numerous flocks are ſupported, the wool of which is abundant, and of a very fine quality. The coarſeſt paſture, which is the unreclaimed moor, is highly nutritious to young cattle. The ſurface is rather an uninterrupted flat, unfavourable to dairy huſbandry, and the corn crops are principally oats and barley. In ſome parts, however, improvements in huſbandry are attended to, in the raiſing of green crops, introducing artificial graſſes, and drilling potatoes. Conſiderably more than a third part of the whole county is occupied by bog and mountain. The bogs, however, ſupply an abundance of moſt excellent fuel, which not only ſerves the inhabitants, but is ſent by the canal to Dublin. They alſo yield, when calcined, an excellent and laſting manure, both for their own improvement and that of the high grounds. As there is a natural fall in many places, theſe bogs are very capable of being drained and reclaimed by lime-ſtone. Such land is fit for all the purpoſes of huſbandry, and will be found more productive, either in paſture or tillage, than the general run of the beſt lands in the county. This reclaiming of bog is now purſued with much ſpirit in many parts ; and nothing ſurely can be more gratifying than to behold rich carpets of white clover and trefoil in ſpots which had been dark and barren moor. Theſe bogs have been lately ſurveyed by the direction of the commiſſioners for the inveſtigation of bogs, and it is to be hoped that ſome extenſive plan of drainage will be carried into effect. The mineral productions of the county are inconſiderable. Sir C. Coote, author of the Statiſtical Survey, mentions only manganeſe, iron ores in ſmall quantity, ochre, marle, lime-ſtone, free-ſtone, and potter's clay. There is a great ſcarcity of timber, except ornamental plantations, though the bogs afford abundant proof of its having once been an almoſt uninterrupted foreſt. The alder appears to have been a native of this county, and a few of them ſtill rear their venerable tops in a park at Droughtville. This county is well watered. Beſides the Shannon and the little Broſna, before mentioned, the greater Broſna, after winding through a great part of it, between pleaſant banks, loſes itſelf in the Shannon. There are alſo ſeveral ſmall rivers, and ſome lakes, of which Lough Pallis and Lough Annagh are the largeſt; and the Grand Canal croſſes the northern part of the county. Of the towns, Birr is the moſt conſiderable; but Philip's-town is the county town. Tullamore is a pretty and thriving place. The county is repreſented in parliament by the two knights of the ſhire only; the boroughs of Philip's-town and Banagher having been disfranchiſed by the Union. Coote's Statiſtical Survey. Beaufort's Memoir.

King's *Court*, a poſt-town of the county of Cavan, Ireland; 39 miles N.W. from Dublin.

King's *Creek*, a river of Virginia, which runs into the Cheſapeak, N. lat. 37° 20′. W. long. 76° 2′.—Alſo, a river of North Carolina, which runs into the Cangaree, N. lat. 35° 8. W. long. 81° 40′.

King's *Iſland*, an iſland in the Eaſt Indian ſea, near the W. coaſt of Siam, about 51 miles in circumference. N. lat. 12° 18′. E. long. 98. —Alſo, a ſmall iſland in Beering's ſtraits. N. lat. 65 2′. W. long. 168′.—Alſo, an iſland near the W. coaſt of North America, ſeparated by Fiſher's canal from the ſouthernmoſt of Princeſs Royal's iſlands, and by Burk's canal from New Hanover; ſo called by captain Vancouver, after captain James King, of the Britiſh navy. It is about 33 miles in length, and rather more than ſix in breadth. Point Edward is the fartheſt point to the N. and point Waller to the S. N. lat. 51° 56′ to 52 26′. E. long. 232° 9′ to 232 43′.

King's *Keys*, iſlets and rocks in the Spaniſh main, near the Moſquito ſhore. N. lat. 12° 42′. W. long. 82° 35′.

King's *Point*, the N.W. extremity of the iſland of Sumatra; 15 miles W. of Acheen. N. lat. 5 30′.

King *and Queen*, a county of Virginia, on Mattapony river, which ſeparates it from king William's county. It is about 25 miles long and 20 broad, and contains 4499 free inhabitants, and 5380 ſlaves. At King and Queen, in this county, is a poſt-office.

King *George*, a county of Virginia, between the Patowmac and Rappahannock rivers. It is 22 miles long and 14 broad, and contains 2762 free inhabitants, and 3987 ſlaves. In the court houſe is a poſt-office.

King *George's Iſlands*, two iſlands in the South Pacific ocean, diſcovered by commodore Byron in 1765, and viſited by captain Cook in 1773. The commodore's landing was oppoſed by the natives, when, a ſhot or two being fired, one man was killed, and the reſt fled. The canoes were curiouſly wrought with planks, ornamented with carving, and the ſeams filled up by ſtrips of tortoiſe-ſhell. They were about 32 feet long, very narrow, with bottoms as ſharp as a wedge. Two of them were joined together laterally by ſtrong ſpars, ſo that between them there was an interval of about ſix or eight feet; each had a maſt, and the ſail was neatly made of matting. The houſes were low mean hovels, thatched with branches of cocoa-nut tree; but they were delightfully ſituated in a grove of ſtately trees. The cocoa-nut tree ſeemed to afford them almoſt all the neceſſaries of life; particularly food, ſails, cordage, timber, and veſſels for holding water. The ſhore appeared to be covered with coral, and the ſhells of large pearl oyſters. The iſland was covered with ſcurvy-graſs. The freſh water is good, but ſcarce, being furniſhed by very ſmall wells, which are ſoon emptied, and as ſoon filled again. In one of the iſlands was a lake or lagoon, in which were obſerved two or three veſſels, one of which had two maſts, and ſome cordage aloft to ſupport them. S. lat. 14° 35′. W. long. 149° 2′.

King *George the Third's Archipelago*, a group of iſlands in the North Pacific ocean, extending from N. to S. about 150 miles in length; about 15 miles broad towards the N. and diminiſhing to little more than a mile at the ſouthern extremity. N. lat. 56 10′ to 58° 18′. E. long. 223° 45′ to 225° 40′.

King *George the Third's Iſland*. See Otaheite.

King *George the Third's Sound*, a harbour on the S.W. coaſt of New Holland, diſcovered by captain Vancouver in 1791. In approaching it from the weſtward, it is the firſt opening that appears like a harbour eaſtward of Cape Chatham. The Eclipſe iſlands are an excellent guide to the Sound, having between them and Bald-head ſome rocks on which the ſea breaks with great violence. The port is ſafe, and eaſy of acceſs any where between its outer points of entrance; Bald-head and Mount Gardner lying N. 62° E. and S. 62° W., 11 miles diſtant from each other. S. lat. 35° 5′. E. long. 118 17′.

King *George's Sound*, a name given by Captain Cook to Nootka ſound. See Nootka.

King *William's Iſland*, a ſmall iſland in the Eaſt Indian ſea, near the N. coaſt of the iſland of Poggy. S. lat. 2 33′. E. long. 99° 43′.—Alſo, a ſmall iſland in Dampier's ſtrait, near the S. coaſt of the iſland of Waigoo. S. lat. 0 32′. E. long. 130 51′. —Alſo, a cape on the eaſtern extremity of New Guinea. S. lat. 6 45′. E. long. 148° 5′.

KINGDOM, the dominion of a king. See King and Monarchy.

Kingdom, among *Chemiſts*, is a term which they apply to each of the three orders or claſſes of natural bodies; *animal*, *vegetable*, and *mineral*.

Kingdom *of God*, or of *Heaven*, in the *Goſpel Hiſtory*, is a phraſe, which, according to Dr. Campbell, has a manifeſt alluſion to the predictions in which this economy was revealed by the prophets in the Old Teſtament, particularly by Daniel, ch. ii. 44. vii. 13, 14; by Micah, ch. iv. 6, 7; and by other prophets. To theſe predictions there is a manifeſt reference in the title ἡ βασιλεια τȣ Θεȣ, or των ȣρανων, or ſimply ἡ βασιλεια, given, in the New Teſtament, to the religious conſtitution which would obtain under the Meſſiah. In moſt caſes βασιλεια anſwers to the Latin *regnum*. But this word is of more extenſive meaning than the Engliſh, being equally adapted to expreſs both our terms *reign* and *kingdom*. The firſt relates to the time or duration of the ſovereignty; the ſecond to the place or country over which it extends. Nevertheleſs, though it is manifeſt in the Goſpels, that it is much oftener the time than the place that is alluded to; it is never, in the common verſion, tranſlated *reign*, but always *kingdom*. Yet the expreſſion, ſays Campbell, is often thereby rendered exceedingly awkward, not to ſay abſurd. In order to prevent this miſapplication of terms, βασιλεια ought ſometimes to be rendered *reign*, and not *kingdom*. When it refers to the time, it ought to be rendered *reign*, and when to the place, *kingdom*. There are, however, a few paſſages in which neither of the Engliſh words can be conſidered as a tranſlation of βασιλεια ſtrictly proper. In ſome of the parables (Matt. xviii. 23.) it evidently means adminiſtration, or method of governing; and in one of them (Luke, xix. 12. 15.) the word denotes royalty, or royal authority, there being a manifeſt alluſion to what had been done by Herod the Great, and his immediate ſucceſſor, in recurring to the Roman ſenate in order to be inveſted with the title and dignity of king of Judea, then dependent upon Rome. Upon the whole, we may obſerve, that the phraſes, *kingdom of God*, and *kingdom of heaven*, are ſynonymous; and that they ſometimes denote the ſtate of the bleſſed, and ſometimes the goſpel diſpenſation. Campbell's Prel. Diſſ. p. 136, &c.

KINGHALE, in *Geography*, a town of Africa, in Cacongo, ſituated on the Louiſa. S. lat. 5° 20′. E. long. 12° 10′.

KINGHORN, a ſmall ſea-port town in the county of Fife, in Scotland, ſituated on the north bank of the frith of Forth, nearly oppoſite to the city of Edinburgh and port of Leith, from the latter of which it is about ſeven miles diſtant. Kinghorn is principally inhabited by fiſhermen and boatmen employed on the ferry, which is one of the chief routs of intercourſe between the metropolis and the counties of Fife and Angus. The boats employed on the ferry are large, well built decked-boats; full-decked for carrying carriages, horſes, and black cattle; and there are handſome ſmall pinnaces for pleaſure parties, and paſſangers who have no equipage or horſes. The fares are regulated, and the conduct of the ferrymen ſuperintended by the magiſtrates of Edinburgh, who puniſh offences and frauds upon paſſengers upon a ſummary complaint. In the middle of the frith is a ſmall pleaſant iſland, about a mile in circumference, called Inch-Keith, upon which is the ruins of an old caſtle, which was once a place of ſome ſtrength. About the commencement of the preſent war ſome entrenchments were made, and guns mounted upon this iſland for the protection of the ſhipping in the Forth from any ſurpriſe, probably from the recollection of the daring but nugatory attempt of Paul Jones, during the American conteſt; but hitherto there has been no occaſion to employ them. Inch-Keith, we believe, is the property of the city of Edinburgh.

KINGIKSOK, a town of Weſt Greenland. N. lat. 61° 55′. E. long. 47° 40′.

KING-KI-TAO, a city and capital of Corea, ſituated in the province of King-ki, and the ordinary reſidence of the ſovereign. N. lat. 47° 38′. E. long. 126° 41′.

KI-NGNAN, a city of China, of the firſt claſs, in the province of Kiang-ſi, ſeated on the river Kan, which is difficult and hazardous of navigation, on account of its numerous rocks and currents, and which requires the aſſiſtance of perſons provided in this city. The adjoining fields and vallies are agreeable and fertile; and the mountains are ſaid to contain mines of gold and ſilver. N. lat. 27° 7′. E. long. 114° 32′.

KINGROAD, a part of the Severn below Briſtol, from whence the outward-bound ſhips from that city take their departure.

KINGS, *Books of*, in *Scripture Hiſtory*, two canonical books of the Old Teſtament, ſo called, becauſe they contain the hiſtory of the kings of Iſrael and Judah, from the beginning of the reign of Solomon, down to the Babyloniſh captivity. The firſt book of Kings contains the latter part of the life of David, and his death; the flouriſhing ſtate of the Iſraelites under Solomon, his building and dedicating the temple of Jeruſalem, his ſhameful defection from the true religion, and the ſudden decay of the Jewiſh nation after his death, when it was divided into two kingdoms: the reſt of the book is taken up in relating the acts of four kings of Judah and eight of Iſrael. The ſecond book, which is a continuation of the ſame hiſtory, is a relation of the memorable acts of ſixteen kings of Judah, and twelve of Iſrael, and the end of both kingdoms, by the carrying off the ten tribes captive into Aſſyria by Salmanaſſar, and the other two into Babylon by Nebuchadnezzar.

It is probable that theſe books were compoſed by Ezra, who extracted them out of the public records, which were kept of what paſſed in that nation. Theſe are the only books which the Hebrews call "Malachim or Kings," though the two books of Samuel have been alſo mentioned under this general title; and authors have enumerated four books of Kings, thoſe of *Samuel* (which ſee) being the firſt and ſecond. The four books contain the hiſtory of almoſt 600 years.

KINGSBRIDGE, in *Geography*, a ſmall market town and pariſh in the hundred of Stanborough, and county of Devon, England, is ſituated on a branch of the Salcombe river, and, according to Riſdon, derives its name from the bridge which connects it with Dodbrooke. The town is in general well built. A free-ſchool was founded here by Mr. Criſpin of Exeter, and has obtained ſome degree of reputation. The pariſh was returned, under the population act of 1800, as containing 155 houſes, and 1117 inhabitants. Kingſbridge is diſtant from Dartmouth 10 miles, from Exeter 39, and from London 207. It has a weekly market on Saturdays, and three annual fairs. David Tolley or Tolbey, called by Leland Tavelegus, an eminent Greek and Latin ſcholar in the time of Henry VIII., was a native of this town. Beauties of England and Wales. Polwhele's Hiſtory of Devonſhire, folio.

KINGSBURY, a townſhip of America, in the county of Waſhington, and ſtate of New York, ſituated on the bend of Hudſon's river, on the N.E. ſide; containing 1651 inhabitants.

KINGSCLERE, a ſmall market town and pariſh in the hundred of the ſame name, Hampſhire, England, is ſituated on the edge of a chain of hills, 17 miles from Reading in Berkſhire, and 55 from London. It is mentioned by Camden as being a conſiderable town, but is now of a mean appearance, and only remarkable for having been the reſidence of the Weſt Saxon kings. The church is a ſmall ſtuccoed building, with a low tower. This pariſh was returned in the year 1801 as containing 394 houſes, and 1939 inhabitants, of whom 492 were employed in trade, principally in the malting line, which produces a conſiderable traffic with London. A weekly market is held on Tueſdays, and here are three annual fairs. It is probable that the palace of the Saxon ſovereigns was connected with Freemantle Park, a ſhort diſtance to the ſouth, as that is known to have been a royal reſidence in the time of king John, and was in the poſſeſſion of the crown ſo late as the reign of queen Elizabeth. The manſion has been lately pulled down, and the park ploughed up and converted into a farm. Beauties of England.

KINGSEY, a townſhip of Lower Canada, N.W. of Shipton, adjoining on both ſides of Nicolet river, having about 30 inhabitants.

KINGSLAND Creek, a river of Virginia, which runs into James river. N. lat. 37° 24′. W. long. 77° 40′.

KINGSTON, or Esopus, a poſt-town of America, in New York, in Ulſter county, on the weſt ſide of Hudſon's river, ſix miles weſt of Rhinebeck, and on the eaſt ſide of Eſopus hill, or creek. In 1777, this town was burned by the Britiſh troops, under the order of general Vaughan. It has been ſince rebuilt on a regular plan, and contains about 150 houſes, a court-houſe, gaol, a Dutch reformed church, and an academy. Its ſituation is pleaſant, being ſurrounded by a ſpacious plain; 56 miles S. of Albany. N. lat. 41° 56′. W. long. 73° 56′. The townſhip contains 4615 inhabitants.—Alſo, a townſhip in Addiſon county, Vermont, containing 185 inhabitants.—Alſo, a poſt-town in Plymouth county, Maſſachuſetts, on the weſtern part of Plymouth bay, bounded northerly by Duxborough, and containing 1037 inhabitants. It was incorporated in 1707; 38 miles S.E. of Boſton.—Alſo, a poſt-town in Rockingham county, New Hampſhire, on the road that leads from Exeter to

Haverhill in Maſſachuſetts; 6 miles from the former, and 12 from the latter. It was incorporated in 1694, and contains 785 inhabitants.—Alſo, a town, now "Conway-borough," in Horry diſtrict, South Carolina, on the weſt ſide of Wakkamaw river, having an epiſcopal church, and about 36 houſes; 41 miles N. by E. from George town.—Alſo, the chief town of Lenoir county, Newbern diſtrict, in North Carolina. It is a poſt-town, ſituated on a beautiful plain on the north ſide of Neus river, and containing a court-houſe, gaol, and about 30 houſes; 40 miles W. of Newbern.—Alſo, a townſhip in Luzerne county, Pennſylvania, containing 752 inhabitants.—Alſo, a town of Upper Canada, at the head of the river St. Lawrence, on the north ſhore, oppoſite to Wolf iſland; occupying the ſcite of old fort Frontinac, laid out in 1784, and now advanced to a conſiderable ſize. It has a barrack for troops, a houſe for the commanding officer, an hoſpital, ſeveral ſtore-houſes, and an epiſcopal church. About Kingſton there are ſeveral valuable quarries of lime-ſtone, and the country in general is rather ſtony, though not detrimental to the crops. It is 200 miles S. of Montreal, and 150 N. of Niagara. Large veſſels go no farther than this place; thence to Niagara, &c. ſtores and merchandize are conveyed in boats.—Alſo, a townſhip of Upper Canada, being the fourteenth and uppermoſt in aſcending the St. Lawrence. It is in the county of Frontinac, and lies partly open to lake Ontario.—Alſo, the capital of the iſland of St. Vincent's, in the Weſt Indies, and the ſeat of government. It lies at the head of a bay of the ſame name, on the ſouth-weſt ſhore of the iſland, in St. George's pariſh. N. lat. 13° 6'. W. long. 60 .—Alſo, a town of Jamaica, in the county of Surrey, ſituated on the north ſide of a beautiful harbour, and founded in 1693, when repeated deſolations by earthquake and fire had driven the inhabitants from Port Royal. It contains 1665 houſes, beſides negro-huts and warehouſes. The number of white inhabitants, in the year 1788, was 6539; of free people of colour, 3280; of ſlaves, 16,659: total number of inhabitants, of all complexions and conditions, 26,478. It is a place of great trade and opulence. Many of the houſes in the upper part of the town are extremely magnificent; and the markets for butchers' meat, turtle, fiſh, poultry, fruits and vegetables, &c. are inferior to none. From comparative regiſters of mortality it appears, that ſince the ſurrounding country is cleared of wood, this town has been proved to be as healthful as any in Europe. Aſſize courts are held every three months in Kingſton, for the county of Surrey. N. lat. 18°. W. long. 76° 33'.

KINGSTON-UPON-HULL. See HULL.

KINGSTON-UPON-THAMES, a market town and pariſh in the hundred of Kingſton, and county of Surrey, England, derives its name from having been a royal reſidence; and the adjunct is affixed to mark its ſituation, and diſtinguiſh it from other Kingſtons. It is ſeated on the ſouthern bank of the river Thames, at the diſtance of 11 miles from Weſtminſter-bridge. In the fourth, fifth, and ſixth years of king Edward II., this town ſent members to parliament; and again in the forty-ſeventh of king Edward III. The corporation afterwards petitioned to be relieved from ſending members, and the town then ceaſed to be a borough. Several valuable privileges and immunities were granted to Kingſton by charters from kings John, Henry III., Edward III., and other ſubſequent monarchs. The corporation now conſiſts of about fifty members. Here are one weekly market, and three annual fairs. In the year 1769, an act of parliament was obtained for ſeparating the pariſh of Kingſton and its dependent chapelries of Richmond, Moulſey, Thames-Ditton, Peterſham, and Kew, into two vicarages and two perpetual curacies. In this town is Canbury-houſe, a ſeat of the late lord Dillon, near which is a very large barn, which has four entrances, four threſhing floors, and is ſupported by twelve pillars: twelve waggons may be unloaded at once within its walls.

The hiſtorical annals of Kingſton relate many intereſting events, as having occurred here. In the year 838, a grand council was aſſembled at this place, and was attended by Egbert, firſt Saxon king of all England, his ſon Ethelwolf, and the principal nobles and biſhops of the land; at the ſame, the archbiſhop of Canterbury preſided. Other monarchs were crowned here, of which the following are ſpecified by our ancient hiſtorians: Edward the Elder, crowned A.D. 900; his ſon Athelſtan, in 925; Edmund, in 940; Eldred, or Edred, in 946; Edwy, or Edwin, in 955; Edward the Martyr, in 975; and Ethelred, in 978. Previous to the reign of Henry III. a caſtle was ſtanding here, as that monarch, in the year 1264, marched out of London, and ſeized the caſtle of Kenington, or Kingſton, which then belonged to Gilbert Clare, earl of Glouceſter, and which is not mentioned in any ſubſequent period. In the civil wars of the ſeventeenth century, Kingſton was again a place of public celebrity; for the firſt armed force is ſaid to have been aſſembled here under the command of colonel Lunsford, with a troop of 400 or 500 horſe. The colonel was proclaimed a traitor, as having levied war againſt the parliament, and was apprehended. Reſpecting this event, and ſome other contemporaneous proceedings, the different party writers are very contradictory. In the month of October 1642, the earl of Eſſex was in this town with 3000 men under arms; and at ſeveral other times, during the parliamentary civil war, Kingſton was poſſeſſed by both parties: but the townſmen were moſtly in favour of the royaliſts. Leland ſtates, that "many olde monuments be founde yn the declyving doune from Cōme-Parke towarde the galoys:"—alſo, "fundation of waulls of houſes, and diverſe coynes of braſſe, ſylver, and gold, with Romayne inſcriptions, and painted yerthen pottes; and yn one, yn cardinal Wolſey's tyme, was founde much Romayne money of ſylver, and plates of ſylver to coyne, and maſſes to bete into plates to coyne, and chaynes of ſylver." The biſhops of Wincheſter formerly had a hall here.

In the market-place is the town-hall, which was built in the time of queen Elizabeth. In this are held the Lent aſſizes for the county of Surrey; and in a room adjoining, the corporation hold their courts of aſſembly.

Adjoining the town is an old manſion, called Ham-houſe, which was intended for Henry, prince of Wales, ſon of James I. It afterwards belonged to the duke of Lauderdale, who furniſhed it in a very expenſive and gorgeous ſtyle. In the centre of the houſe is a large hall, ſurrounded with an open gallery. Some of the ceilings are painted by Verrio; and ſeveral rooms are ornamented with paintings by the old maſters, among which are a few valuable portraits. In this houſe was born John, duke of Argyle, and his brother Archibald, who was alſo created duke, and made lord keeper of Scotland. The church of Kingſton has ſome ancient parts. On its ſouth ſide was the chapel of St. Mary, which fell down in the year 1730, and buried the ſexton, his daughter, and another perſon, in the ruins. The daughter, however, was reſcued alive, and ſucceeded her father. In the church are ſeveral monumental memorials, ſome of which are for perſons of eminence. Near Kingſton is a bridge acroſs the Thames, ſaid, by Mr. Lyſons, "to be the moſt ancient on the river, except that of London. It is mentioned in a record of the eighth of Henry III." An act of parliament was obtained in the thirteenth year of George, for lighting and watching this town. In 1800, Kingſton contained 682 houſes, and 3793 inhabitants. Lyſons' Environs of London, vol. i. 4to. 1796.

KINGSTOWN, a town of Africa, in the kingdom of Kantor.

KINGSTREE, a poſt-town of America, in Williamsborough county, South Carolina; 480 miles from Waſhington.

KING-TCHEOU, a city of China, of the firſt claſs, in the province of Hou-quang, ſeated on the Yang-tſe river. The diſtrict of this town has two cities of the ſecond order, and eleven of the third claſs. It is ſurrounded with lakes, which contribute to render the land about it fruitful and pleaſant. It is well-built and populous; and its trade is great. A wall divides it into two parts, one of which belongs to the Chineſe, the other to the Tartars, of which the garriſon conſiſts. N. lat. 30° 28'. E. long 111° 37'.

KING-TE-CHING, a village belonging to the diſtrict of Jao-tcheou in China, in which are collected the beſt workmen in porcelain, and as populous as the largeſt cities of China. It is reckoned to contain a million of inhabitants, who conſume every day more than ten thouſand loads of rice. It extends 1½ league along the banks of a beautiful river, with crowded buildings, and its ſtreets are thronged with inhabitants; for a great number of whom it furniſhes employment. The river in this place forms a kind of harbour, about a league in circumference, which accommodates a great number of barks. This village contains about 500 furnaces for making porcelain; and to thoſe who approach it at night it appears like a large city on fire. Strangers are not permitted to ſleep here, but they are required either to ſleep in their barks, or with their friends. N. lat. 29° 25'. E. long. 116° 56'.

KINGTON, or Kyneton, a ſmall market town and pariſh in the hundred of Huntingdon, and county of Hereford, is ſituated on the Black Brook, under Bradnor mountain. A caſtle was conſtructed at this place, at a former period, for the defence of the marches; but the whole is now deſtroyed. The church is a very irregular ſtructure, having a detached tower, with a ſpire of ſingular form. The town is in general well built, and has a free grammar ſchool, erected and endowed by lady Watkins. The inhabitants of this pariſh, as aſcertained by the act of 1801, amounted to 1424; the number of houſes to 311. The principal manufacture is that of woollen cloth. Kington is diſtant from Hereford 20 miles, and from London 155. Here are four annual fairs, and a weekly market on Wedneſdays. The markets immediately before Eaſter, Whitſuntide, and Chriſtmas, are very conſiderable for corn, cattle, and cloth; and are equal to moſt fairs. On the ſummit of Bradnor mountain are the remains of a ſquare entrenchment.

About two miles eaſtward of Kington are the ruins of Lyons-hall caſtle, a very ancient ſtructure, of which ſcarcely any thing now remains but fragments of the outer walls; the caſtle having been demoliſhed in the reign of Edward II. Beauties of England, vol. vi.

KING-TONG, a city of China, of the firſt claſs, in the province of Yun-nan, on the Pa-pien river. It is ſurrounded with very high mountains, in which, it is ſaid, there are ſilver mines. The adjacent country abounds with rice, and the vallies are well watered. N. lat. 24° 30'. E. long. 100° 39'.

KINGUA, a town of Eaſt Greenland. N. lat. 61° 21'. E. long. 45° 26'.

KING-WILLIAM, a county of Virginia, between Mattapony and Pamunky rivers. It is 47 miles long, and 15 broad, and contains 5744 free inhabitants, and 3311 ſlaves. At the court-houſe is a poſt-office.

KINGWOOD, a townſhip in Huntingdon county, New Jerſey, containing 2446 inhabitants, of whom 104 are ſlaves; 15 miles S.W. of Lebanon.—Alſo, the name of a ſmall river of New Jerſey.

KING-YANG, a city of China, of the firſt claſs, in the province of Chen-ſi. N. lat. 36° 6'. E. long. 107° 20'.

KING-YUEN, or Kin-yuen, a city of China, of the firſt claſs, in the province of Quang-ſi. This city is built on the banks of a large river, and ſurrounded with lofty and craggy mountains. The vallies between theſe mountains are full of villages and forts, and in the rivers is found gold. Under its juriſdiction are two towns of the ſecond order, and five of the third. N. lat. 24° 26'. E. long. 108°.

KIN-HOA, a city of the firſt claſs in China, in the province of Tche-kiang, ſituated in the midſt of the province, on the banks of a fine river; formerly diſtinguiſhed both as to the extent and beauty of its buildings, but much injured by the attacks of the Tartars. It has eight towns of the third order in its diſtrict, ſituated partly in a level country, and partly among mountains. Rice grows plentifully, and the wine made of it is much eſteemed. The inhabitants carry on a large trade in dried plums and hams, which are ſent into all provinces of the empire. Near it are ſmall ſhrubs, reſembling jeſſamine, which produce tallow, that make very white candles. N. lat. 29° 16'. E. long. 119° 16'.

KINIC Acid, in *Chemiſtry*, is a peculiar ſubſtance, recently found in Peruvian bark, where it exiſts in combination with lime. We are indebted for the diſcovery to a Mr. Deſchamps, apothecary at Lyons, who deſcribed the ſalt in the 48th volume of the Annales de Chimie. He obtained it by macerating the bark in cold water; afterwards evaporating the ſolution, and leaving it to cryſtallize. The cryſtals produced were equal to about 7 *per cent.* of the bark employed. He did not proſecute his inquiry further; and it was not until ſome experiments which were afterwards undertaken upon it by Vauquelin, that the ſalt in queſtion was found to contain a new acid. The reſearches of this excellent chemiſt, however, appear fully to have eſtabliſhed the fact; and he has denominated it the *kinic* acid, from the word *quinquina*, which is a name given by the French to the yellow kind of bark from which the ſalt deſcribed was extracted.

The kinat of lime, obtained by the foregoing proceſs, is of a white colour, and cryſtallizes in plates. It is devoid of taſte, diſſolving in about five times its weight of water, at the temperature of 55°. Alcohol exerts no action upon it. By expoſure to heat it is decompoſed, and carbonat of lime and charcoal are the products. Its ſolutions are not altered by ammonia; but the fixed alkalis precipitate the lime. This alſo takes place with the oxalic and ſulphuric acids. It appears to be compoſed of 90 acid, and 10 lime.

To procure the free acid, M. Vauquelin precipitated the lime by an oxalat, and afterwards concentrated the liquid by evaporation. It was of a ſyrupy conſiſtence; and on being ſet aſide to cryſtallize, was found, at the end of a week, to have undergone no change: but the moment he touched it with a glaſs rod, the whole mats aſſumed the form of divergent cryſtalline plates. The colour of the acid was of a ſlight brown; occaſioned, probably, by the evaporation having been carried too far. Its taſte was extremely ſour; and there was alſo a bitterneſs in it, which might be owing to an imperfect ſeparation of the other conſtituents of the bark. Expoſure to the air effected no alteration upon it.

By heat, kinic acid is decompoſed, and converted into charcoal. It combines with different baſes; and with the earths and alkalis, produces ſoluble and cryſtallizable ſalts. On the nitrats of ſilver, mercury, and lead, no change is occaſioned by it. Annales de Chimie, t. 59.

KINITS, in *Geography*, a town of Moravia, in the circle of Olmutz; 24 miles W. of Olmutz.

KINK-COUGH, in *Medicine*. See Pertussis.

KINKS, in the *Sea Language*. When ropes are new, or too hard laid, they are apt in foldings to make turns, which are called kinks.

KIN-LI, in *Geography*, a town of Corea; 15 miles E.N.E. of Cou-fou.

KIN-MEN-LO, an iſland in the Chineſe ſea, near the coaſt of China, about 24 miles in circumference, of a triangular form. N. lat. 24° 30′. E. long. 118° 20′.

KINNAIRD's Head, a promontory on the eaſt coaſt of Scotland, forming the ſouth boundary of the frith of Murray; ſuppoſed to be the "promontorium Taixalium" of Ptolemy. N. lat. 57° 58′. W. long. 1° 54′.

KINNARAS, or Cinnara's, in *Hindoo Mythology*, are male dancers in Swerga, or the heaven of Indra.

KINNBACK, in *Geography*, a ſmall iſland on the weſt ſide of the gulf of Bothnia. N. lat. 65° 9′. E. long. 21° 30′.

KINNEGAD, a poſt-town of Ireland, in the county of Weſtmeath, province of Leinſter. A kind of cheeſe, of a very inferior quality, made in this neighbourhood, is called Kinnegad cheeſe, from this town. It is 29½ miles W. by N. from Dublin.

KINNEL, in *Rural Economy*, a provincial term ſometimes applied to a powdering tub or ſalting veſſel.

KINNEYETO, in *Geography*, a conſiderable town of Africa, in the kingdom of Manding; about 24 miles N.E. of Kamalia. N. lat. 12° 55′. W. long. 5° 52′.

KINNOR, in the *Jewiſh Antiquities*. See Cinyra, and Chinnor.

KINO, in *Chemiſtry*, is an aſtringent ſubſtance, of a black colour, ſuppoſed to have been originally introduced into this country from Africa. It is commonly called a gum, but very improperly; for, as Vauquelin has remarked, it has neither the phyſical nor chemical properties characteriſtic of that claſs of vegetable products. According to Dr. Duncan, the kino now known in the ſhops is principally imported from Jamaica; and is an extract from the *coccoloba uvifera*, or *ſea-ſide grape*. It is nearly wholly ſoluble in hot water and hot alcohol, and chiefly conſiſts of tannin in a particular ſtate; which has the property of precipitating the ſalts of iron of a green colour, inſtead of black. With gelatine it forms a roſe coloured coagulum. We are indebted to Dr. Duncan for the firſt deſcription of its properties; and he has publiſhed the reſult of his obſervations in the New Edinburgh Diſpenſatory, p. 242. Vauquelin afterwards took up the ſubject; but the kino that his experiments were made upon, Dr. Duncan ſuſpects to have been the product of ſome of the ſpecies of *eucalyptus*, particularly the *reſinifera*; being the ſubſtance called *Botany Bay gum*, a quantity of which was ſome years ago imported into Europe. It differs from the kino of the *coccoloba* in being of a much finer quality. Nicholſon's Journal, vol. vi. No. 24, p. 232—234.

Kino, in the *Materia Medica*, or "Gummi rubrum aſtringens gambienſe," the gum reſin of a non-deſcript African tree. Although the tree, from which this reſin is obtained, is not yet botanically aſcertained, it is known to grow on the banks of the river Gambia in Africa. The firſt account of this drug is related by Moor in his "Travels into the interior Parts of Africa," ed. 2. p. 113, by which we learn, that in wounding the bark of this tree, the fluid kino immediately iſſues drop by drop, and by the heat of the ſun is formed into a hard maſs. This, which was for ſome time conſidered as a ſpecies of Sanguis draconis, was afterwards fully explained, and its medical character eſtabliſhed, by Dr. John Fothergill. (Med. Obſ. and Enq. vol. i.) Kino has a conſiderable reſemblance to Catechu, but redder, and is more firm, reſinous, and aſtringent. It is now in common uſe, and is the moſt efficacious vegetable aſtringent, or ſtyptic, in the materia medica. The "tincture of kino" is prepared by macerating three ounces of kino powdered in two pints of proof ſpirit, for 14 days, and ſtraining it. All the aſtringency of kino is included in this preparation. The doſe is from one fluid-drachm and a half to two fluid-drachms. The "compound powder of kino" conſiſts of 15 drachms of kino, half an ounce of cinnamon bark, and a drachm of hard opium, which are to be reduced ſeparately into a very fine powder and then mixed. This aſtringent powder was firſt introduced into the London Pharmacopeia of 1809; the proportion of opium contained in it being one in twenty. The doſe is from five gr. to ℈j.

KINOGAM, in *Geography*, a river of Canada, which runs from lake Wiakwa to the river Saguenay. N. lat. 48° 34′. W. long. 71° 31′.

KINOLI, a town of Aſiatic Turkey, in Natolia, on the coaſt of the Black ſea; 16 miles N.W. of Sinob.

KINOSA, St., an iſland in the Grecian Archipelago. N. lat. 36° 53′. E. long. 25° 34′.

KINROSS, the chief town of a ſmall county of the ſame name, bordering N.E., E., and S. upon Fife, and the other part on Perth, in Scotland. The number of inhabitants of this county in 1801 was 6725, of whom 888 were employed in trade and manufactures, and 667 in agriculture. Kinroſs is a ſmall town of little conſequence, excepting as a market for the neighbouring country. It is ſituated on the border of Lochleven, a fine freſh water lake, with two ſmall iſlands in it, on one of which is a caſtle, which was one of the many places in which the unfortunate Mary Stewart, queen of Scots, was confined, and from which ſhe effected her eſcape. The lands near Kinroſs, like thoſe of the adjoining counties of Fife and Stirling, are fertile and well cultivated. The county returns a member to parliament alternately with the ſmall iſland of Clackmannan. The town was formerly famous for its cutlery; but the chief manufacture now is Sileſia linen. In 1801, the number of inhabitants was 2124, of whom 394 were employed in trade and manufactures; 18 miles N.N.W. of Edinburgh. N. lat. 56° 13′. W. long. 3° 25′.

KINROSS-SHIRE is a ſmall inland county in the northern part of Scotland. The ancient ſhire of this name was divided, about the year 1426, into the two counties of Fife and Kinroſs; and at the revolution Kinroſs, being thought too ſmall a county as it then ſtood, was enlarged by the addition of Orwell, Cleiſh, and Tillibole; which pariſhes, before that period, were part of the county of Fife. But though theſe are now two diſtinct counties, and are ſeparately repreſented in parliament, they are both comprehended in the ſheriffdom of Fife. Kinroſs-ſhire is bounded on the eaſt and ſouth by Fifeſhire, and on the north and weſt by Perthſhire. It extends, from eaſt to weſt, from Foſſaway church to Auchmore bridge, eleven miles; and from Kelly-bridge nearly due north to Damhead, about nine miles and a half. The general figure of the county is circular, though the line of its boundary is very irregular. That which limits with Perthſhire meaſures twenty-one miles; but when taken in a right line is only about fourteen: the boundary with Fife meaſures nearly twenty-eight miles, but in a ſtraight line does not exceed nineteen. The county contains 78 ſquare miles, or about 39,702 Scottiſh acres; comprehending one town, Kinroſs, with ſix other pariſhes; and was returned under the population act of 1801 as containing 1409 houſes, and 6725 inhabitants. The ſurface of the county is greatly varied. The middle portion occupies a ſituation comparatively low, and may be conſidered as a kind of plain ſlightly varied with gentle riſing grounds. The boundaries, in every direction, are hilly, or formed of a higher land than the laigh or vale of Kinroſs, with a ſingle exception, at the narrow paſſage at the eaſtern extremity of the county, where the river Leven iſſues from the celebrated loch of that name. The Ochil hills form the northern boundary of Kinroſs-ſhire; the Cleiſh hills, the ſouthern; and Balneartie hill, with Weſt Lomond, or Biſhop's hill, as it is called, bound it on the eaſt and ſouth-eaſt quarters. The ſides of theſe hills, which face the central part of the county, are for the moſt part excellent paſtures, generally retaining beautiful verdure; patches of moorland occurring only near their ſummits. In the interior and higher part of the Ochils, however, heath becomes more abundant. The chief variety in the appearance of the low grounds is produced by the mixture of corn and graſs-lands, and by a few thriving plantations interſperſed with villages. Some intervening moraſſes, and extenſive moors, likewiſe variegate the ſurface. Even the margin of Lochleven is ornamented in this way by a common moor of more than 300 acres, in the vicinity of the town of Kinroſs, in the very centre of the county. The aſpect of the whole ſhire is open and expoſed, there being but a ſmall part incloſed, and many of the incloſures formed not of hedges but of ſtone walls.

Of the waters of this county, the moſt remarkable is the lake called Lochleven, on the weſtern banks of which ſtands the town of Kinroſs. This lake, though inferior in magnitude and grandeur to Lochlomond, is a noble expanſe of freſh water, about fifteen miles in circumference, including its angular juttings, and covering nearly 3300 acres. The ſurface of the water at its higheſt riſe and loweſt fall, varies about three feet. Lochleven is bounded on the eaſt by the Lomond hills, on the ſouth by that of Balneartie, and on the weſt by the plain of Kinroſs. It is remarkable for producing trout of a large ſize with fleſh of a reddiſh colour, nearly approaching to the taſte and appearance of ſalmon. Some of them weigh from two to eight, and even ten pounds each. The high colour of theſe trout is aſcribed to the great quantity of ſmall red ſhell-fiſh which abounds at the bottom of the loch; the trouts have often their ſtomach full of them. Lochleven receives the waters of three ſmall rivers; Gairny, the ſouthermoſt ſtream in the county, South Queech and North Queech, which both have their riſe among the Ochil hills. Lochleven gives riſe to the river Leven, which paſſes through a conſiderable part of Fifeſhire into the ſea, forming the largeſt water in that county. In September, the eels, which greatly abound in Lochleven, begin to emigrate in great numbers to the ſea; but only attempt this paſſage during the night. The county contains ſeveral ſmall lakes; of theſe four are in the pariſh of Cleiſh; the largeſt is about a mile and a half in circumference: the four cover about 250 acres. The climate in the higher grounds of this county is cold and wet; owing to the elevation of the land, and chiefly to the hills, which attract the clouds and vapours. Froſt ſets in earlier, and continues longer, than in the adjacent diſtricts towards the ſouth. The county is well interſected with roads, which are, in general, kept in excellent repair by the ſtatute labour. The carriages and the perſonal duty may be furniſhed in kind, or commuted, at the option of the perſons chargeable. The principal turnpike roads are thoſe from Perth to Queensferry, and from Stirling to Kinroſs: they are kept in the higheſt preſervation.

Of the antiquities of Kinroſs-ſhire, thoſe connected with Lochleven are the moſt remarkable. The caſtle of Lochleven, now in ruins, ſtands upon an iſland of about two acres in extent. The circuit of the outer rampart is 585 feet. This caſtle is ſaid to have been built by Congal, ſon of Dongart, king of the Picts: but it has been rendered particularly conſpicuous in Scottiſh hiſtory, by the confinement of the unfortunate queen Mary. In the largeſt iſland of the lake was formerly ſituated a priory dedicated to St. Serff, or Servanus; and ſaid to have been founded by Brudo, the laſt but one of the Pictiſh ſovereigns.

KINSALE, a ſea-port and poſt-town of the county of Cork, Ireland. It is ſituated at the mouth of the river Bandor, which forms a fine harbour, and is navigable for large ſloops near 12 miles above the town, though a bar prevents large men of war from coming into the baſin. In this port there was formerly a dock furniſhed with ſtores for the uſe of the navy, but this has lately been removed to the neighbouring harbour of Cork, where the accommodations are greater, and which is the chief naval ſtation in Ireland. The entrance of Kinſale harbour is defended by a fort, which having been conſtructed in the reign of Charles II. is called Charlesfort, in which there is always a good garriſon. Kinſale is the town which the Spaniards took poſſeſſion of, and in which they were beſieged and taken priſoners, at the latter end of queen Elizabeth's reign. The town, which contains at leaſt 10,000 inhabitants, is built at the ſide of Compaſs hill; the ſtreets are narrow and the houſes indifferent, yet in the bathing ſeaſon it is the reſort of much faſhionable company, and there are at all times many genteel reſidents, ſo as to afford good ſociety. Kinſale is repreſented by one member in the imperial parliament, who is choſen under the influence of the lord de Clifford, chief proprietor of the town. It gives title of baron to the deſcendant of the famous John de Courcy, who procured for himſelf and poſterity the privilege of being covered in the king's preſence. Kinſale is 136 miles S.W. from Dublin, and about 12 miles S. from Cork. N. lat. 51° 42′. W. long. 8° 30′.

KINSALE, *Old Head of*, a cape of Ireland, projecting a conſiderable way into the ſea, and forming a very noted land mark. N. lat. 51° 37′. W. long. 8° 30′.

KINSALE, a poſt town of Virginia, 16 miles from Weſtmoreland court-houſe, and 12 from Northumberland court-houſe.

KINSOMBA, a town of Africa, 25 miles S.E. of New Benguela.

KINTAL, or QUINTAL, a weight of one hundred pounds, more or leſs, according to the different uſage of divers nations.

The kintal of Smyrna is 123 pounds three ounces nine drachms, or 120 pounds ſeven ounces 12 drachms; but that of Aleppo is 465 pounds 11 ounces 15 drachms.

KIN-TAM, in *Geography*, an iſland in the Chineſe ſea, near the coaſt of China, about 24 miles in circumference. N. lat. 30° 8′. E. long. 121° 24′.

KINTARRA, a town of Hindooſtan, in the circar of Cicacole; 10 miles N. of Coſſimcotta.

KIN-TCHENG, a town of Corea; 80 miles E. of King-ki-tao.

KIN-TCHIN, a city and capital of the iſles of Lieou-kieou. This city is ſituated in the S.E. part of the large iſland called "Cheou-li," where the court reſides. The king's palace, which is reckoned to be four leagues in circumference, is built on a neighbouring mountain. It has four gates, which correſpond to the four cardinal points; and that which fronts the weſt, forms the grand entry. The view which this palace commands is moſt extenſive and delightful; it reaches as far as the port of Napa-kiang, at the diſtance of 10 lys, (200 lys making 60 geographical miles), to the city of Kin-tching, and to a great number of other cities, towns, villages, palaces, temples, monaſteries, gardens, and pleaſure-houſes. N. lat. 26° 2'. E. long. 146° 26'.

KINTEN, a town of Pruſſian Lithuania; 15 miles S. of Memel.

KINTORE, a ſmall borough town and pariſh of Aberdeenſhire, Scotland, in the diſtrict of Garrwik, is ſeated on the river Don, at the diſtance of 15 miles N.W. of the county town, and 137 N. of Edinburgh. It is ſaid that this place obtained a charter at an early period, but the only authentic deed of this deſcription was granted by James V.: its government is veſted in a provoſt, two bailiffs, a dean of guild, a treaſurer, and a council of eight other burgeſſes. The firſt of theſe offices has long been veſted in the earls of Kintore. In this place are a town-houſe and a priſon; and in the year 1800 it contained 198 houſes and 846 inhabitants. In conjunction with Bamff, Cullen, Elgin, and Inverury, it returns one member to the Britiſh parliament. The pariſh of Kintore is about ſix miles in length by eight in breadth, and riſes gradually from the river Don to a range of hills. In it is Thainſtone, the ſeat of Forbes Mitchell, eſq. and in one part of it are ſeveral cairns and tumuli, which are traditionally ſaid to mark the ſcene of an action between Robert Bruce, and the army of Edward I. Sinclair's Statiſtical Account of Scotland.

KINTYRE, or Cantyre, one of the three diſtricts of Argyleſhire, in Scotland. Of the three diſtricts or diviſions of the county of Argyle, *viz.* Lorn, Knapdale and Kintyre, the latter is the moſt level and beſt adapted to the purpoſes of agriculture. It forms a long narrow peninſula, bordered by Lochfine and the Firth of Clyde on the eaſt ſide, and by the weſtern ſea on the weſt. Of this peninſula, by much the greateſt part belongs to the duke of Argyle, who has a chamberlain or factor reſident at Campbelltown, for the ſuperintendance of this part of his eſtate. There is alſo a cuſtom houſe at Campbelltown, for the regulation of the collection and prevention of frauds on the revenue, and ſome of the cruizers are generally on this ſtation, for the detection and capture of ſmugglers. The loch or harbour of Campbelltown is excellently adapted for this, as from it a veſſel of force can with eaſe command the whole ſhipping of the Clyde in moderate weather, and may board, over-haul, and inſpect almoſt every veſſel in the leaſt ſuſpected. The termination of the peninſula is called the Mull or Moyle of Kintyre.

KINVACA, a town of Africa, in Fooladoo. N. lat. 13° 10'. W. long. 6° 2'.

KINURE Point, a cape of Ireland, in the county of Cork, at the entrance of Oyſter haven, and about three miles eaſt from Kinſale harbour.

KINWAT, a town of Bengal; 17 miles S.E. of Curruckpour.

KINYALOO, a town of Africa, in the town of Manding. N. lat. 12° 5'. W. long. 6° 5'.

KIN-YANG, a city of China, of the firſt claſs, in the province of Chen-ſi; which, being regarded as a barrier againſt the incurſions of the Tartars, is ſtrongly fortified in the Chineſe manner: the adjacent country is very fruitful; and produces a kind of herb, called "Kinſee," *i. e.* golden ſilk, to which is aſcribed ſome medicinal virtue, and alſo a kind of bean which is ſaid to be an admirable ſpecific againſt any ſort of poiſon. This city has in its diſtrict one town of the ſecond order and four towns of the third order. N. lat. 36° 6'. E. long. 107° 19'.

KINYTAKOORA, a town of Africa, in the kingdom of Gadou; 36 miles S.W. of Kamalia.

KIOANON Point, called in ſome maps *Kikelonee*, is the extremity of a large peninſula which projects far into the S. ſide of Lake Superior.

KIO-FEOU, a celebrated city of China, in the province of Chang-tong, which was the birth-place of Confucius. Several monuments are ſtill to be ſeen there, erected in honour of this eminent man.

KIOGE, a ſea-port of Denmark, ſituated on the iſland of Zealand, in a bay at the mouth of a river, formerly a place of conſiderable trade, with manufactures of valuable tapeſtry. In 1659, it was fortified by Charles Guſtavus, king of Sweden, with ditches and ramparts; 10 miles S.S.W. of Copenhagen. N. lat. 55° 28'. E. long. 12° 12'.

KIOLEN, a town of Sweden, in Warmeland; 40 miles N.W. of Carlſtadt.

KIONGONG, a town of Bengal; 30 miles N.N.E. of Burdwan. N. lat. 23° 41'. E. long. 88° 10'.

KIONTONA, an Indian town on Conewango river, in Pennſylvania; 11 miles N. from its mouth in the river Alleghany.

KIOPING, a town of Sweden, in Weſtmanland, on a river of the ſame name, communicating with Malar lake. It is a place of good trade; 10 miles W. of Stroemſholm. N. lat. 59° 33'. E. long. 16° 42'.

KIORAH, a town of Hindooſtan, in Boggilcund; 27 miles N.N.E. of Rewah.

KIOREHVESI, a town of Sweden, in Tavaſtland; 56 miles N. of Tavaſthus. N. lat. 61° 56'. E. long. 24° 33'.

KIOV. See Kiev.

KIOVA, a town of Africa, in the kingdom of Congo, and province of Sogno.

KIOUMZEIK, a well built town of Ava, ſituated on the Irawaddy, and gradually improving. The manufacture of cotton cloth is the ſource of its proſperity. A town called "Hinzaelah" near it, is of much greater antiquity; 76 miles N.N.W. of Rangoon. N. lat. 17° 42'.

KIOZDI, a town of Walachia; 77 miles N. of Buchareſt.

KIPE, a kind of ozier baſket, wide in the middle, and narrow at both ends; uſed for taking fiſh.

Kipe is alſo a game, which conſiſts in throwing ſomething into a hole, called the kipe-hole.

KIPHANTA, in *Geography*, a town of European Turkey, in the Morea; 20 miles E. of Miſitra.

KIPPER. See *Salmon* Fishery.

Kipper-*Time*, a ſpace of time between the feſtival of the finding of the Holy Croſs, May the 3d and 12th day; during which, ſalmon-fiſhing in the river Thames, from Graveſend to Henley, is forbidden by Rot. Parl. 50. Edw. III.

KIPPIS, Andrew, in *Biography*, an eminent nonconformiſt miniſter of the laſt century, was born at Nottingham on the 28th day of March, in the year 1725. He was deſcended, both by the father's and mother's ſide, from ejected miniſters of the names of King and Ryther, who are mentioned with reſpect in Dr. Calamy's Account of the

Miniſters ejected and ſilenced by the Act of Uniformity. Upon the death of his father, when he was about five years of age, he was removed to his grandfather at Sleaford in Lincolnſhire, where he received his grammatical education. His talents and application attracted the peculiar notice of Mr. Merrivale, who was paſtor of a congregation of diſſenters in that town; and by his advice and encouragement, his views were directed to the profeſſion of a diſſenting miniſter, and to thoſe literary purſuits in which he afterwards ſo much excelled. At the age of ſixteen, he was admitted to the academy at Northampton, under the care of Dr. Doddridge; and in that ſeminary he proſecuted his ſtudies with ſuch diligence and improvement, and conducted himſelf with ſuch exemplary propriety, as to conciliate the affectionate eſteem and partial attachment of his tutor. Having completed his courſe of five years at the academy, he undertook the charge of a diſſenting congregation at Boſton, in Lincolnſhire, with which he ſettled in September 1746. From Boſton he removed to Dorking in Surrey, in 1750; and in 1753, he ſucceeded Dr. Hughes as paſtor to the ſociety in Prince's ſtreet, Weſtminſter. In the ſame year he married Miſs Elizabeth Bott, the daughter of a reſpectable merchant at Boſton, in whom he found a ſenſible, prudent, ſprightly, and cheerful companion, and by whoſe attentions his mind was relieved from all family concerns; ſo that he was left at full leiſure to proſecute the various duties which his numerous engagements devolved upon him. Whether we conſider the literary talents, the miniſterial abilities, or the external accompliſhments of the ſubject of this article, no perſon could have been better qualified for the ſituation into which he was introduced than himſelf. His ſettlement with the ſociety in Weſtminſter laid the foundation of that celebrity which he afterwards acquired, and of that extenſive uſefulneſs which diſtinguiſhed his future life. He was thus ſoon introduced into a connection with the Preſbyterian fund, to the proſperity of which he was afterwards very ardently devoted. In June 1762, he became a member of Dr. Williams's truſt; and this appointment afforded him an additional opportunity of being eminently and extenſively uſeful in a variety of reſpects. His connection with the general body of Proteſtant diſſenting miniſters, belonging to the cities of London and Weſtminſter, and with many charitable inſtitutions, which the liberality of diſſenters has eſtabliſhed, gave him frequent occaſion to exerciſe his talents for the honour and intereſt of the cauſe, to which, both by his ſentiments and profeſſion, he was zealouſly attached.

His literary abilities and attainments were acknowledged by all who knew him. It was, therefore, natural to imagine, that when a favourable opportunity offered, he would be employed in the department of public education. Accordingly, when the death of the reverend Dr. Jennings rendered it neceſſary to make a new arrangement of tutors in the academy, ſupported in London by the funds of William Coward, eſq. the truſtees directed their views to him; and in the year 1763, he was appointed claſſical and philological tutor to that inſtitution.

In 1767 he received the degree of doctor in divinity from the univerſity of Edinburgh; an honour, in the unſolicited grant of which the principal and profeſſors very cordially concurred. No one can diſpute his peculiar claim to ſuch a token of reſpect.

In March 1778, he was elected a fellow of the Society of Antiquaries; and in June 1779, a fellow of the Royal Society. He was a member of the council of the former ſociety from 1782 to 1784, and of that of the latter from 1786 to 1787. In both theſe ſocieties he was a regular attendant, and a reſpectable and uſeful member.

Having, in the year 1784, quitted his connection with Mr. Coward's academy, which, upon the reſignation of the two other tutors, was diſcontinued, he cordially concurred with a very reſpectable body of diſſenters, in 1786, in eſtabliſhing a new inſtitution in the neighbourhood of London, with a view of educating miniſters and other young gentlemen intended for civil life. Dr. Kippis was very aſſiduous and active in his endeavours to accompliſh this laudable deſign; and though his other engagements rendered it very inconvenient for him to accept any official connection with it, he was urged to unite with other perſons, for whom he entertained a peculiar reſpect; and he at length, though not without reluctance, acquieſced in the appointment to be one of the tutors of this new inſtitution. The diſtance of his reſidence from Hackney, where the college was fixed, and ſome other circumſtances which it is unneceſſary to recite, induced him in a few years to withdraw from it, as a tutor: though he ſtill continued to ſerve it by a liberal ſubſcription, and by his intereſt with opulent friends.

Dr. Kippis continued to proſecute his other uſeful labours without intermiſſion; and till within a fortnight of his death, his friends had no reaſon to imagine that they were ſo near their cloſe. In the courſe of the ſummer, a few weeks before his death, he took a long journey on public buſineſs, and returned, as his fellow travellers apprehended, with recruited ſpirits and eſtabliſhed health; and they were equally ſurpriſed and grieved when they heard that he was confined to his bed with a fever, which baffled the ſkill of the moſt eminent phyſicians, and which haſtily advanced to the fatal criſis. His diſorder was of ſuch a nature, that he found himſelf both diſinclined and unable to make any exertion, or to converſe much even with his moſt conſtant attendants. There is reaſon, however, to believe, that in a very early ſtage of his diſorder he was not without apprehenſions of its terminating in his diſſolution. The laſt public ſervice he performed was on the 20th of September; and on Thurſday evening, the 8th of October, he awoke after a tranquil ſleep of ſome continuance, and in a little while expired: having ſerved his generation according to the will of God, and attained the age of 70 years and 6 months.

It is not eaſy to do ſufficient juſtice to the eminent talents, the extenſive labours, and exemplary character of Dr. Kippis.

His mild and gentle temper, his poliſhed manners, his eaſy and graceful addreſs, and a variety of external accompliſhments, prepoſſeſſed thoſe who firſt ſaw him in his favour, and could not fail to conciliate eſteem and attachment on a more intimate acquaintance. Theſe qualities contributed very much to recommend him to perſons in the higher ranks of life, to ſeveral of whom he had occaſional acceſs; and qualified him, in a very eminent degree, for the ſituation in which he exerciſed his miniſterial office. But he was no leſs condeſcending, courteous, and affable to his inferiors, than to thoſe who occupied ſuperior ſtations. Dr. Kippis had nothing of that auſterity and reſerve, of that haughtineſs and ſuperciliouſneſs, of that parade and ſelf-importance, and oſtentatious affectation of dignity, which forbid acceſs, and which mar the freedom and the pleaſure of all the ſocial intercourſes of life. And yet theſe diſguſtful and odious qualities ſometimes accompany literary men, and eſpecially thoſe who have acquired any conſiderable degree of eminence and reputation.

The mental abilities of Dr. Kippis were of the ſuperior kind. He poſſeſſed a comprehenſive underſtanding, a ſound judgment, a retentive memory, a correct imagination, a refined taſte, a quickneſs and a facility of exerting his faculties on any ſubject or occaſion, however ſuddenly they might occur.

The natural powers of his mind were cultivated with an aſſiduity and perſeverance of application, in which he had few ſuperiors, and not many equals. They had been habituated through life to regular and conſtant exerciſe, and had acquired ſtrength and vigour from uſe. He was never hurried and diſtracted by the variety of his literary purſuits; and though he had many engagements which required his attention, and which diverted his mind from the objects of ſtudy to which he was devoted, he never ſeemed to want time. Every kind of buſineſs was referred to its proper ſeaſon. By a judicious arrangement of his ſtudies, as well as of his other occupations. the number and variety of which he never oſtentatiouſly diſplayed, and by the punctuality of his attention to every kind of buſineſs in which he was employed, he avoided confuſion; he retained on all occaſions the poſſeſſion of himſelf; and he found leiſure for reading and writing, and for all his literary avocations, without encroaching on that time which he appropriated to his profeſſional duties and ſocial connections.

Indeed, there have been few perſons, ſays his biographer, who read ſo much, and with ſuch advantage to themſelves and others, as Dr. Kippis. Hence he acquired that extenſive acquaintance with books, and with the literature of ancient and modern times, and particularly of the laſt century, which rendered him an inſtructive companion, and which directed him where to apply for neceſſary information on any ſubject that employed his own attention or that of others. But though he read much, he was not one of thoſe who waſte their time in deſultory reading, and who make no addition to their ſtock of uſeful knowledge by the volumes which they turn over for mere preſent amuſement. He read with attention and diſcrimination. He formed an accurate judgment of the intrinſic value of every publication, to which he had recourſe: and there have been few works, in the department of literature with which he was converſant, that have iſſued from the preſs, for many years, of the ſpecific objects and real merit of which he could not give a juſt and ſatisfactory account.

There is one circumſtance, to which it was principally owing that Dr. Kippis ſeemed, in the midſt of a great number of engagements, to have time at his own command, and which enabled him to diſpatch much buſineſs without apparent hurry and confuſion.

We mention it here, for the direction of young perſons, and eſpecially of young ſtudents, whoſe habits are not eſtabliſhed. He had been accuſtomed from his youth to early riſing; and he thus ſecured to himſelf a certain portion of time, during which he was not liable to be interrupted by any foreign avocations. This habit was no leſs conducive to his health, than to the diſcharge of his various literary and profeſſional obligations. Providence had bleſſed him with an excellent conſtitution. He had preſerved it unimpaired by a courſe of uniform regularity and temperance. He was little interrupted through life by any bodily diſorder in any of the occupations to which he was devoted. If we except a fever, which laid him aſide for ſome years before his death, and a conſtitutional cough which was rather beneficial than injurious, he enjoyed an unuſual ſhare of health and ſpirits.

Dr. Kippis poſſeſſed other qualities, beſides his mental abilities, however excellent, however aſſiduouſly cultivated, and however uſefully employed, which rendered his character in a ſtill higher degree eſtimable and praiſe-worthy. In private life, his diſpoſition and deportment were amiable and exemplary. His piety originated in honourable ſentiments of the perfections and providence of God; and its practical influence was uniform and permanent. He exhibited, in all his connections and concerns, a humble, meek, placable, forgiving, and benevolent temper. The gentleneſs, mildneſs, and philanthropy of his diſpoſition formed very diſtinguiſhing traits of his character. With theſe virtues, ſo congenial to the ſpirit of the religion he profeſſed, ſo conducive to the tranquillity of his own mind, and ſo powerful as incentives to activity and uſefulneſs, he united an inflexible integrity, and an independence of ſpirit, which diſdained every thing that was mean, ſelfiſh, and ſervile.

If we accompany Dr. Kippis from private and domeſtic life into the various ſtations of public uſefulneſs, which Providence aſſigned him, we ſhall find him eminently qualified, and ardently diſpoſed to ſerve his generation according to the will of God. His knowledge of the world, the rectitude of his judgment, and the mildneſs of his temper, gave him conſiderable influence in various connections to which he belonged. At the Preſbyterian Board, in Dr. Williams's Truſt, and in the general body of aſſociated miniſters, his opinion always claimed peculiar deference. As he was become the father of ſeveral ſocieties of this kind to which he ſtood related, his age commanded reſpect; and his condeſcending, complying diſpoſition rendered it eaſy and pleaſant to act with him on every occaſion. Notwithſtanding the variety of his engagements, he was a conſtant attendant. He never pleaded them as an apology for abſence. He never wiſhed to decline any public ſervice, whatever perſonal inconvenience or trouble might attend it. He preferred the concerns of others, who needed his aſſiſtance, to his own.

As a ſcholar, the literature of Dr. Kippis was various and comprehenſive. But the ſtudies to which he principally applied, and in which he moſt excelled, were thoſe of the claſſics, the belles lettres, and hiſtory; beſides thoſe which were immediately connected with his profeſſion. The hiſtory of his own country had been the ſubject of his long and laboured inveſtigation; and the principles of the Britiſh conſtitution he had diligently ſtudied. To theſe he was zealouſly attached; and he ably defended them, though he was not unapprized of the corruption which time had introduced, and of the neceſſity and wiſdom of a ſpeedy reformation. He was a ſteady, uniform, and ardent friend to the cauſe of civil and religious liberty; and in the courſe of his life he had various occaſions of avouching himſelf the advocate of this cauſe. But whilſt he deteſted tyranny and oppreſſion, he dreaded anarchy and tumult. In the political conteſts, which have lately agitated this country, the moderation of his temper was eminently conſpicuous. His diſpoſition was gentle and conciliating. He was an enemy to every ſpecies of violence; and he thought that calmneſs, firmneſs, and perſeverance in the purſuit of conſtitutional meaſures, were the moſt likely means of obtaining a reformation of acknowledged abuſes, and a termination to public calamities and evils. Though he thought it moſt prudent to withdraw from ſome ſocieties of a political nature, with which he had been long connected, he never abandoned the principles upon which his firſt connection with them was founded; nor did he ever diſguiſe his ſentiments either of men or of meaſures, whenever a proper occaſion for declaring them occurred.

In many other ſocieties of a different kind, that were eſtabliſhed for literary improvement or friendly intercourſe, Dr. Kippis was a very valuable and uſeful member. Whilſt his modeſty prevented his obtruding his ſentiments on others, or aſſuming the lead, and preſuming to dictate amongſt thoſe who were in various reſpects inferior to himſelf, he was always communicative and entertaining. He never offended either by an ungracious reſerve and affected ſilence, on the one hand, or by an intruſive and troubleſome loquaciouſneſs on the other. His literary character was univerſally acknowledged by perſons of this deſcription, with whom his acquaintance was intimate and extenſive. The courſe of his ſtudies furniſhed him with a variety of anecdotes, that rendered his converſation, on particular occaſions, intereſting and inſtructive. His knowledge of books, and his judgment of their reſpective merit, which was always formed with candour and pronounced with modeſty, were very comprehenſive and accurate; and he was often appealed to by thoſe who wiſhed to obtain information on ſubjects of this nature. In thoſe friendly aſſociations to which he belonged, he was always placid and cheerful; placid without dulneſs, and cheerful without an unbecoming levity. In him were invariably united, the knowledge of the ſcholar, and the judgment reſulting from experience and an attentive obſervation of the courſe of the world, with the manners of the gentleman, and the decorum belonging to his public character as a Chriſtian, and his profeſſion as a miniſter.

Amidſt a variety of other occupations, Dr. Kippis ſuſtained the office of tutor, for more than 25 years, with ſingular reputation to himſelf, and with great benefit to the young perſons who were under his care. His lectures and his general conduct conciliated the eſteem, and promoted the improvement of his pupils. They all honoured and loved him; for he had a happy talent of attaching their affection and reſpect. They lamented his removal from this ſphere of public ſervice. To young men, and particularly to young miniſters, Dr. Kippis was always attentive and friendly. He was ready, on all occaſions, to aſſiſt them with his advice in the proſecution of their private ſtudies and public labours; and to thoſe who needed pecuniary aid, his hand was extended for the diſtribution of his own property, as well as that of others entruſted to his diſpoſal.

As an author, Dr. Kippis commenced his career in early life, as many other young men have done, by contributing to the magazines of the time, particularly the Gentleman's Magazine. He afterwards became a more conſtant writer in the Monthly Review. His articles were chiefly hiſtorical and theological, with occaſional ſtrictures on works of general erudition. He alſo furniſhed a periodical publication, called the Library, with ſeveral valuable papers. He laid the foundation of the New Annual Regiſter; and ſuggeſted the improved plan upon which that work is conducted. The Hiſtory of Ancient Literature, and the Review of modern Books, were, at its firſt commencement, written by him, and continued to the year 1784, incluſive. He was alſo the author of the "Review of the Tranſactions of the preſent Reign," prefixed to the Regiſter for 1780; and of the "Hiſtory of Knowledge, Learning, and Taſte, in Great Britain," prefixed to the ſucceeding volumes, to the year 1794 incluſive.

During the application of the diſſenting miniſters to parliament, for the enlargement of the Act of Toleration in the year 1772, to which he devoted much of his time and attention, he publiſhed a valuable pamphlet, vindicating that meaſure as to the matter, manner, and time of it. It was intended as an anſwer to a publication aſcribed to a writer who afterwards filled a very high ſtation in the church, and was entitled "A Vindication of the Proteſtant Diſſenting Miniſters, with regard to their late Application to Parliament," 8vo.

Soon after his admiſſion into the Royal Society, he publiſhed a pamphlet, entitled "Obſervations on the late Conteſts in the Royal Society," 1784, 8vo.; with a view of allaying the animoſities that ſubſiſted in that body, which produced a good effect. His intimate connection with ſir John Pringle, bart. who was formerly a very reſpectable and uſeful preſident of the Royal Society, led Dr. Kippis, after his deceaſe, to republiſh his Six Diſcourſes, delivered at the aſſignment of ſir Godfrey Copley's medal, to which he has prefixed a valuable life of the author, 1783, 8vo. At the cloſe of the American war he publiſhed a political pamphlet, formed from materials which were communicated to him by perſons of eminence, and deſigned to juſtify the peace, which terminated that unhappy conteſt. This pamphlet was entitled "Conſiderations on the Proviſional Treaty with America, and the Preliminary Articles of Peace with France and Spain." He alſo publiſhed ſeveral ſingle diſcourſes, which were delivered on particular occaſions; ſome of which are reprinted in his volume of ſermons, 1794. Nor ſhould we omit to mention his account of the life and voyages of captain Cook, 1788, 4to.; his new edition of Dr. Doddridge's Lectures, with a great number of additional references; his life of this excellent perſon, prefixed to a new edition of his Expoſition of the New Teſtament, 1792; his life of Dr. Lardner (to whoſe abilities, character, and writings he has paid the juſt tribute of reſpect) prefixed to the complete collection of his works; in 11 vols. 8vo. 1788: and "An Addreſs delivered at the Interment of Richard Price, D.D. F.R.S., &c. 1791;" and an "Ordination Charge," 1788, 8vo. He alſo aſſiſted in ſelecting and preparing "A Collection of Hymns and Pſalms, for public and private Worſhip," 1795, 8vo. and 12mo. which is uſed in many places of worſhip among Proteſtant diſſenters, and has paſſed through ſeveral editions. But the work, to which Dr. Kippis devoted his principal attention for many of the laſt years of his life, and by which he has acquired ſingular reputation, was the Biographia Britannica. His indefatigable induſtry in collecting materials for it, his acceſs to the beſt ſources of information, his knowledge of men and books, his judgment in ſelecting and marking every circumſtance that could ſerve to diſtinguiſh talents and character, and the habit which he had acquired by long practice of appretiating the value of different works, qualified him, in a very high degree, for conducting this elaborate performance. It has been much regretted, that he did not live to carry on this edition of the "Biographia," farther than to about a third part of the ſixth volume, which has not yet made its appearance.

Notwithſtanding the time that muſt have been devoted to the ſeveral objects now recited, and to the correction and publication of the works of friends, who reſpected his judgment and wiſhed to avail themſelves of his aſſiſtance, which he could never refuſe to thoſe who requeſted it; Dr. Kippis never neglected the ſtudies and duties more immediately pertaining to his character as a divine, and his profeſſion as a miniſter. His acquaintance with the various branches of theology, and with ſubjects ſubſervient to his critical ſtudy of the ſcriptures, was very extenſive. He was in the daily habit of reading ſome portion of the New Teſtament in the original language. He was converſant with the beſt writers on Jewiſh and Chriſtian antiquities; and in the courſe of his reading no work eſcaped him, that was deſigned to illuſtrate the evidence, to eſtabliſh the truth and divine original, and to inveſtigate the genuine doctrines of the Chriſtian Revelation.

He was a believer in Chriſtianity upon the matureſt examination and the fulleſt conviction. No perſon was better acquainted with the controverſies which Revelation has produced. He had ſtudied them in his earlier and riper years with great attention; and though he was ready to allow the force of every difficulty and objection, yet to the ample preponderance of evidence his deliberate and impartial judgment ſubmitted. Authority, indeed, is not abſolutely concluſive in queſtions of this nature. Yet whilſt Chriſtians can rank in the number of the advocates of their religion ſuch men as Bacon and Boyle, Newton and Locke, Clarke and Hoadley, Jortin and Lardner, and many other living writers of the firſt eminence with reſpect both to learning and character, who have profeſſedly ſtudied the evidence of Revelation; there is no real ground of alarm from the feeble efforts of avowed infidels, who have acquired popularity in another way, and to whom a partial attention may be directed, but who manifeſt great ignorance of this ſubject, and who are very reprehenſible on account of their mode of attacking Chriſtianity.

The principles which Dr. Kippis derived from Chriſtianity were the directory of his conduct and the ſource of his conſolation. By the amiable ſenſibility of his heart, as well as by the ſober conviction of his judgment, he was led to value the diſcoveries and hopes of the goſpel; to ſubmit to the practical influence of its doctrines and precepts; and to cheriſh the pleaſing and animating expectations which it afforded. He had imbibed in a very high degree the mild and placable and benevolent ſpirit of the religion which he profeſſed, and he exemplified this ſpirit both in his preaching and in his practice.

Of his ſentiments as a divine, and of his abilities as a preacher, it is hardly neceſſary for us to ſay any thing on this occaſion. Towards the cloſe of his life the inclination of his mind was to the diſtinguiſhing opinion of the modern Unitarians; though he was far from embracing all the tenets that have been adopted by ſome perſons who are thus denominated. However, he diſapproved their appropriating this appellation to themſelves, which he conſidered as aſſuming and excluſive; and he lamented that exceſs of zeal, with which ſpeculations, comparatively of ſmall importance, are maintained and propagated. Thoſe doctrines and duties which he thought of principal moment, he ſedulouſly inculcated. Tenets of inferior importance, and that had no immediate influence on rectitude of temper and practice, he more generally avoided. Such, indeed, were the meekneſs and moderation of his temper, his ſolicitude to preſerve peace and unity, and his governing deſire to guard againſt the pernicious effects of a controverſial and contentious ſpirit, that he beheld with concern the intemperate eagerneſs and ardour with which diſputes of trivial moment have been ſometimes conducted, and he deprecated the unhappy diviſions which they are likely to occaſion.

As a preacher, Dr. Kippis was rational and ſcriptural; judicious and inſtructive; practical and intereſting, eſpecially towards the cloſe of his diſcourſes; and he blended the argumentative and pathetic on particular occaſions. His compoſitions were always well ſtudied; his voice was clear and harmonious; his delivery was natural and unaffected, and on occaſions that required it, animated and impreſſive; and though he ſought not that popularity which depends more on ſound and geſture and mechanical exertions, than on rational and fervent addreſſes to the judgment and affections, and which is generally of no long duration, he retained the reſpect and eſteem of the ſociety in Weſtminſter for more than 42 years.

Such are the general outlines of the character and labours of Dr. Kippis. "The portrait, I am ſenſible," ſays the writer from whoſe account of him this article is extracted, "is not ſufficiently juſt to the original. In delineating a character, which exhibits ſo many excellencies and ſo few defects, none can ſuſpect me of approaching to adulation. My reſpect for him was great. I honoured him as a father. I loved him as a brother. But my affection, I am confident, has not miſled my judgment. By the favour of Providence, which marks the bounds of our habitation, I was led in early life into an intimate connection with him. Our acquaintance, as co-tutors and co-adjutors in public buſineſs, ripened into an eſtabliſhed friendſhip; and our friendſhip continued, without ſo much as a momentary interruption, and with increaſing attachment, for more than 32 years, to the day of his death. It muſt have been my own fault, if I have not derived advantage from his extenſive literary knowledge, from the wiſdom of his counſel, and from the exemplarineſs of his conduct. No apology, I truſt, will be thought neceſſary for introducing myſelf on this occaſion. As it was my ambition to cultivate the friendſhip I enjoyed, it is my pride to have it publicly known, that I valued that friendſhip, as one of the chief honours and pleaſures of my life. The friend I have loſt cannot be eaſily replaced." See Rees's Funeral Sermon, preached at the Meeting-houſe, in Prince's-ſtreet, Weſtminſter, Oct. 18, 1795.

KIPPURE, in *Geography*, the name of the higheſt mountains in the chain extending into the counties of Wicklow and Dublin, about ten miles ſouth of the city of Dublin.

KIRA, a ſmall iſland in the gulf of Engia; nine miles W. of Engia.

KIRAHIANA, a town of Hungary; 15 miles E.S.E. of Munkacz.

KIRALI, a town of Aſiatic Turkey, in Caramania; 35 miles W.S.W. of Cogni.

KIRANOOR, a town of Hindooſtan, in the Carnatic; 22 miles N. of Nattam.

KIRANORE, a town of Hindooſtan, in Marawar; 20 miles S. of Tripatore.

KIRBYE, GEORGE, in *Biography*, an excellent Engliſh madrigaliſt on the Italian model; but who was more remarkable for ſimplicity than taſte and fancy. In 1597, he publiſhed his firſt ſet of madrigals to 3, 4, 5, and 6 voices; ſeveral of which were ſucceſsfully revived at the concert of ancient muſic and the Catch-club, during the firſt years of thoſe inſtitutions. They are now ſuffered again to ſleep in peace, with thoſe of Walker, Wilhye, Eſt, and Bennet, our principal madrigaliſts, perhaps never to be waked again.

KIRCAGATCH, in *Geography*, a town of Aſiatic Turkey, about 40 miles N.E. of Magniſi or Magneſia, on the route to Pruſa, which has riſen to conſiderable population, from the cultivation of cotton.

KIRCAJAN, a town of Perſia, in the province of Kerman; 117 miles E. of Sirgian.

KIRCALDY, a ſmall town of Fife, on the N. coaſt of the Frith of Forth, about three miles eaſt of Kinghorn, from which alſo there is a ferry to Leith and Edinburgh. Beſides the ferry and the fiſhing, Kircaldy uſed to employ a conſiderable number of ſhips, brigs, and other veſſels, in the trade with the eaſtern countries of Europe and the Baltic, but theſe were more frequently chartered or freighted from other ports than their own. It has alſo been long a conſiderable

able place for the manufacture of coarſe goods both of linen and cotton, and this trade is ſtill proſecuted to a very conſiderable extent. The chief article of their manufacture conſiſts in low-priced blue and white checked goods, uſed for ſeamens' ſhirts, and for clothing for the negroes in the Weſt Indies. So great has been the demand for theſe articles at particular times, that ſhortly after the capture of Trinidad by the Britiſh, the writer of this article was requeſted by an eminent Weſt India houſe in Liverpool, to endeavour to procure for them ſeven thouſand pieces of theſe checks, or any quantity which could be ſupplied. Upon application, however, he found the demand from other quarters ſo great, that only a very ſmall proportion of the ſupply could be procured. Coarſe low-priced checked handkerchiefs are alſo manufactured to a very conſiderable extent.

Kircaldy was erected into a royal burgh in the fifteenth century, and its charter was ratified by Charles I. in 1644, and is governed by a provoſt, bailiff, and council, at which time it is ſaid that 100 ſail of ſhips belonged to the port : the chief article of export is coals ; and the importation conſiſts of corn, flax, flax-ſeed, linen-yarn, wood, iron, aſhes, tallow, bark, hides, &c. Kircaldy is united with Dyſart, Kinghorn, and Burnt-iſland, in electing a member to ſerve in parliament. In 1801, the number of inhabitants was 3248, of whom 700 were employed in trade and manufactures ; 13 miles north of Edinburgh. N. lat. 56° 7'. W. long. 3° 9'.

KIRCH, Godfrey, in *Biography*, an able aſtronomer, was born at Guben, a town in Lower Luſatia, in the year 1640. He proſecuted his ſtudies at Leipſic, where he acquired conſiderable reputation by the almanacs which he publiſhed. In 1692, he married Mary Margaret Winckelman, who rendered him much uſeful aſſiſtance by making aſtronomical obſervations for the conſtruction of his Ephemerides. In 1701, on the eſtabliſhment of the Academy of Sciences at Berlin, by Frederic I., king of Pruſſia, that prince invited M. Kirch to be a member of the ſociety, and to take upon himſelf the office of aſtronomer in ordinary, with an honourable penſion for his ſupport. He died at Berlin in 1710, at the age of ſeventy-one years. He had been in the habit of correſponding with all the learned ſocieties of Europe, and publiſhed a variety of aſtronomical treatiſes, which are in conſiderable eſtimation.

Kirch, Mary-Margaret, wife of the preceding, was daughter of a Lutheran clergyman at Panitzſh, a village near Leipſic, where ſhe was born in the year 1670. Having loſt her father when ſhe was only twelve years of age, ſhe was educated by his ſucceſſor, and indulged the inclination which ſhe diſcovered for the acquiſition of knowledge, and particularly that of aſtronomy. This partiality for his favourite purſuit was a recommendation to M. Kirch, who obtained her hand in marriage, and found her a moſt valuable aſſiſtant in his ſcientific labours. She was not contented, however, with rendering her huſband important ſervices, but ſhewed herſelf capable of viewing the heavens with the eye of a diſcoverer, and in 1702, ſhe firſt ſaw a comet, upon which M. Kirch publiſhed his obſervations. In 1707, ſhe diſcovered a peculiar Aurora Borealis, of which mention is made in the Memoirs of the Academy of Sciences at Paris, for the year 1716. Theſe exertions of her genius procured her the eſteem of the learned at Berlin, notwithſtanding which ſhe was in very low circumſtances when her huſband died. She contrived to maintain herſelf and educate her children, by conſtructing almanacs, and, in 1711, ſhe publiſhed a diſſertation, intitled "Preparations for obſerving the grand Conjunctions of Saturn, Jupiter, &c." Soon after this ſhe found a patron in the baron de Throſiek, who furniſhed her with apartments in his own houſe, adapted to the carrying on her aſtronomical obſervations. Here ſhe lived till the baron's death, which happened about two years afterwards. She now removed to Dantzic, when Peter the Great wiſhed to engage her to ſettle in his empire. She preferred her native country, and, in 1716, accompanied her ſon to Berlin, where ſhe was appointed aſtronomer to the Academy of Sciences in that city. She was now introduced to the notice of the royal family, and ſecured the patronage of ſome of the branches of it. She died in 1720, in her fifty-firſt year.

Kirch, Christian Frederic, ſon of the preceding, was born at Guben, in the year 1694, and diſcovered an early and very ſtrong bias for ſcientific purſuits. He commenced his ſtudies at Berlin, and afterwards continued them at Halle, whence he made excurſions, for improvement, to Nuremberg, Leipſic, and Pruſſia. He was employed a conſiderable time in the obſervatory at Dantzic, and during his reſidence here the czar, Peter the Great, offered him an eſtabliſhment at Moſcow ; but his attachment to his mother, who was averſe from leaving Germany, led him to decline it. In 1717, he was made member of the Academy of Sciences at Berlin, and, in 1723, he was choſen a correſponding member of the Royal Academy of Sciences at Paris, and he ſhewed himſelf worthy of that diſtinction, by the frequent valuable contributions which he tranſmitted to them during the remainder of his life. He died in 1740, in the forty-ſixth year of his age. He publiſhed ſeveral works connected with aſtronomy, which were in conſiderable reputation at the period in which he flouriſhed. Moreri.

KIRCHBACH, in *Geography*, a town of the duchy of Stiria ; 14 miles S.E. of Gratz.

KIRCHBERG, a town and caſtle of Bavaria; 12 miles N. of Landſhut.—Alſo, a town of Germany, in the principality of Hohenlohe, on the Jaxt ; 28 miles W. of Anſpach.—Alſo, a town of Saxony, in the circle of Erzgebirg ; ſix miles S. of Zwickau.—Alſo, a town of the principality of Naſſau-Dietz, capital of a bailiwic ; five miles S.E. of Dietz.—Alſo, a town of Auſtria ; 11 miles S. of St. Polten.—Alſo, a town of France, in the department of the Rhine and Moſelle, and chief place of a canton, in the diſtrict of Simmern. The place contains 772, and the canton 6491 inhabitants, in 38 communes.

KIRCHEAN Musæum at Rome, was founded by father Kircher about the middle of the ſeventeenth century. This celebrated muſeum is full of ancient paintings, vaſes, gems, intaglios, cameos, and other antiquities, which are there in ſuch abundance, that a ſpectator might fancy himſelf at Portici ; but the curioſities which we were moſt eager to ſee and examine, were father Kircher's muſical inſtruments and machines deſcribed in his Muſurgia. They were almoſt all out of order in 1770, and in decay ; and it is to be feared that time has not improved them. Their conſtruction was not only curious, but manifeſted the ingenuity as well as zeal of the learned father, in his muſical enquiries and experiments.

KIRCHEIM-Bohlanden, in *Geography*, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diſtrict of Mayence ; 28 miles N.W. of Manheim. The place contains 1872, and the canton 9465 inhabitants, in 22 communes. N. lat. 49° 39'. E. long. 7° 59'.

KIRCHER, Athanasius, in *Biography*, a celebrated mathematician and philoſopher, was born at Fulda in the year 1601, and when he was ſeventeen years of age he commenced his noviciate in the ſociety of the Jeſuits, among whom he diſtinguiſhed himſelf by his vaſt proficiency in literature and ſcience. Having finiſhed his ſtudies, he was ſelected by his ſuperiors to fill the chair of profeſſor, and taught philoſophy, mathematics, the Hebrew and Syriac languages, in the univerſity of Wirtzburg, in Franconia, with great ſucceſs till the year 1631. During the war between the emperor Ferdinand II. and Guſtavus, king of Sweden, he withdrew to France, and reſided ſome time in the Jeſuits' college at Avignon. After this he was called to Rome, where, for ſix years, he filled the poſt of mathematical profeſſor in the Roman college, and then undertook the profeſſorſhip of Hebrew. He died in the year 1680, in the eightieth year of his age. His works amount to twenty-two volumes folio, eleven in quarto, and three in octavo. Of theſe the following are mentioned as the principal, "Præluſiones magneticæ;" "Primitiæ gnomonicæ catoptricæ;" "Ars magna lucis et umbræ;" "Muſurgia univerſalis;" "Obeliſcus Pamphilius;" "Œdipus Ægyptiacus;" "Itinerarium extaticum;" "Obeliſcus Ægyptianus;" "Mundus ſubterraneus;" "China illuſtrata." Kircher was a man of very extenſive erudition, and of indefatigable induſtry, but the ſubjects of his ſtudious labours were more frequently curious than uſeful, and a viſionary fancy, rather than a cool judgment and accurate enquiry, too frequently guided his pen. Whatever wore the ſtamp of antiquity faſcinated his attention, and he had a particular paſſion for decyphering hieroglyphical characters, of which, if he could not diſcover the true meaning, he was always ready to give what he conceived to be a plauſible one. He had collected a rich cabinet of antiquities, curioſities, medals, mathematical inſtruments, rare animals, minerals, &c. for the muſeum of the Roman college, the arrangement of which was begun by himſelf, and finiſhed by father Bonanni, who publiſhed a deſcription of it at Rome in 1709, intitled "Muſæum Kircherianum, &c." Moreri.

The chief work of Kircher, which we ſhall notice here, is his "Muſurgia Univerſalis," dedicated to Leopold, archduke of Auſtria, afterwards emperor of Germany, who was not only a patron of muſic, but an excellent performer on the harpſichord. The Muſurgia is written in Latin, in ten books, occupying two volumes in folio, of which the firſt contains ſeven books, and the ſecond three.

The ſubjects which he treats are, chiefly, the following:—of the propagation of ſound;—of the elements of practical muſic;—of harmonics, or the ratio of ſounds;—geometric and algebraic diviſion of the monochord;—new experiments on the conſtruction of muſical inſtruments;—of melody, comprehending new ſecrets for producing every ſpecies of cantilena;—a parallel between the ancient and modern muſic, pointing out the dignity of the eccleſiaſtical canto fermo, and the means of arriving at the pathetic ſtyle;—of compoſition, or the combination of ſounds, and application of melody to poetical numbers and rhythms in all languages;—muſical wonders produced by latent means and new experiments of various kinds;—and laſtly, of the various derivations of muſic and the phyſical and artificial purpoſes to which it is, or may be, applied.

This work, which undoubtedly contains many curious and amuſing ſections, is, however, diſgraced by the author's credulity and ill-founded aſſertions.

Father Kircher has been very truly called "Vir immenſæ quidem, ſed indigeſtæ eruditionis," a man of immenſe, but indigeſted learning.

He was always careleſs of what he aſſerted, credulous, and inaccurate; collecting, without choice or diſcernment, whatever he found relative to the ſubject upon which he was writing; and adopting whatever was offered to him, true or falſe, provided it contained any thing marvellous.

His Muſurgia, publiſhed at Rome in 1650, is a large book; but a much larger might be compoſed in pointing out its errors and abſurdities. Yet with all its imperfections, it contains much curious and uſeful information, for ſuch as know how to ſift truth from falſehood, and uſefulneſs from futility; for a conſiderable portion of which, however, he was obliged to Père Merſenne, whoſe "Harmonie Univerſelle" appeared in 1536.

Kircher, Conrad, a German Proteſtant divine, who was ſettled at Augſburg, and was author of a very learned and laborious work, of conſiderable uſe in illuſtrating the genuine ſenſe of the holy ſcriptures. This work was intitled "Concordantia veteris Teſtamenti Græcæ, Ebræis vocibus reſpondentes πολυχρηστοι. Simul enim et Lexicon Ebraicolatinum, &c." printed at Franckfort, 1607, in two volumes, quarto. This work, which is a Hebrew Dictionary and Concordance, is ſtrongly recommended by father Simon when treating of the beſt methods to be adopted in undertaking any new tranſlation of the ſcriptures. It contains all the Hebrew words in the Old Teſtament, introduced in an alphabetical order, and underneath is the Greek verſion of them from the Septuagint, followed by a collection of the paſſages of ſcripture in which thoſe words are differently interpreted. Moreri.

KIRCHHAMB, in *Geography*, a town of Carinthia, on the borders of the Tyrol; 16 miles N.N.W. of Greiffenburg.

KIRCHHAYN, a town of Heſſe Caſſel, on the Wohra, containing more than 400 houſes; 35 miles S.S.W. of Caſſel.—Alſo, a town of Luſatia, on the Little Elſter; 14 miles S. of Luckau. N. lat. 51° 36′. E. long. 13° 35′.

KIRCHHEIM, a town of Wurtemberg, on the Lauter; 24 miles N.W. of Ulm.—Alſo, a town of Germany, the capital of a lordſhip belonging to the family of Fugger; 25 miles E.S.E. of Ulm.

KIRCHLAUTERN, a town of the duchy of Wurzburg; 8 miles N.W. of Bamberg.

KIRCHPACH, a town of Auſtria; 10 miles W.N.W. of Horn.

KIRCHPERG, a town of Bavaria; 13 miles N.W. of Moſburg.—Alſo, a town of Auſtria; 8 miles S.W. of Sonneberg.

KIRCHSCHLAGEN, a town of Auſtria, with a medicinal bath; 10 miles S. of Zwetl.

KIRCHWALSEDE, a town of Germany, in the county of Verden; 11 miles N.E. of Verden.

KIRCKMAN, Jacob, in *Biography*, an excellent harpſichord-maker from Germany, who came to England about the year 1740, and worked with the celebrated Tabel, as his foreman and finiſher, till the time of his death. Soon after which, by a curious kind of courtſhip, Kirckman married his maſter's widow, by which prudent meaſure he became poſſeſſed of all Tabel's ſeaſoned wood, tools, and ſtock in trade. Kirckman himſelf uſed to relate the ſingular manner in which he gained the widow, which was not by a regular ſiege, but by ſtorm. He told her one fine morning, at breakfaſt, that he was determined to be married that day before twelve o'clock. Mrs. Tabel, in great ſurprize, aſked him to whom he was going to be married, and why ſo ſoon? The finiſher told her, that he had not yet determined whom he ſhould marry, and that, if ſhe would have him, he would give her the preference. The lady wondered at his precipitancy, heſitated full half an hour; but he continuing to ſwear that the buſineſs muſt be done before twelve o'clock that day, at length ſhe ſurrendered;

dered ; and as this abridged courtſhip preceded the marriage act, and the nuptials could be performed at the Fleet or May Fair, " without loſs of time, or hindrance of buſineſs," the canonical hour was ſaved, and two fond hearts were in one united, in the moſt ſummary way poſſible, juſt one month after the deceaſe of Tabel.

Kirckman lived long enough to ſtock the whole kingdom with his inſtruments, and to amaſs great wealth. He had no children, but as many nephews hovering over him as a Roman pontiff.

Theodorus, the father of Iſocrates, was a flute-maker, who acquired wealth ſufficient by his employment not only to educate his children in a liberal manner, but alſo to bear one of the heavieſt public burthens to which an Athenian citizen was liable ; that of furniſhing a choir or chorus for his tribe, or ward, at feſtivals and religious ceremonies.

Each tribe furniſhed their diſtinct chorus ; which conſiſted of a band of vocal and inſtrumental performers and dancers, who were to be hired, maintained, and dreſſed, during the whole time of the feſtival : an expence conſiderable in itſelf, but much increaſed by emulation among the richer citizens, and the diſgrace conſequent to an inferior exhibition. The fluctuations of trade and public favour have rendered the buſineſs of boring flutes far leſs profitable at preſent, than it was in the time of Theodorus. But our harpſichord maker, Kirckman, who was known to be worth 90,000*l.* twenty years before he died, doubled the profits of his inſtruments, by becoming a pawnbroker and a uſurer ; obliging young heirs with money as kindly, and with as much liberality, as a Hebrew.

At a time when ruin ſtared harpſichord-makers in the face, by the rage with which muſical ladies were ſeized for the guitar, in preference to all other inſtruments, Kirckman hit on an ingenious expedient which ſaved himſelf from bankruptcy, and reſtored the harpſichord to all its former favour. (See GUITAR.) He did not live to ſee his excellent double harpſichords of ſixty or ſeventy guineas price, ſold at auctions for twelve or fourteen pounds, and the original purchaſers turn them out of their houſes as uſeleſs lumber. Bot ſuch are the viciſſitudes of this world, that our deſcendants will, perhaps, know as little about the pianoforte, as we do now of the lute or lyre. Kirckman is ſuppoſed to have died, in 1778, worth near 200,000*l.*

KIRCUBBIN, in *Geography*, a poſt-town of Ireland, in the county of Down and province of Ulſter, ſituated in the peninſula of Ardes, and 97 miles N. by E. from Dublin.

KIRCUDBRIGHT. See KIRKCUDBRIGHT.

KIRDORF, a town of Upper Heſſe ; 34 miles W. of Caſſel.

KIRENSK, a town of Ruſſia, in the government of Irkutſk, on the Lena. N. lat. 57° 40′. E. long. 108 14′.

KIRENSKOI, a town of Ruſſia, in the government of Irkutſk, on the borders, built in the year 1655, on a fertile ſoil, but now decaying ; 112 miles W. of Doroninſk.

KIRGANELIA, in *Botany*, from *Kirganeli*, a name in the Hortus Malabaricus for ſeveral ſpecies of *Phyllanthus*. Juſſ. 387. This genus is founded by Juſſieu on a ſhrub called in the iſland of Mauritius *Bois de demoiſelle*, and which Commerſon, in conformity perhaps to that appellation, deſtined to commemorate a botanical Neapolitan lady, Maria Angela Ardinghelli, who tranſlated the works of Dr. Hales into Italian. Our ſpecimen from Commerſon is marked *Ardinghelia*, and we cannot account for Juſſieu's paſſing this name over in ſilence. How far the genus is diſtinct from *Phyllanthus*, or from *Cicca*, with which latter its pulpy fruit nearly accords, we are not furniſhed with materials ſufficient to decide.

KIRGHISES, KIRGEISES, or *Kirguſes*, in *Geography*, a tribe of Tartars, who occupy about one-half of Independent Tartary, in the north. They are alſo called " Kaizaks," and are of undoubted Tartaric origin, ſo that they ſeem to live in perfect amity with their ſouthern brethren, the Uzbeks. Theſe Kirguſes are divided from Siberia by the great Stepp, or deſert of Iſſim, which is interſected by a river of the ſame name. On the weſt of the Kirguſes there ſtill remain ſome tribes of Kalmuks, though the moſt of them migrated from the Volga in 1770, when they ſought the protection of the Chineſe. The Kirguſes are ſuppoſed to derive their name from the founder of their horde ; and from time immemorial have been claſſed under three diviſions, of great, middle, and leſſer, though quite unknown to Europe till the Ruſſian conqueſt of Siberia, at which time they nomaliſed at the ſuperior Yeniſſey about the Yuſs, the Abakhan, &c. ; and in the year 1606, ſome tribes of them became ſubject to the Ruſſian empire, at the ſame time with the Barabinzes. From that period, by their puſillanimity, their faithleſſneſs, their frequent rebellion, and the ſubjugation of correlative nations, they have had the character of an extremely turbulent people. The revolutions which have thus been produced in their political condition, induced them to remove from the Yeniſſey to the Oby, and gradually farther to the weſt and the ſouth. They at preſent inhabit the prodigious deſert between the Ural and the Irtyſh, denominated by the Ruſſians the Kirghiſian Steppe, and bordering weſtward on the Caſpian and the government of Caucaſus, northwards upon the parts about the Ufa and the Tobol, and eaſtwards on the government of Kolhyvan. The great horde, defended by mountains on the ſouth and eaſt, aſſerted their independence in repeated conteſts with the Kalmuks of Soongaria. The middle and little hordes have acknowledged the Ruſſian ſovereignty ever ſince the year 1731 ; but having always been unfaithful allies, and a very piratical people, the Ruſſians have been obliged to conſtruct lines of ſmall forts along the frontier rivers. Each of theſe two hordes is eſtimated at 30,000 kibitkies, or families ; and ſuppoſing the great horde to contain 60,000, and each family to conſiſt of ſix perſons, the population of this wide region may amount to 720,000 ; but it probably does not exceed half a million. Their manners have been minutely deſcribed by Pallas. Their tents are conſtructed of a kind of felt ; their drink is kumiſs, made of acidulated mare's milk. The great horde is conſidered as the ſource of the two others. Being ſettled near the mountains of Alak, called alſo Ala Tau, this horde has been denominated the Alatanian Kirguſes. They lead a wandering life from the borders of the Upper Sirr, or Syrt, near Taſhkund, to the Steppe of Iſſim. Each horde has its peculiar khan ; but the middle horde, when Pallas approached this country, was contented with a prince, that acknowledged the khan of the leſſer horde ; and in 1777, this khan of the leſſer horde, whoſe election had been confirmed by Ruſſia, was called Nur Hali, a ſenſible and equitable prince. The features of the Kirguſes are Tartaric, with the flat noſe and ſmall eyes ; but not oblique like thoſe of the Monguls and Chineſe. They have horſes, camels, cattle, ſheep, and goats. Some individuals in the middle horde are ſaid to have 10,000 horſes, 300 camels, 3 or 4000 cattle, 20,000 ſheep, and more than 2000 goats ; while ſome in the leſſer horde were proprietors of 3000 horſes, and a proportionable number of the other animals. Their dromedaries furniſhed a conſiderable quantity of woolly hair, which was ſold to the Ruſſians and Bucharians, being annually clipped like that of ſheep. Their chief food is mutton, of the large-tailed ſort ; and ſo exquiſite is the lamb, that it is ſent from Orenburg to Peterſburg for the tables of the palace. The lamb-ſkins are the moſt celebrated after thoſe of Bucharia, being damaſked as it were by clothing the little animal in coarſe linen. But the wool of the ſheep being coarſe, is uſed only in domeſtic conſumption for felts and thick cloths. The ſteppes ſupply them with objects of the chace, wolves, foxes, badgers, antelopes, ermines, weazels, marmots, &c. In the ſouthern and eaſtern mountains are found wild ſheep, "ovis muſimon," the ox of Thibet, "bos grunniens," which ſeems to delight in ſnowy alps; with chanoys, chacalls, tigers, and wild aſſes.

"As the Kirguſians regard one another as brethren, they are obliged to employ ſlaves, being captives whom they take in their incurſions. Their dreſs is the common Tartaric, with large trowſers and pointed boots. A thin veſt ſupplies the place of a ſhirt, and they commonly wear two ſhort robes. The head is ſhaved, and covered with a conic bonnet. Their clothes are numerous and light, ſo that if they fall from horſeback, they are ſeldom hurt; their ſaddle-horſes are richly ornamented; but their riders are ſhort in ſtature, and their trowſers aſcend to the arm-pits, ſo that they reſemble a pair of pantaloons on horſeback. The ladies ornament their heads with the necks of herons, diſpoſed like horns. They appear to be Mahometans, though rather of a relaxed creed.

"The Kirguſians carry on ſome trade with Ruſſia. The chief traffic, which is wholly by exchange, is at Orenburg, but the middle horde proceed to Omſk. Sheep, to the amount of 150,000, are annually brought to Orenburg; with horſes, cattle, lambs, ſkins, camels'-wool, and camlets; ſometimes they offer ſlaves, Perſians or Turcomans. In return they take manufactured articles, chiefly clothes and furniture. From Bucharia, Khiva, and Taſhkund, they receive arms and coats of mail, which Ruſſia refuſes, in return for camels and cattle. They are extremely fond of the Kalmuk women, who long retain their form and charms; and often marry them, if they will adopt the Mahometan religion. There is an annual feſtival in honour of the dead. About the beginning of the 17th century this people, who were formerly Shamanians, became children of circumciſion, by the exertions of the prieſts of Turkiſtan; but Pallas, in 1769, found them addicted to ſorceries and other idle ſuperſtitions."

This barren country, now inhabited by the Kirguſes, has been the ſcene of conſiderable events: and it is not improbable, that its numerous deſerts and plains have been formerly more fertile, at leaſt in paſturage. However this be, theſe regions have been held by ſucceſſive nations of high repute, from the Maſſagetæ of early times to the Turks. Pallas, cited by Pinkerton in his Geog. vol. ii. Tooke's View of the Ruſſian Empire, vol. i.

KIRIAN, a mountain of Thibet. N. lat. 33° 12'. E. long. 79° 44'.

KIRIANI, a town of European Turkey, in Livadia; 8 miles S.E. of Athens.

KIRILOV, a town of Ruſſia, in the government of Novgorod; 52 miles N.W. of Vologda.

KIRIN, or **KIREN-OULA**, one of the three grand departments of the country of the Mantchew or Mandſhur Tartars, or Eaſtern Chineſe Tartary, bounded on the N. by the river Saghalien, on the E. by the ſea, on the S. by Corea, and on the W. by the province of Leao-tong. This country, which is rendered extremely cold by the number of foreſts that cover it, is ſcarcely inhabited; it contains only two or three ill-built cities, ſurrounded by plain mud-walls. The valuable plant "ginſeng" grows here; and the emperor ſends hither thoſe criminals, who are condemned to baniſhment by the laws. The capital is alſo called Kirin, or Kerin, and is ſituated on the river Songari, called at this place Kirin, which falls into the Saghalien or Amur, and was the reſidence of the Mantchew or Mandſhur general, who was inveſted with all the powers of a viceroy; inſpecting the troops and having authority over all the Mandarins; 500 miles N.E. of Peking. N. lat. 43° 48'. E. long. 126° 24'.

KIRKBY-LONSDALE, a market town and pariſh in the valley of Lonſdale, whence its ſecond, or diſtinctive name, on the bank of the river Lune, at the ſouthern edge of the county. It is 12 miles ſouth-eaſt of Kendal, and 252 north of London. In the year 1800, the town contained 260 houſes, and 1283 inhabitants. At this place Kirkby, biſhop of Carliſle, repulſed the Scots. He was a native of this town. Over the Lune is a curious bridge of three arches, and in the market place is a croſs of rather ſingular character. The church is a large building, 120 feet in length, by 102 in breadth. In the church library is the following inſcription: "This library, pulpit, and new loft, together with the ſchool-houſe, were founded by Mr. Henry Wilſon, of Underly, who gave to the colleges 1000*l.* beſides 35*l.* yearly to ſeven poor ſcholars going to Queen's-college in Oxford; and to this church and ſchool 240*l.*; to the poor of Kirkby-Lonſdale lordſhip 500*l.*; beſides many other gifts to pious uſes in other places: by all which, he, being dead, yet ſpeaks." About two miles from the town, towards Lonſdale, is Borrow-hall, the ſeat of Thomas Fenwicke, eſq. It is ſeated in a narrow dale, and nearly ſurrounded by mountains. At Kirkby are a weekly market and three fairs, annually. Nicholſon and Burn's Hiſtory, &c. of Weſtmoreland, 2 vols. 4to. 1777.

KIRKBY-*Moorſide*, a market town and pariſh in that part of Yorkſhire called the North-Riding, England, as its name implies, is ſeated among the moors, or mountains, which abound in that part of the iſland. This town is 28 miles N. of York, and 233 from London. In the year 1800, it contained 287 houſes, and 1396 inhabitants. By the ſtatement in Domeſday-book the manor of this place, then called Chirchabi, was one of the heads of the ancient family of Stutevilles, one of whom founded an abbey at Keldholone, about one mile from this town. On the top of a hill, to the north-eaſt of Kirkby, is the ſcite of an ancient building, ſaid to have been the ſeat of the abovenamed family, who continued to reſide here till the reign of Henry III. The Nevilles, lords, Latimer, had alſo a manor-houſe here. George Villiers, the diſſolute duke of Buckingham, part of whoſe eſtates lay here, and at Helmſley, where he had a ſeat, died in a miſerable condition, in a mean houſe in this town. Pope, in his Moral Eſſays, has characteriſed the place, and ſeverely reprobated the man in lines of peculiar force and ſeverity.

> "In the worſt inn's worſt room, with mat half-hung,
> The floors of plaſter, and the walls of dung,
> On once a flock-bed, but repaired with ſtraw,
> With tape-tied curtains, never meant to draw,
> The George and garter dangling from that bed,
> Where tawdry yellow ſtrove with dirty red,
> Great Villiers dies."

About one mile weſt of the town is Kirkdale church, an ancient edifice, ſeated in a moſt romantic ſituation, and noted for an inſcription over the ſouth door. An account of this was written by Mr. Brooke, for the Society of Antiquaries, who publiſhed the ſame with a print in vol. v. Archæologia.

KIRKBY-*Stephen*, a market town and pariſh in the county of Weſtmoreland, England, is ſeated on the weſtern bank of the river Eden, in a mountainous part of the country. The town conſiſts of one ſtreet, running north and ſouth, at the extremities of which are proſpects of the Helbec and Wildbore mountains. Formerly here was a ſpacious area for a market place, which has been nearly covered with buildings. A market is held here every Monday, and is chiefly occupied by the manufacturers and dealers in ſtockings. This town is four miles from Brough, and 266 north of London. The pariſh church is a large building, and contains ſome old monuments. Adjoining it is a handſome parſonage-houſe, built by the late Dr. Chaters, prebend of Durham, to whoſe family the living belongs. In the town is a free grammar-ſchool, which has two exhibitions.

Near Kirkby are the ruins of Pendragon-caſtle, which was formerly the ſeat of the lords Clifford: and about one mile ſouth of the town are Wharton-parks, the ancient ſeat of the Wharton family. This place is deſerted, and the houſe fallen to decay. Nicholſon and Burn's Hiſtory, &c. of Weſtmoreland, 2 vols. 4to. 1777.

KIRKCALDY. See KIRCALDY.

KIRK-CLISSA, or KIRKLEESAN, a town of European Turkey, in the province of Romania; formerly called "Teſſaraconta Eccleſiæ," or forty churches; at preſent it has neither walls nor churches, and but few Chriſtian inhabitants. It is inhabited by many Jews, who are chiefly employed in making butter and cheeſe, for which they have a ready market among their friends at Conſtantinople; 30 miles E. of Adrianople.

KIRKCUDBRIGHT, the chief town of one of the ſtewartries into which the county or ſhire of Galloway in Scotland is divided. Kirkcudbright is ſituated on the Solway Frith, near the mouth of the river Dee, and, excepting as a market town for the adjacent diſtrict, is not eminent for any ſpecies of commerce, manufacture, or trade. The harbour is ſafe, with good anchorage, and ſheltered from all winds; but being a tide-harbour is well fit for veſſels that can take the ground. It was anciently a burgh of regality, and held of the Douglaſſes, lords of Galloway, as ſuperiors. On the forfeiture of the earl of Douglas, laſt lord of Galloway, in 1455, it was by James II. erected into a royal burgh, and is now governed by a provoſt, three bailiffs, and town-council. In the environs are many traces of ancient camps, Britiſh and Roman. Its caſtle, the mounts and dikes of which are ſtill remaining, was evidently conſtructed to defend the entrance of the river Dee. In 1801, the number of inhabitants was 2380; 28 miles S.W. of Dumfries. N. lat. 54° 55′. W. long. 4° 5′.

KIRKCUDBRIGHTSHIRE, a diviſion or county of Scotland, called the *Stewartry of Kirkcudbright*, forms the eaſtern, and by far the moſt extenſive portion of Galloway. The latter name was anciently applied to an independent principality, which included the greater part of Ayrſhire and Dumfriesſhire, but is now limited to the two counties of Wigton and Kirkcudbright. The ſtewartry is ſituated between 54 40′ and 55° 20′ of N. latitude, and contains 882,57 ſquare miles, on 449,313 Scotch acres. It is bounded on the ſouth by the Solway frith, which divides it from England; by Dumfriesſhire and the eſtuary of the Nith on the eaſt, by the ſame county and Ayrſhire on the north, and by the latter, with the ſhire of Wigton and the bay of that name, on the weſt. Kirkcudbright has no ſubdiviſions, except that four of the moſt northerly pariſhes, Cavefairn, Dalry, Kells, and Balmaclellan, are commonly called the diſtrict of Glenkens. The aſpect of the country, however, affords a very natural diviſion into two parts. If a line be drawn from the centre of Irongray pariſh to the Gatehouſe of Fleet, all to the weſt and north, with little exception, is ſo mountainous, that it may be very properly termed a Highland diſtrict; while the ſouth and eaſt exhibit a fine champaign and cultivated country. The pariſhes are 28 in number, the whole population of which, according to the parliamentary returns of 1800, amounted to 29,211 perſons. Kirkcudbright, Gatehouſe of Fleet, Creetown, Caſtle Douglas, and New Galloway, are the principal towns. Beſides theſe there are ſeveral conſiderable villages, which it will not be neceſſary to particularize in this place. Kirkcudbright is the county town, and a royal borough, as is alſo New Galloway. Creetown, which is ſituated at the upper part of Wigton bay, has lately been conſtituted a borough of barony: ſo likewiſe has Caſtle Douglas, a thriving village, not much above thirty years old, but which now contains nearly a thouſand inhabitants. Some attempts have been made to introduce the cotton manufactures here; but the high price of coals oppoſes an almoſt unſurmountable impediment to ultimate ſucceſs. The ſame circumſtance operates, in no inconſiderable degree, againſt the eſtabliſhment of manufactures, requiring large quantities of fuel, in every part of the ſtewartry. Thoſe villages which are ſituated on the coaſt, however, being ſupplied with coal from England, have made more rapid progreſs, even in the manufacture of cotton, than could reaſonably have been expected.

Though, as mentioned above, the greater part of this ſtewartry is hilly; yet, upon the whole, it contains few mountains remarkable for their ſize or height. The moſt lofty of thoſe in the weſtern diviſion is that called Cairnſmuir, within the pariſh of Minigaff, which riſes 1737 feet above the level of the ſea, and is ſurrounded by ſeveral others of equal altitude, though leſs ſtriking to the eye, from the greater elevation of the circumjacent grounds. The hill called Cairnbarrow, in the pariſhes of Anworth and Kirkmabreck, is 1100 feet in height, very little encumbered with rocks, and commanding a very beautiful and extenſive view, not only of the ſtewartry of Kirkcudbright and the ſhire of Wigton, but alſo of the Iſle of Man, and the oppoſite coaſts of England and Ireland. Crowfell, which terminates a lofty ridge of hills in the ſouth-eaſtern part of the county, was formerly one of the alarm-poſts for giving notice of the incurſions of the Engliſh. The elevation of Douglas-Cairn, on the ſummit of this mountain, is ſaid to be about 1900 feet, and Knockendoch, which ſurmounts the north wing, 1500 feet above the level of the ſea. From this range of hills, the country deſcends towards the ſhore in the moſt regular and beautiful manner, exhibiting a delightful view of well-incloſed fields in a ſtate of excellent cultivation. Immediately upon the ſea, the ſcene is of a very different deſcription: the coaſt here being remarkably bold and rocky, diſcloſes from the ſand, at low water, ſome grand and picturesque appearances; tremendous and rugged precipices; high and pointed ſpires, under the baſes of which are paſſages reſembling the form of rude arches; large and regular amphitheatres, leading into caverns, the extent of which no human being has yet ventured to explore.

At this point, and indeed on almoſt every part of the coaſt of this county, a great variety of marine plants are found. Among theſe the moſt remarkable are *ſamphire*, uſed for preſerves or pickles; and the water *polypus*, or *ſea anemone*, which naturaliſts conſider as the connecting link between the animal and vegetable kingdoms: for, though deſtitute of the faculty of locomotion, it poſſeſſes a degree of irritability and ſenſation much ſuperior to any other known vegetable production. For a particular account of this very curious ſubject, ſee the article ANEMONE.

The ſtewartry of Kirkcudbright gives riſe to ſeveral rivers, beſides a number of ſmaller ſtreams. The moſt remarkable of theſe are, the Orr or Urr, the Ken, the Dee, the Fleet, and the Cree. The Urr, which is alſo called the Uurr or Whurr, flows from a lake of the ſame name, in the pariſh of Balmaclellan, ſituated in the diſtrict of Glenkens. Hence it runs almoſt directly ſouth, and falls into the Solway frith near the village of Colvend. This river is navigable for veſſels of 80 tons burden, to the diſtance of eight miles from its mouth. By means of it, therefore, coals, lime, and other articles, imported from England, are conveyed thus far up the county, and hence diſtributed to the more interior parts. The dangers and difficulties, however, attending this trade, owing to the numerous ſand-banks in the channel of the Solway, which are every day becoming more extenſive, oppoſe powerful obſtacles to its increaſe, either here or at any other port on this coaſt. One advantage poſſeſſed by this river, is a large baſon called Gibbs-hold, which it forms within land, about two miles from its confluence with the ſea, where large veſſels often ſecure a ſafe retreat during ſtormy weather. The Ken, the ſecond river above mentioned, takes its riſe alſo in the northern part of the ſtewartry, near the borders of Nithſdale. Flowing hence, at firſt in a ſouth-weſterly direction, it ſeparates the pariſhes of Dalry and Caveſphairn; then proceeding towards the ſouth, with an inclination eaſtwards, it falls into Kenmuir-loch, and forms a junction with the Dee. This river begins its courſe among the hills in the north-weſtern diviſion of the county. After receiving the Ken, it flows towards the Solway frith, into which it diſcharges itſelf, after paſſing the town of Kirkcudbright. The Dee is remarkable both on account of its breadth and depth, particularly at the place called Kenmuir-loch. It is navigable to the village of Tongland, two miles above the town of Kirkcudbright; and, were it not for the number of rocks and ſhallows with which it abounds beyond this point, might be made the means of introducing an inland navigation to the very centre of the county. A ſurvey was made ſome years ago, with a view to ſupply the defects of the river by a navigable canal, but the plan was not ſucceſsful in meeting the approbation of parliament. A ſmall canal, however, has been cut by the ſteward of the county between the Dee and a lake called Carlinwark-loch, which is ſituated above the ſhallows of Tongland, and furniſhes marle in great abundance. The Fleet and the Cree are alſo navigable for ſeveral miles. The former riſes out of a lake called Lochfleet, and pours its waters into the bay of Wigton, at a ſhort diſtance from the village called Gatehouſe-of-Fleet. The Cree takes its riſe among the mountains which ſeparate the northern part of the county from Ayrſhire, forming, for ſeveral miles of its courſe, the boundary of the ſtewartry. It ſerves as a continuation of the navigation of Wigton bay, and produces fiſh of various kinds, particularly ſalmon, in great plenty.

Few counties can boaſt of a greater number of lakes or lochs than Kirkcudbright. With the exception, however, of Lochken, or Kenmuir-loch, already mentioned as formed by the waters of the Ken and Dee, which is ten miles in length, they are, generally ſpeaking, of ſmall extent. The pariſh of New Abbey, in the eaſtern diſtrict of the ſtewartry, contains three lakes, Lochkendan, Lochend, and Craigend, the two laſt of which are nearly a mile long, and more than one half of a mile broad. Lochrutton, which gives name to a pariſh, is of ſimilar dimenſions. In the centre of it is an artificial iſland, nearly of a circular form, and ſomewhat more than half a rood in circumference. It is compoſed, on the ſurface, of a vaſt collection of large ſtones. In Balmaclellan pariſh there are five lakes. One of theſe, though very ſmall, is famous for a particular ſpecies of trout, many of which weigh ten Engliſh pounds each. Carlingwark loch, in the pariſh of Kelton, formerly covered 116 acres, but ſince the canal joined it to the Dee, it has been reduced to leſs than 80. This loch contains an inexhauſtible fund of the very beſt ſhell marle. Before its extent was contracted, there were two iſles in it, upon which the country people ſay two churches or chapels formerly ſtood. Indeed, the tradition in the neighbourhood is, that there had been a town in the loch, which was drowned or ſwallowed up. The diſcovery of an iron forge, on the ſouth iſle, ſome years ago, ſeems to give ſome probability to this idea. It was ſurrounded by the remains of a ſtone building or rampart, and communicated with the oppoſite ſide of the lake by a cauſeway or road of ſtones, ſecured by piles of oak wood, and having an opening in it, ſuppoſed to have been for a drawbridge. Several canoes, hollowed by fire, after the manner of the American ſavages, and a large iron mallet, have alſo been found in this loch. Beſides thoſe alread noticed, there are a number of ſmaller lakes in different parts of the county. None of them, however, deſerve to be particularized except Loch Kohn or Koan, which is ſituated in the pariſh of Croſſmichael. It extends over 40 acres of ground, and is from 10 to 22 fathoms deep. No rivulets or ſtreams flow into it, nor indeed has it any viſible ſource of ſupply excepting the clouds. It never freezes but during the moſt intenſe froſt.

This county contains a variety of minerals and mineral ſprings. The want of coals, however, and the difficulty of ſhipping them, in general prevents the former from being turned to advantage. A rich iron-mine, in the pariſh of Kerrick, was wrought for ſome time by an Engliſh company, but they were at laſt obliged to abandon it. A lead mine, however, has been opened, and is ſtill ſucceſsfully carried on in the weſtern diviſion of the ſtewartry. Both theſe metals are found in abundance in many other parts. Appearances of copper have alſo been obſerved; but it is not known that any trial of it has been made. There is alſo great plenty of limeſtone, though of an inferior quality, as yet untouched; and a vaſt fund of excellent ſhell-marle for manure, which is too much neglected by the farmers, and lime exported in its ſtead, at a very conſiderable expence.

The remains of antiquity in this county are ſtill very numerous, and many of them in no ſmall degree intereſting. The abbey of Sweetheart, or New Abbey, in a pariſh of that name, is a beautiful lofty building in the light pointed ſtyle. It was founded in the 13th century by Devongilla, the mother of John Bahol, king of Scotland. This ſtructure ſtands in a fine level field about 20 acres in extent, which is encloſed by a ſtone wall ten feet high, built of granite ſtones, ſome of which are of immenſe ſize.

Hil's caſtle ſituated near Lochrutton, and about three miles from Dumfries, was one of the many fortified places which belonged to the Douglas family, as lords of Galloway. Edward the firſt lodged here, on his way to Kirkcudbright in the year 1300. A tower and a few ſmall buildings, which ſurround a ſquare court, are all that remain of this edifice. Buittle caſtle, the favourite reſidence of king John Bahol, is ſtill to be ſeen in the pariſh whence it derives its name. The hand of time, however, has nearly levelled it with the ground. An old coin was diſcovered here ſome years ago, bearing the date 1220. This neighbourhood is remarkable for a number of vitrified forts, the nature and formation of which antiquaries have found it difficult to determine; and reſpecting which various opinions are entertained.

One of theſe forts appears alſo on the top of a ſmall hill in the pariſh of Anworth. The ſummit forms an area of thirty paces long and twenty broad, and is nearly ſurrounded by an irregular ridge of looſe ſtones, intermixed with large portions of vitrified matter. Theſe ſtones are of the common blue ſchiſtus kind, and from the manner in which they lie ſcattered about, it would ſeem that the fort has either been deficient in regularity of ſtructure originally, or been intentionally demoliſhed. Some coins of Edward VI. and queen Elizabeth were lately found near this ſpot. Thrieff caſtle, which is ſituated in an iſland formed by the river Dee, is famous for having been the chief reſidence of the Douglaſſes. A great ſquare tower is all that remains of the once proud and lofty manſion of theſe celebrated warriors.

Lincludden college was founded in the reign of Malcolm IV. It was originally a Benedictine nunnery, but afterwards converted into a monaſtery, in the chancel of which is an elegant monument, erected in honour of Margaret, daughter of Robert III. and wife to one of the earls of Douglas. The college is ſituated upon a ſmall ſtream called Cluden, about two miles from its junction with the river Nith, and preſents in its ruins many marks of its former magnificence and grandeur.

Dundrennan Abbey, which ſtands in the pariſh of Kerrich, about a mile and a half from the Solway frith, is alſo a fine ruin. It was founded in the year 1142, and has acquired celebrity as the aſylum of Mary queen of Scots after the battle of Langſide. Beſides theſe, the ſtewartry contains ſeveral other curious remains of antiquities. The moſt remarkable are the *rocking ſtone*, in the pariſh of Kells, which is ſo nicely balanced, that it can be moved by the ſlighteſt preſſure; the monaſtery of Tongland, the Dun of Bareland, the moat of Urr, probably the largeſt work of the kind in Scotland, and the caſtle of Kennuir, ſituated near the lake of that name. To theſe may be added the tomb of king Galdus, called Cairnholy, ſaid to have been erected to commemorate the fall of that prince in a battle between the Scots and Picts about the year 82, or, according to another tradition, in memory of biſhop Whitehorn and other gentlemen, who were killed in an action with the Engliſh about the year 1150. Which of theſe accounts is the correct one it is perhaps impoſſible to determine. This, however, is certain, that this ſtewartry was the ſcene of many ſanguinary conteſts, particularly during the invaſions of the Romans, and during the contentions of Bruce and Baliol.

The principal country ſeats in the ſtewartry are thoſe of the earl of Selkirk, Mr. Murray of Broughton, and a large houſe built by the late ſir Samuel Hannay, the exterior of which is wholly formed of the moſt beautiful granite. The chief products of this diſtrict, beſides thoſe already noticed, are ſheep and black cattle for the Engliſh market. It has given birth to few remarkable characters, except Thomas Gordon, famous for his writings in the Bangorian controverſy, and Paul Jones the celebrated pirate, who ſpread ſo much terror over different parts of the coaſt during the American war.

A very intereſting and well written account of this diſtrict, was publiſhed in 1810, entitled "General View of the Agriculture of Galloway; comprehending two counties, *viz.* the Stewartry of Kirkcudbright, and Wigtonſhire," by the Rev. Samuel Smith, miniſter of Borgue.

KIRKHAM, a ſmall market town and pariſh in the hundred of Amounderneſs, Lancaſhire, England, is ſituated in a tract of country called the File-lands, between the Ribble and another ſmall river. It is 22 miles diſtant from Lancaſter, and 225 from London; and contained, according to the return under the population act of 1800, 362 houſes, inhabited by 1561 perſons. The chief trade is in coarſe linen and ſail cloth. Here are a well endowed free-ſchool for the education of 100 boys, and a charity-ſchool for 40 girls: two fairs are held annually, and a market weekly on Tueſdays. The Lancaſter canal paſſes by this town, from Liverpool. One mile weſt of Kirkham is Ribby-hall, a large well built brick manſion, belonging to Joſeph Hornby, eſq. Beauties of England, vol. ix.

KIRKI, a town of Grand Bucharia; 100 miles S.E. of Bokhara.

KIRKIE, a town of Hindooſtan, in the circar of Chandaree; 24 miles S.S.W. of Chatterpour.

KIRKINTULLOCH, a ſmall town of Dumbartonſhire, ſituated about nine miles from Glaſgow, and four from Kilſyth. The Forth and Clyde canal is carried over the ſmall river Logie, about half a mile from this place, by an aqueduct of a ſingle arch of great dimenſions, which was conſidered at the time it was built as a very extraordinary ſpecimen of maſonic art. Kirkintulloch is not a place of any importance, but the country round it is populous and well cultivated, and many reſpectable land-holders of middling fortunes reſide upon their eſtates, and contribute much to its improvement. It is a burgh of barony, governed by two bailiffs, annually choſen. In 1801, the number of inhabitants was 3210, of whom 1785 were employed in trade and manufacture. Its manufactures are linen and cotton.

KIRK-MOTE, a ſynod. See SYNOD.

Sometimes the word is alſo taken for a meeting in the church, or veſtry. See MOTE.

KIRK-OSWALD, in *Geography*, a market town and pariſh in the ward of Leath and county of Cumberland, England, is ſeated in the pleaſant vale of Eden, and is a place of ſome note in the early annals of the kingdom. The church dedicated to St. Oſwald, the king and martyr of Northumberland, is a large irregular building, evidently erected at different periods; probably at the expence of the Dacre family, whoſe arms appear in various parts of the building. Here is an handſome monument raiſed to the memory of ſir Timothy Featherſtonehaugh, an active ſupporter of king Charles I. He was beheaded, and his two ſons were ſlain in the battle of Worceſter. A deſcendant of the ſame name reſides near this town. At the weſt end of the church iſſues a copious ſpring of excellent water; which, in the reign of Monachiſm, was deemed to poſſeſs miraculous powers. The belfry tower ſtands on an eminence at ſome diſtance from the church. In the town is an endowed free ſchool, and a meeting houſe for Diſſenters. On an elevated ſpot, about a quarter of a mile from the town, are the ruins of a caſtle, which Sandford deſcribes "as the faireſt fabric that ever eye looked upon." At preſent only a ſmall tower and ſome vaults are all that remain: but originally it was extenſive, of a ſquare form, and bounded on three ſides by a foſs, and on the fourth by a brook. Hugh de Morville procured a licence from king John to incloſe his woods at Kirk-Oſwald, to fortify his manor houſe, and to have there an annual fair and a weekly market. This Hugh was one of the murderers of archbiſhop Becket; and the weapon of aſſaſſination was kept for a long time in this fortreſs.

On a hill about three miles from Kirk-Oſwald, near the village of Little Salkeld, is a noted Druidical monument, called "Long Meg and her Daughters." It conſiſts of a circular arrangement of unhewn ſtones; the circumference of the circle is about 350 yards. Some of the ſtones are 10 feet high, and from 12 to 15 feet in girth. The ſtone called Long Meg, about 17 feet out of the circle, is 18 feet in height, and nearly 14 feet in circumference. Pennant's Tour to Alſton-Moor, 4to Hutchinſon's Hiſtory, &c of Cumberland, 2 vols. 4to. Beauties of England, vol. xi. 8vo. 1802.

KIRK-SESSIONS, the name of a petty eccleſiaſtical judicatory in Scotland. Each pariſh, according to its extent is divided into ſeveral particular diſtricts, every one of which has its own elder and deacon to overſee it. A conſiſtory of the miniſters, elders, and deacons of a pariſh, form a kirk-ſeſſions.

Theſe meet once a week, the miniſter being their moderator, but without a negative voice. It regulates matters relating to public worſhip, elections, catechiſing, viſitations, &c. It judges in matters of leſs ſcandal; but greater, as adultery, are left to the preſbytery; and in all caſes an appeal lies from it to the preſbytery.

KIRKSTALL, in *Geography*, a village in Yorkſhire, was formerly a place of note, and adorned with a moſt ſplendid and richly endowed abbey, of which the ruins of the church preſent a grand and intereſting maſs of ancient eccleſiaſtical architecture. It was founded in the reign of king Stephen for Ciſtercian monks. Parts of the original building ſtill remain: the columns of the nave are maſſive, and ſupport heavy, pointed arches. The ſide aiſles are nearly perfect, as are alſo the nave, tranſepts, and choir. At the weſt front is a fine door-way with a ſemicircular arch, and above it two handſome windows, curiouſly ornamented. On the ſouth ſide are ſeveral ruinous apartments, among which the dormitory and ſome other rooms are ſtill covered in. "Kirkſtall will be found highly intereſting to the pictureſque traveller, as it affords a variety of ſubjects for the pencil, both architectural, and where the ruins will unite finely with the landſcape." This place is three miles from Leeds, and 191 from London. Dayes' Excurſions in Yorkſhire, 8vo. 1805, in which work is a neatly engraved view of Kirkſtall, and an intereſting account of the pictureſque features of the country around that grand pile of ruins.

KIRKULETI, a river of Aſia, which riſes in the mountains of Armenia, and traverſing the principality of Guriel, runs into the Black ſea. N. lat. 41° 55'. E. long. 41° 25'.

KIRKUR, a town of Hindooſtan, in Rohilcund; 35 miles S. of Bereilly.

KIRKWALL, the chief or principal town of the Orkney iſlands, Scotland, is ſeated on the northern coaſt of the Main-land, in the latitude of 59° 9' N. and in the longitude of 2° 30' W. of Greenwich, towards the S.E. ſide of the bay of the ſame name; and is divided into the old town that bends along the bay, and the new, which ſtretches a conſiderable way to the ſouth. Its original name appears, from ancient authorities, to have been Kirkiovog, or the kirk on the bay. The town has only one ſtreet, nearly a mile long, with many excellent houſes ranged on each ſide, which, for the ſtyle of their building, and the manner in which they are finiſhed and furniſhed, may bear a compariſon with thoſe of any ſmall town in the kingdom. Several gentlemen of property reſide here, and alſo a conſiderable number of ſhopkeepers; but the bulk of the people is compoſed of tradeſmen, boatmen, ſervants, and day-labourers: and when the population of the country pariſh, which makes a fourth of the whole, is conſidered, the united pariſhes of Kirkwall and St. Ola, in which are two eſtabliſhed clergymen, contain, the former about two thouſand, the latter five hundred inhabitants. The town was erected into a royal borough by charters from the Scottiſh ſovereigns, confirming all its ancient privileges: and all its rights and advantages were at laſt ſolemnly ratified by act of parliament. The government is veſted in a provoſt, four magiſtrates, a dean of guild, a treaſurer, and fifteen other members, who together compoſe a council. In this town, the ſheriff, the admiral, the commiſſary, and the juſtice of peace courts, are alſo occaſionally convened for the adminiſtration of law; and for the cognizance and regulation of eccleſiaſtical matters: the three preſbyteries, of which the provincial ſynod is compoſed, and ſometimes the ſynod itſelf, meet at leaſt once a year, or oftener, according to circumſtances. Here are alſo a cuſtom-houſe, a poſt-office, and a ſtore-houſe, into which are collected the rents, that are moſtly paid in kind, of both the biſhopric and earldom, which are generally let on leaſe to merchants, who ſometimes diſpoſe of them here, and ſometimes ſend them out of the country. Kirkwall, with the four northern burghs, Wick, Dornock, Tain, and Dingwall, chooſe a burgeſs to repreſent them in the Britiſh parliament. The principal modern building is a town-houſe, divided into apartments reſpectively appropriated to a priſon, an aſſembly-hall, a court of juſtice, and a lodge of freemaſons. At a ſmall diſtance are ſchool-houſes for the ſeveral branches of education. Theſe ſtructures, however, are but trifling, compared with the relics of the biſhop and earl's palaces, the caſtle, once a place of great ſtrength, and the venerable cathedral of St. Magnus: but for nothing is the town more celebrated than for its excellent harbour, which is broad, ſafe, and capacious, with a bottom of clay ſo firm, and a depth of water ſo convenient, as to afford anchorage for ſhips of a large ſize, and in great numbers. Towards the ſouth-eaſt ſide, are ſtill viſible the veſtiges of a rude temporary fort, thrown up on an emergency by Oliver Cromwell; and on the oppoſite ſide another of the ſame kind has been evidently marked out for co-operation in either annoying or protecting the harbour. Moſt of the lands in the pariſh of St. Ola, which ſurround Kirkwall, formerly made part of the temporalty of the biſhopric of Orkney, and were ſeparated at the Reformation, or on the proſpect of the abolition of epiſcopacy. Some additional particulars relating to this town, and to places in its vicinity, will be given in a ſubſequent article, under the word Orkneys. In the interim, the reader is referred to an intereſting volume publiſhed in 1808, entitled "Hiſtory of the Orkney Iſlands," &c. by the Rev. Dr. Barry: ſecond edition, with corrections and additions, by the Rev. James Headrick.

KIRLAK, an iſland of a triangular form in the Frozen ſea, about 240 miles in circumference. N. lat. 71° 30' to 72° 15'. E. long. 121° to 126°.

KIRMANSHA, or Kirmoncha, a town of Perſia, in the province of Irak; 145 miles N.E. of Bagdad. N. lat. 34° 35'. E. long. 46° 30'.

KIRN, a town of France, in the department of the Rhine and Moſelle, and chief place of a canton, in the diſtrict of Simmern; 17 miles W. of Creutznach. The place contains 1240, and the canton 4084 inhabitants, in 18 communes. N. lat 49° 47'. E. long. 7° 26'.

KIRNBERGER, John Philip, in *Biography*, a German muſician, much reſpected as a learned contrapuntiſt, was born in 1721, at Saalfeld, in Thuringia, a province of Saxony; at the age of eighteen he went to Leipſic, where he ſtudied under Sebaſtian Bach till 1741, when he went into Poland, where he was admitted into the ſervice of ſeveral Poliſh princes; and afterwards appointed director

rector of the muſic at a convent. In 1751, he went to Dreſden, where he ſtudied the violin under Fickler, and ſome time after entered into the ſervice of the king of Pruſſia, as a performer on that inſtrument. About the year 1756, he was appointed court muſician to her royal highneſs princeſs Amelia of Pruſſia. The harpſichord, which was his firſt, was likewiſe his beſt inſtrument, and his compoſitions for that and the organ were very numerous, as well as his polemical and theoretical writings. Beſides theſe publications, he was editor of four collections of harpſichord pieces, which included ſeveral of his own; and of all theſe he marked the fingering according to the rules of Emanuel Bach.

During the laſt years of his life, his knowledge in the laws of harmony made him regarded as the Pepuſch of Berlin; but being gifted with leſs temper than the venerable organiſt of the Charter-houſe, his critical quarrels kept his mind in perpetual perturbation. Naturally grave and auſtere, he was ſaid to be rendered more ſour by oppoſition and diſappointment.

His fugues and church muſic are models of correct counterpoint, but too elaborate and dry for the public. He never ſeems to have aſpired at, or thought of, facility, grace, and elegance. His ambition ſeems to have been to ſhew what *could* be done by labour and ſtudy, which had never been attempted before, and which, when achieved, amuſed the eye much more than the ear. He ſeems to have created giants which none could vanquiſh but himſelf. His muſical inſtitutes manifeſt great meditation and ſcience; but will be intelligible to none but thoſe who have already advanced far into the myſteries of counterpoint.

This profound muſician, whoſe knowledge in all the laws and ſubtleties of canon, fugue, and modulation, were indiſputable, but who, in his latter days, appeared to be more ambitious of the character of an algebraiſt than a muſician of genius, now and then ſuffered fine paſſages, and even whole movements, to eſcape him; which proves that, like his great maſter Sebaſtian Bach, if he had condeſcended to be leſs artificial, he was poſſeſſed of the means of exciting, by his abilities, delight as well as wonder. See his Inſtitutes, pp. 242 and 243, where the compoſition is admirable, clear, neat, and pleaſing. This able profeſſor died at Berlin, in 1773, at the age of ſixty-two years.

KIRNEE, in *Geography*, a town of Hindooſtan, in Bahar; 48 miles S.W. of Arrah.

KIROLL, a town of Hindooſtan, in Dooab; 28 miles N. of Etaya.

KIROO, a town of Bengal; 24 miles N. of Tomar.

KIRRIEMUIR, commonly pronounced Killamoor, a town and pariſh of Angus-ſhire, Scotland, is built on the S.W. ſide of a hill near a romantic glen, through which flows the ſmall river Gairie. This town is 16 miles from Dundee, 20 from Arbroath, ſix from Forfar, and 75 from Edinburgh. Here is a large weekly market; and the town contains ſome conſiderable manufactories for Oſnaburghs and coarſe linens. In the year 1792, the value of theſe goods, manufactured here, and in the immediate neighbourhood, was about 30,000*l.* ſterling. The town is a burgh of barony, but the date of its charter is unknown. In the population report of 1800, this town was returned as containing 949 houſes, and 4421 inhabitants; but it is preſumed this total muſt include the whole pariſh, as in a previous cenſus for 1793, the town is ſaid to have compriſed only 1584 inhabitants. The pariſh conſiſts of an area meaſuring about eight miles in length by ſix in breadth, and is beautifully diverſified by hills, dales, woods, and plains. At Kinnordy, Mr. Lyall has a handſome ſeat, with fine plantations; and at Clova, the ſeat of Mr. Ogilvie, the woods are abundant, and ſerve to beautify the aſpect of the country. At Invercarity is a large caſtle formerly belonging to the Ogilvies. Sinclair's Statiſtical Account of Scotland.

KIRSANAFF, a town of Ruſſia, in the government of Tambof, ſeated on the Vorona, which falls into the Khoper; 56 miles S.E. of Tambof.

KIRSHEHR, a town of Aſiatic Turkey, in Natolia, and capital of a diſtrict; formerly a conſiderable city, and called "Diocæſaria." In the vicinity ſalt is manufactured; 84 miles N. E. of Cogni. N. lat. 39° 12′. E. long. 34° 13′.

KIRSHETCH, a town and diſtrict of the government of Volodimir, in Ruſſia, ſeated on a rivulet that falls into the Kliaſma.

KIRSOVA, a town of European Turkey, in Bulgaria, on the Danube; 30 miles S. of Galatz. N. lat. 44° 50′. E. long. 27° 30′.

KIRSTENIUS, Peter, in *Biography*, a learned phyſician, was born at Breſlau, in Sileſia, on the 25th of December, 1577, where his father was a merchant. He loſt his parents when he was very young, but his guardians took good care of his education, intending him for his father's profeſſion. He early evinced, however, a paſſion for letters, which they did not think proper to control, and left him to indulge it to the utmoſt. He learned the Greek and Latin languages, and paid conſiderable attention alſo to the Hebrew and Syriac; at the ſame time, as he now began to look to medicine as his object, he cultivated natural philoſophy, anatomy, and botany, with the greateſt aſſiduity. He afterwards ſtudied at the univerſities of Leipſic, Wittenberg, and Jena, where he was much diſtinguiſhed among his fellow-ſtudents, and determined upon farther improving himſelf by travelling. He had been told, that no perſon could obtain a high rank in the practice of phyſic, unleſs he underſtood Avicenna; and knowing the tranſlation of that phyſician's work to be bad, he had a ſtrong inclination to learn Arabic. To this he was urged by Joſeph Scaliger and Iſaac Caſaubon, who judged that he was capable of rendering great ſervice to the republic of letters in that way: and he reſolved to read not only Avicenna, but alſo Meſue, Rhaſes, Avenzoar, Albukaſis, and Averröes. This paſſion, however, did not prevent him from gratifying the inclination which he had to travel, and he accordingly ſpent ſeven years from home. He firſt went through the Low Countries into France, and thence to Switzerland, where he received the degree of M. D. from the univerſity of Baſle, at the age of twenty-four. He then continued his travels, viſiting Italy, England, and Spain, and reaching even Greece and Aſia.

Soon after his return to Sileſia, he was appointed by the magiſtrates of Breſlau to be director of the college and ſchools of that city. But he afterwards reſigned that difficult employment, and applied himſelf entirely to the practice of phyſic and to the ſtudy of Arabic, with which he became ſo enamoured, that he reſolved to promote the knowledge of it by eſtabliſhing an Arabic preſs, and employed all the money he could ſpare in accompliſhing that object; refuſing, at the ſame time, the moſt honourable offers from courts and univerſities, which would have interfered with his project. He afterwards retired into Pruſſia, ſtill with the intention of fulfilling his deſigns, and purſuing his favourite ſtudies; but obtaining the friendſhip of chancellor Oxenſtiern, he was induced to accompany him in a journey to Germany. While at Erfurth, Kirſtenius received the offer of a profeſſorſhip, which he accepted. But his patron induced him, nevertheleſs, to quit this univerſity, and to accompany him to Sweden, where he was appointed profeſſor of medicine, in 1636, and ſoon afterwards phyſician to the queen. His conſtitution, however, was conſiderably impaired, and he did not enjoy theſe advantages above four years; for he died on the eighth of April, 1640, in the ſixty-third year of his age. The epitaph, inſcribed by Schröer to his memory, eulogizes his extraordinary knowledge of languages, of which, it is there ſaid, he was acquainted with twenty-ſix.

He publiſhed ſeveral works, for which divines are as much indebted to him as thoſe of his faculty. Theſe are, 1. "Grammatica Arabica."—2. "Tria Specimina Characterum Arabicorum."—3. "Decas ſacra Canticorum et Carminum Arabicorum ex aliquot MSS. cum Latina ad verbum interpretatione."—4. "Vitæ quatuor Evangeliſtarum ex Antiquiſſimo Codice MS. Arabico erutæ."—5. "Liber ſecundus Canonis Avicennæ, typis Arabicis ex MSS. editus, et ad verbum in Latinum tranſlatus, &c."—6. "Liber de vero Uſu et Abuſu Medicinæ."—7. "Hypotypoſis, ſive, Informatio Medicæ Artis ſtudioſo perutilis, aliquandiu in Pharmacopolio verſaturo."—8. "Nota in Evangelium S. Matthæi ex collatione Textuum Arabicorum, Syriacorum, Ægyptiacorum, Græcorum, et Latinorum."—9. "Epiſtola S. Judæ ex MSS. Heidebergenſi Arabico ad verbum tranſlata, &c." Hutchinſon Biog. Med. Eloy. Dict. Hiſt.

Kirstenius, George, alſo a phyſician, was born at Stettin, in January, 1613. He purſued his ſtudies, during ſeveral years, at Jena and Straſburg, and afterwards travelled through Germany and the Low Countries. He was invited to profeſſional chairs in the univerſities of Gripſwald and Derp; but the political troubles of the times prevented him from accepting them: he determined at length to ſettle at his native place, and contented himſelf with a profeſſorſhip in the Royal College of Stettin. He died on the 4th of March, 1660. The greater part of his life was paſſed in uſeful reſearch, and he obtained a high reputation in his profeſſion. He left ſeveral learned eſſays, in Latin, on the ſecretion of milk, on wounds of the head, on the ſight, ſmell, taſte, &c. which were eſteemed in their day; and he publiſhed alſo the following works: "Oratio de Medicinæ dignitate et præſtantia," 1647.—"Adverſaria et Animadverſiones in Joannis Agricolæ Commentarium in Poppium et Chirurgiam parvam," 1648.—"Diſquiſitiones Phytologicæ," 1651. Eloy. Dict. Hiſt.

KIRTI, in *Hindoo Mythology*, a name of Parvati, the conſort of Siva.

KIRTLE, a term uſed for a ſhort jacket; alſo for a quantity of flax, about a hundred weight.

KIRTON, or Kirktown, in *Geography*, a large village and pariſh in the diviſion of Holland, and county of Lincoln, England, has been a place of conſiderable ſize and importance, but from having loſt its weekly market, and being out of a public road, and diveſted of manufactures, is now reduced to the rank of a village. In the year 1800, it contained 269 houſes, and 1238 inhabitants. Kirton has long been famed for its large and elegant church, which was formerly collegiate, and, according to ſome writers, was built by Alexander, biſhop of Lincoln, in the time of king Henry I. This ſtatement is, however, evidently erroneous, for the ſtyle of architecture marks it to be as late as the early part of the 15th century. Being much injured by neglect, and larger than neceſſary for the population of the pariſh, the chancel, tower, and tranſepts were taken down in the year 1806. A new tower was, however, erected at the weſt end of the church with the original materials. At the weſtern end of the nave is a ſemicircular arch, probably of the age of the biſhop above named. In the church is a handſome octangular font, on the pedeſtal of which is an inſcription, ſtating, that it was made for Alauni Burton, in the year 1405. Beauties of England, vol. ix. 1807.

Kirton *Lindſay*, a market town and pariſh in the wapentake of Corringham, in Lindſay diviſion of the county of Lincoln, England, is ſituated 20 miles from Lincoln, and 147 from London. The inhabitants were returned under the population act as 1092, the houſes as 243. Dr. Stukeley ſtates, that John of Gaunt had a palace here. At this place Mr. Pegge places the Sidnaceſter of the Romans. See Gough's edition of Camden's Britannia, vol. ii. p. 266. ed. 1789.

KIRWANI, a town of Africa, in the country of Dentela, in which Mr. Park ſaw ſome iron ſmelting-furnaces; 20 miles W. of Baniſerile. N. lat. 12° 30'. W. long. 11°.

KIRWEILER, a town of France, in the department of the Lower Rhine; 15 miles N. of Straſburg.—Alſo, a town of France, in the department of Mont Tonnerre; 18 miles S. of Lauterburg.

KIRZAK, a town of Ruſſia, in the government of Vladimir; 48 miles W.S.W. of Vladimir.

KIS, in *Natural Hiſtory*, a name given by ſome people to the common pyrites; and by others to a peculiar kind of it, containing copper, and a ſmall quantity of ſilver.

KISAK, in *Geography*, an iſland near the S.W. coaſt of Eaſt Greenland. N. lat. 59° 51'. W. long. 45°.

KISERYA, a town of Hindooſtan, in Bahar; 32 miles S.S.E. of Bettiah. N. lat. 26° 20'. E. long. 85° 6'.

KISH, or Kesh, a poſt-town of Ireland, in the county of Fermanagh; 93 miles N.W. by N. from Dublin.

Kish, a ſand-bank in the Iriſh ſea, about ſix miles long, and hardly one wide; 7 miles from the coaſt of the county of Dublin. N. lat. 53° 15'. W. long. 5° 54'.

KISHCORRAN Mountains, a long ridge of mountains in the ſouthern part of the county of Sligo, Connaught, Ireland, on the ſummits of moſt of which are very large cairns. Beaufort.

KISHENAGUR, a circar of Bengal, lying on the E. ſide of the Hoogly, about 110 miles long, and from 7 to 30 broad.—Alſo, the capital of this circar; 45 miles N. of Calcutta. N. lat. 23° 23'. E. long. 88° 38'.—Alſo, a town of Hindooſtan; 15 miles S. of Agimere.

KISHMA, Kishmish, *Kiſmich*, or *Dsjiſme*, the largeſt iſland in the Perſian gulf, 30 miles long and from ſix to eight broad. A narrow channel ſeparates it from the continent of Perſia, navigable, but dangerous, on account of pirates. This iſland contains three or four towns or villages, one of which, on the N. coaſt, is called by the ſame name. N. lat. 26° 54'. E. long. 56° 50'.

KISHNUKOOD, a town of Perſia, in the province of Segeſtan; 36 miles W. of Candahar.

KISHTAC, an iſland in the N. Pacific ocean, E. of Foggy Cape, oppoſite to the mouth of Cook's river; about 100 miles long, and from 30 to 50 broad. N. lat. 57° to 58° 40'. W. long. 152° 30' to 154° 50'.

KISHTEWAR, a country of Aſia, lying S.E. of Caſhmere, near the banks of the river Chunaub. Its capital, called Mundul, or Mundul-Muder, is ſituated about three coſſes E. of this river.

KISI-HISAR, a town of European Turkey, in Bulgaria; 36 miles N.E. of Sofia.

KISILE-DARIA. See Khesil.

KISKEMANITAS, a river of America, which is a branch of the Alleghany, into which it diſcharges itſelf. N. lat. 40° 40′. W. long. 79° 42′, in Weſtmoreland county, Pennſylvania. Its headwaters are, Little Conemaugh and Stone creek, which after their junction aſſume the name of Conemaugh river. After receiving other waters it takes the name of Kiſkemanitas. It is navigable for batteaux 40 or 50 miles, and good portages are found between it and Juniatta and Potowmac rivers. Coal and ſalt are diſcovered in the vicinity of theſe rivers.

KISKIN-Ostrog, a town of Ruſſia, in the peninſula of Kamtſchatka; 52 miles W. of Verchnei-Kamtſchatſkoi.

KISKO, a town of Sweden, in the province of Nyland; 12 miles N. of Eknas.

KISLAK, a town of Poland, in the palatinate of Braclaw; 20 miles E.S.E. of Braclaw.

KISLAR. See Kizliar.

KISMA, a town of Perſia, in the province of Ghilan; 21 miles W.N.W. of Reſhd.

KISMALO, a town of Hungary; 12 miles N.N.E. of Gran.

KISSABATTY, a town of Bengal; 22 miles S.E. of Burdwan. N. lat. 23° 2′. E. long. 88° 18′.

KISSAMOS, a ſmall town, formerly the harbour of "Aptera," which gives name to a diſtrict or province in the north-weſtern part of the iſland of Crete. This town would be of ſome importance, if the pachas had not prohibited the exportation of the commodities of the iſland, except from the chief place of their government. This province is one of the beſt cultivated and moſt productive of the iſland; it furniſhes a tolerably large quantity of oil and wine; it produces honey, wax, and ſilk; but little barley and wheat. Its mountains are for the moſt part wooded; and among the trees are ſcattered many common and holm oaks, the acorns of which allow the Greeks to breed a large number of hogs. Here are alſo many carob-trees, whoſe fruits are carried to Canea. In this province the vine deſerves attention, which produces grapes with one hoeing and without any manure. The wine of Kiſſamos is a claret, ſpirituous, and of a tolerably good quality. As it is not an article of commerce, the Greeks convert a part of it into brandy for their winter ſtock. On the gulf of Kiſſamos is a quarry of beautiful gypſum. The fort of "Grabuſa," ſituated on a ſteep iſlet, at the moſt weſtern and northern part of Crete, is compriſed in the diſtrict of Kiſſamos. The junction of theſe ſmall iſlands and an advanced cape form a natural harbour, in which the largeſt ſhips anchor in ſafety. The population of the Turks of Kiſſamos is eſtimated at upwards of a third of the inhabitants. See Candia.

KISSEE, or Kissey, a town of Africa, in the country of Sierra Leona, at the head of a river of the ſame name, eight journeys from Teembo. According to Dr. Afzelius the town of Kiſſey may be, in direct diſtance, about 36 geographical miles to the N.E. by E. of Sierra Leona.

KISSEL, John Van, in *Biography*, a painter of portraits and ſtill life. He was born at Antwerp in 1626. Nature was his guide in the practice of the art he profeſſed, and it was his conſtant cuſtom to make ſketches of all his various productions at the different ſeaſons of the year; merely ſketching ſome, and colouring and even modelling others; by theſe means he poſſeſſed a large ſtock of things ready to his hand for compoſition, and he executed them with great taſte and delicacy.

He demanded ſo high a price for his productions, that few could purchaſe them. Among thoſe who did was the king of Spain, who, after having obtained many of his works, at laſt gained poſſeſſion of the painter alſo. He was appointed painter to the queen of Spain, and was retained in her ſervice as long as he lived.

His portraits are very highly eſteemed, being executed with a light free touch, and a tone of colour that very much reſembles Vandyke's. He died in 1708, at the age of 82.

KISSELPOUR, in *Geography*, a town of Bengal; 35 miles S.S.W. of Doeſa. N. lat. 22° 32′. E. long. 84° 41′.

KISSER, a town of Africa, in Tunis; 18 miles S.E. of Sbeah.

KISSI, St., a ſmall iſland in the Grecian Archipelago. N. lat. 38° 43′. E. long. 24° 10′.

KISSIMA, a town of Japan; 45 miles N. of Nangaſaki.

KISSINGEN, a town of the duchy of Wurzburg, on the Saal, in the environs of which are ſome medicinal and ſalt ſprings; 24 miles N. of Wurzburg. N. lat. 50° 14′. E. long. 10° 17′.

KISSOREGUNGE, a town of Hindooſtan, in Bundelcund; 18 miles S.E. of Chatterpour.

KISSUNPOUR, a town of Hindooſtan, in Bahar; 11 miles N. W. of Bahar.

KIST, a word uſed by Paracelſus as the name of a weight, equal to 14 grains.

KISTNA, in *Geography*, a town of Hindooſtan, in the Carnatic.

KISTNABARAM, a town of Hindooſtan, in Myſore; 13 miles S. of Tademeri.

KISTNAGHERI, a town and fortreſs of Hindooſtan, in the Myſore country; 90 miles E. of Seringapatam. N. lat. 12° 30′. E. long 78° 22′.

KISTNAGUR, a town of Bengal; 24 miles N. of Goragot.—Alſo, a town of Bengal; 16 miles S. of Nagore. N. lat. 22° 52′. E. long. 87° 21′.

KISTNAH, a river of Hindooſtan, which riſes in the mountains of Viſiapour, about 20 miles from Sattarah, and after obliquely traverſing almoſt the whole extent of Hindooſtan, from W. to E., diſcharges itſelf, by ſeveral mouths, into the gulf of Bengal, between Maſulipatam and Nizapatam, in the circar of Guntoor. The Godavery and Kiſtnah, approaching one another in their deſcent towards the ſea, incloſe a tract of country, for an account of which, (ſee Delta.) The iſlands, formed by the mouths of the Kiſtnah, are very fertile, and produce grain, excellent timber, and ſome of the beſt tobacco in India; and beſides, the low grounds, which at ſpring tides are overflown, produce a ſhrub of great uſe in dyeing chintzes and callicoes.

KISTNAPORAM, a town of Hindooſtan, in the Carnatic; 25 miles W.N.W. of Tritchinopoly.

KISTNAPORUM, a town of Hindooſtan, in Golconda; 48 miles S. of Hydrabad.

KISTNAVERAM, a town of Hindooſtan, at the mouth of a river, which runs into the bay of Bengal; 15 miles S.E. of Nellore. N. lat. 14° 16′. E. long. 80° 11′.

KISTVAEN, or Cist-Vaen, in *Britiſh Antiquities*, a ſtone cheſt, coffin, or cavity for the interment of the human body, after its deceaſe. Many antiquarians have confounded this ſubject with the Cromlech, and have thus confuſed their readers, and indeed have bewildered themſelves. Some even call the perpendicular, or ſtanding ſtones of the Cromlech, by the appellation of Kiſtvaen, and the horizontal, or covering-ſtone, the Cromlech. This is multiplying terms without meaning or utility. Kiſtvaen is a compound word from the Britiſh language, and literally ſignifies a cheſt of ſtone; *i. e. Ciſt*, a cheſt or coffer, and

Vaen, from *Maen*, a ſtone: the *m* in Britiſh being commonly changed to *v* in compoſition. The Kiſtvaen decidedly differs from the Cromlech, the firſt being always immerſed, or covered over with many ſtones, when the whole is called *cairn*, or by a heap or mound of earth, which is called barrow. Mr. Owen deſcribes the Ciſtvaen "as a kind of cell formed by placing four flat ſtones together in a ſquare, with another laid on the top for a cover." In ſome inſtances, however, the ciſt is formed by five, ſix, or ſeven ſtones, raiſed on their edges, and covered by two or three flat ſtones. In Berkſhire, near the track of the ancient Ridge-way, on the downs, in the vicinity of the White-horſe Hill, are ſome remains of a monument of this claſs. The upper part of a barrow being removed, ſeveral large ſtones were diſcovered, ſome of which were ſet up edge-ways, and others placed flat, or horizontally. Three of large dimenſions formed the ſides and end of a cell, which was nine feet from eaſt to weſt, by about ſix feet from north to ſouth. At the mouth, or entrance towards the weſt, were two upright ſtones, forming jambs, between which was a paſſage to the ciſt. Several other ſtones were placed near the entrance, and the barrow appeared to have been ſurrounded with a circle of ſtones. (See Beauties of England, vol. i.) "In the various practice of the Britons, the Ciſtvaen ſometimes contained the urn which preſerved the precious aſhes of the deceaſed; but it often contained the aſhes and bones without any urn." (Caledonia, by Chalmers, vol. i. p. 84.) Toland thinks that Kiſtvaens were altars for ſacrifice: and ſome writers have conjectured that they were intended for cells, or dungeons to confine priſoners. "In Cornwall, and elſewhere, we find Kiſtvaens (of an area equal to the ſize of the human body) conſiſting of ſide ſtones pitched on end, without any covering ſtone: theſe certainly once incloſed bones of the dead, though now generally dug up to ſearch for money." Borlaſe's "Antiquities of Cornwall," p. 228: ſee alſo p. 225. Gough, in his "Sepulchral Monuments of Great Britain," vol. i. p. 16, &c. has given accounts of the contents of ſeveral Kiſtvaens. See alſo Stukeley's "Abury" and "Stonehenge." King's "Munimenta Antiqua," vol. i. pp. 232. 253. 267. Rowland's "Mona Antiqua." Davies' "Mythology and Rites of the Druids," p. 394. "Archæologia," vol. ii. pp. 256. 362.—iii. 116.—iv. 114.—xii. 328.—xiv. 227. Jamieſon's Etymological Dictionary. Douglaſs's "Nenia Britannica," folio.

KISWARDA, in *Geography*, a town of Hungary; 17 miles E. of Tokay.

KISZENAU, or Kitznu, a town of European Turkey, in Moldavia; 72 miles E. of Jaſſi. N. lat. 47° 13'. E. long. 29° 30'.

KIT, in *Muſic*, the name of a ſmall violin of ſuch form and dimenſion as to be capable of being carried in a caſe or ſheath in the pocket. Its length, meaſuring from the extremities, is about ſixteen inches, and that of the bow about ſeventeen. Small as this inſtrument is, its powers are co-extenſive with thoſe of the violin.

Kit, in *Laboratory Works*, a compoſition made of reſin 9lb., pitch 6lb., bees-wax 6lb., and tallow 1lb., uſed for the laſt covering of carcaſſes. This is uſed, when previouſly pounded and rendered completely liquid.

Kit is likewiſe uſed, among dragoons, to denote their lot of neceſſaries, collected and packed up in a ſmall compaſs. The term is alſo applied, among the infantry, to the contents of a ſoldier's knapſack.

Kit, in *Rural Economy*, in ſome places, a name given to a milking-pail or veſſel in the form of a churn, with two ears and a cover, uſed to convey milk in by horſes or other means, in country ſituations.

KITAIBELIA, in *Botany*, ſo named, by Willdenow, in honour of Dr. Kitaibel, one of the authors of the ſplendid work, entitled *Plantæ Rariores Hungariæ*, which was publiſhed in imitation of Jacquin's *Flora Auſtriaca*. and intended as a continuation or ſequel of that book. Willd. Nov. Act. Soc. Nat. Scrut. Berol. v. 2. 107.—Curt. Mag. t. 821. Claſs and order, *Monadelphia Polyandria*. Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Eſſ. Ch. Calyx double; the outer one ſeven, or nine-cleft. Capſules ſingle-ſeeded, forming a roundiſh, five-lobed head.

1. *K. vitifolia*. Willd. Sp. Pl. v. 3. 800. Waldſt. et Kitaib. Pl. Rar. Hung. v. 1. 29. t. 31.—A native of Sclavonia. This *plant*, when wild, riſes to the height of ſeven or eight feet, and is entirely covered with ſmall viſcid glanduliferous hairs. *Stem* round, even, not ſtriated. *Leaves* alternate, on footſtalks, five-lobed, unequally toothed; the intermediate lobe longer than the reſt, pointed. *Footſtalks* round, the lower ones as long as the leaves, the upper ſhorter. *Stipulas* ovate, rather heart-ſhaped, bifid. *Flowers* axillary, generally about three, pedunculated. *Inner calyx* villoſe, ſmaller than the outer one. *Petals* white, wedge-ſhaped, truncate, a little ſmaller than the ſegments of the outer calyx.

KITANESJO, in *Geography*, a town of Japan, on the N.W. coaſt of the iſland of Niphon. N. lat. 36° 40'. E. long. 137° 30'.

KI-TCHANG, a town of Corea; 65 miles S.S.E. of Kang-tcheou.

KITCHEN, a room appropriated to the dreſſing of meat, and furniſhed with ſuitable accommodations and utenſils for that purpoſe. See Building.

The kitchen in the king's houſhold is under the direction and management of a clerk-comptroller, who has a ſalary of 500*l*. a-year, ſubordinate clerk at 250*l*. a-year, firſt clerk at 150*l*. a-year, junior clerks, two maſter-cooks, the ſalary of the firſt being 237*l*. 10*s*. a-year, and of the ſecond 217*l*. 10*s*. a-year, yeomen, grooms, &c.

Kitchen-*Garden*, that ſort of garden which is principally deſtined to the growth of different ſorts of culinary vegetables and roots.

The land deſigned for this ſort of garden ſhould be ſufficiently ſpacious, of a good depth and quality of mould, dry, and at the ſame time well ſituated for warmth, and the influence of the ſun.

The ſoils and ſituations which are the moſt adapted for this purpoſe, as well as the forms and modes of laying them out, have been already fully explained in ſpeaking of gardens in general. The great expence of cultivating kitchen gardens by means of hand-labour, however, renders it eſſentially neceſſary that they ſhould be ſo contrived, as to have the principal part of the work executed in other ways, as by the uſe of ſmall teams. In this way much money may in numerous inſtances be ſaved, and at the ſame time the labour be equally well performed. Mules and large aſſes have been found extremely beneficial in this intention, in a great number of ſituations. See Garden.

Kitchen-*Garden Plants*, the common name of all ſuch plants as are cultivated for the purpoſe of food, in gardens of this kind.

Names and Sorts of Plants, with Modes of Culture reſpectively.

Agaricus campeſtris, the field agaric or muſhroom. Cultivated by the ſpawn of the root, or inviſible ſeed, running in lumps of earth or dung, in the autumn ſeaſon.

Allium, garlick, onion, leek, &c., of the firſt kind, large white garlick and red garlick——By the cloves of the root when ſeparated.

In the ſecond, or rocambole ſort——By the root and bulbs from the ſtalk.

In the third, or onion kind, as the common oval Straſburg onion, great oval Portugal onion, flat white Spaniſh onion, flatted Spaniſh onion, ſilver-ſkinned onion, bulbleſs rooted Welch onion——By ſeed annually, which ſhould be ſown at different times in the early ſpring months.

In the fourth ſort, as chives or cives——By dividing the roots, and planting them out in the ſpring.

In the fifth kind, the eſcalot or ſhallot——By offſets of the root planted out in ſpring.

In the ſixth ſort, or Canada tree-onion——By offſet bulbs of the root, and the bulbs at the top of the ſtalk, planted out in ſpring.

In the ſeventh, or the leek kind, as the broad-leaved London leek, narrow-leaved leek——By ſeed annually, which ſhould be ſown in the early ſpring.

Anethum, *dill*, &c.; common dill——By ſeed annually, ſown in the ſpring.

Fennel, light-green leaved, dark-green fennel, ſweet-ſeeded fennel——By ſeed ſown in ſpring; alſo by ſlipping the old roots, and planting them out in the autumnal ſeaſon.

Italian fennel——By ſeed annually, ſown in the ſpring.

Angelica ſativa, common angelica——By ſeed annually, ſown in ſpring.

Apium, parſley, celery, &c.; parſley, common plane-leaved parſley, curled leaved common parſley, broad-leaved, or large rooted parſley——By ſeed ſown in ſpring.

Celery, common upright celery, upright celery with ſolid ſtalks, turnip-rooted ſpreading celery——By ſeed ſown in the ſpring, for tranſplanting in ſummer and autumn.

Aſparagus officinalis, common aſparagus——By ſeed ſown in the autumn, and when once raiſed, the roots abide for ſome years.

Atriplex hortenſis, garden orach, white-leaved garden orach, green orach, purple orach——By ſeed annually ſown in the ſpring ſeaſon.

Beta vulgaris, beet, common culinary beet, green-leaved culinary beet, white beet, chard, or great white Swiſs beet, mangel wurzel beet——By ſeed annually ſown in the ſpring months.

Red beet, large long red-rooted beet, turnip-rooted red beet, red-rooted beet with green leaves, pale-red beet——By ſeed annually ſown in the early ſpring.

Barago, borage——By ſeed annually ſown in autumn or ſpring.

Braſſica, the cabbage, cauliflower, broccoli, turnip, &c. The cabbage ſort, ſmall early ſummer cabbage, dwarf early ſugar-loaf-ſhaped cabbage, large hollow ſugar-loaf-cabbage, early Ruſſia cabbage, common round white cabbage, long-ſided hollow cabbage, oval hollow cabbage, flat-topped cabbage, muſk-ſcented cabbage, giant cabbage, red cabbage——By ſeed annually ſown at different times, in ſpring and autumn, for uſe all the year, by having the plants ſet out at various times.

Savoy cabbage, common green curled ſavoy, large green Dutch ſavoy, yellow ſavoy——By ſeed annually ſown in ſpring, for autumn and winter uſe.

Laciniated, and other open-leaved coles, green curled borecole, red curled borecole, thick-leaved curled borecole, finely fringed borecole, broad erect curled-leaved Siberian borecole, or Scotch cole or kale, red and green common plane-leaved green colewort——By ſeed annually ſown in ſpring and ſummer, for plants for autumn and winter uſe.

Turnip cabbage, turnip cabbage with the turnip above ground, with the turnip under ground——By ſeed ſown annually in ſpring and ſummer.

The cauliflower ſorts, early cauliflower, late cauliflower——By ſeed ſown annually in ſpring and autumn, for plants for ſummer and autumn uſe.

Italian *braſſica*, or broccoli, early purple broccoli, late large purple broccoli, comprehending varieties, with blue, brown, green, and yellowiſh heads, dwarf purple broccoli, white or cauliflower broccoli, black broccoli——By ſeed ſown in ſpring and beginning of ſummer, for plants for autumn, winter, and ſpring uſe.

The turnip, early Dutch turnip, white round turnip, green-topped turnip, red-topped turnip, yellow turnip, oblong white turnip, long white-rooted French turnip, round purple French turnip——By ſeed ſown in ſpring and ſummer, for plants for uſe moſt part of the year.

Calendula officinalis, common marigold——By ſeed ſown annually in ſpring, ſummer, or autumn.

Cichorium endivia, endive, green curled endive, white curled endive, broad-leaved Batavian endive——By ſeed ſown annually, in ſummer, from May till July, for plants for autumn and winter uſe.

Cochlearia armoracia, horſe radiſh——By pieces of the roots planted out in ſpring, for uſe for moſt part of the year.

Crambe, ſea-cabbage or colewort, the different varieties——By ſeed ſown in ſpring; but when once raiſed, the roots remain for years, ſending up ſhoots for uſe in ſpring and ſummer.

Cucumis, cucumber and melon, the cucumber, early ſhort prickly cucumber, early cluſter cucumber, long green prickly cucumber, long white prickly cucumber, long ſmooth green Turkey cucumber, large ſmooth white cucumber, large ſmooth green Roman cucumber——By ſeed ſown annually, at different times on hot-beds, in the early ſpring and ſummer.

The melon, Romana melon, Cantaleupe melon; varieties of each, and ſeveral other ſorts——By ſeed ſown annually at different times, on hot-beds, in the ſpring months.

Cucurbita, the gourd and water melon——By ſeed ſown annually in the ſpring ſeaſon.

Cynara, artichoke and cardoon, the common artichoke, globular-headed red Dutch artichoke, oval-headed green French artichoke——By ſuckers from the ſides of the old plants, in ſpring, of many years duration.

The common cardoon——By ſeeds ſown annually in the early ſpring.

Daucus carota, the carrot, orange-coloured carrot, red carrot, yellow carrot, white carrot——By ſeed ſown annually in ſpring, ſummer, and autumn, for uſe moſt part of the year.

Helianthus tuberoſus, tuberous ſun-flower, or Jeruſalem artichoke——By pieces of the root planted annually in the ſpring ſeaſon.

Hyſſopus officinalis, common hyſſop, the ſeveral different varieties——By ſeed ſown in ſpring, and by planting ſlips and cuttings of its branches.

Lactuca, lettuce, early green cabbage-lettuce, white cabbage-lettuce, brown Dutch cabbage-lettuce, great admirable cabbage-lettuce, green and white ball cabbage-lettuce, green cos-lettuce, white cos-lettuce, black cos-lettuce, ſpotted Aleppo cos-lettuce, brown Cilicia lettuce, Imperial lettuce, red Capuchin lettuce, green Capuchin lettuce, curled-

lettuce——By ſeed ſown annually, at different times, in ſpring, ſummer and autumn, for plants for ſetting out for uſe moſt part of the year.

Lavandula, lavender, ſpike-flowered common lavender, common narrow-leaved, broad-leaved, blue-flowered, white-flowered, and dwarf lavender——By ſlips planted out in ſpring, which are of many years continuance.

Stœchas, or French lavender——By planting ſlips or cuttings, and by ſeed, which are of many years duration.

Lepidium ſativum, garden-creſs, common ſmall-leaved, broad-leaved, curled-leaved——By ſowing ſeed at different times of the year, according as the plants are wanted.

Meliſſa officinalis, balm, common balm——By dividing and planting the roots in ſpring or autumn, which are of many years duration.

Mentha, mint, penny-royal, &c., green common ſpearmint, curled-leaved ſpearmint, variegated ſpearmint——By dividing the roots, by young plants, and by cuttings of the ſtalks, planted out in ſpring, and which continue many years.

Peppermint——By roots and plants, &c. like the former.

Penny-royal——By dividing and ſlipping the plants, as for the mint, and planting them out.

Ocymum baſilicum, baſil, common ſweet baſil, ſeveral varieties——By ſeed ſown in ſpring on a hot-bed, the plants being afterwards planted out.

Origanum marjoram, common, wild, perennial pot marjoram, winter perennial ſweet marjoram, marjorana, or annual ſweet marjoram——By ſowing ſeeds in ſpring, and the two former alſo, by ſlipping the roots, and planting them.

Paſtinaca ſativa, parſnip, common garden parſnip——By ſeed ſown annually for winter uſe.

Phaſeolus vulgaris, common kidney-bean, dwarfs and runners, dwarf kinds, early white, early yellow, liver-coloured ſpeckled dwarf, Canterbury white dwarf, Batterſea white dwarf, large white dwarf, cream-coloured dwarf, black dwarf, ſparrow-egg dwarf, amber-ſpeckled dwarf——By ſeed ſown annually, at different times, from April till July, or the following month.

Running kinds, ſcarlet runner, white variety, large Dutch runner, Batterſea white runner, negro runner, variable runner——By ſowing the ſeed like the former, but principally in the ſummer months.

Piſum, the pea, Charlton pea, golden Charlton, earlieſt golden Charlton, long Reading hotſpur, Maſter's hotſpur, Spaniſh morotto, green nonpareil, early dwarf marrowſat, large marrowſat, green rouncival or union, white rouncival, Ledman's dwarf pea, ſmall ſugar pea, large ſugar pea, cluſter pea, crown pea, egg-pea, ſickle pea, &c.——By ſeed ſown annually, at different times, from October till June, but principally in the early ſpring months.

Portulaca oleracea, purſlane, green purſlane, golden purſlane——By ſeed ſown different times in April and May.

Poterium ſanguiſorba, burnet, common garden burnet——By ſeed ſown in autumn or ſpring, and parting the roots.

Raphanus ſativus, the radiſh, ſhort-topped early radiſh, long-topped radiſh, deep-red radiſh, pale-red, tranſparent, mild radiſh, ſalmon-coloured radiſh, ſmall white turnip-rooted radiſh, ſmall red turnip radiſh, large white turnip-rooted Spaniſh radiſh, large black turnip-rooted Spaniſh radiſh——By ſeed ſown at different times, from Chriſtmas till July or Auguſt; but the latter ſorts ſown principally in June and July, for autumn and winter uſe.

Roſmarinus, roſemary, ſome varieties——By planting layers, ſlips, and cuttings in ſpring.

Rumex acetoſa, ſorrel, common long-leaved ſorrel, round-leaved French ſorrel, barren ſorrel——By parting the roots and the firſt ſort alſo plentifully by ſeed.

Ruta graveolens, rue; ſeveral varieties——By planting ſlips and cuttings; alſo by ſeed.

Salvia, ſage, clary, &c. The ſorts are; common ſage, red ſage, broad-leaved green ſage, narrow-leaved green ſage, broad-leaved hoary ſage, ſage of virtue, worm-wood ſage, &c.——By planting ſlips in April, May, and June; alſo by ſowing the ſeed in the ſpring ſeaſon.

Clary——By ſeed ſown annually in the ſpring.

Satureja, ſavory, winter perennial ſavory, ſummer annual ſavory——Both by ſeed ſown in the ſpring ſeaſon, and the former alſo by planting ſlips.

Scandix cerefolium, chervil, annual garden chervil——By ſeed annually, in Auguſt, for winter and ſpring uſe, or ſown alſo in ſpring and ſummer, for ſucceſſion crops.

Scorzonera, ſcorzonera, Spaniſh ſcorzonera——An eatable root, raiſed from ſeed ſown in ſpring.

Sinapis, muſtard, white muſtard, black muſtard, field or wild muſtard; the former to uſe young in ſallad, and the two laſt for their ſeeds, to make the table ſauce called muſtard——By ſeed in ſpring; or, if for ſallads, at any time of the year.

Sium ſiſarium, ſiſarium or ſkirret——An eatable root raiſed by planting offsets commonly of the root; alſo by ſeeds.

Smyrnium oluſatrum, Aliſanders, or common Alexanders——By ſeed annually in ſpring.

Solanum, night-ſhade, furniſhing the potatoe and tomatoe, tuberous-rooted ſolanum or potatoe, the common ſound red potatoe, early round red, oblong red, deep red, pale red, rough red, white kidney-ſhaped, large red-ended kidney, white round, white cluſter, prolific American——By planting pieces of the roots or the roots whole in ſpring; alſo by ſowing ſeed occaſionally to obtain new varieties.

Tomatoe or love-apple; varieties——By ſowing the ſeed annually, on a hot-bed, in the ſpring.

Spinacia, ſpinach, round thick-leaved or ſmooth-ſeeded, triangular leaved or prickly ſeeded; the former for ſpring and ſummer crops, the latter to ſtand the winter——By ſowing annually in ſpring, ſummer, and autumn, for uſe moſt part of the year.

Tanacetum vulgare, common tanſey——By parting the roots, and planting in ſpring or autumn.

Thymus vulgaris, common thyme, the varieties with broad leaves, with narrow leaves, with ſtriped leaves——By ſowing ſeeds in March and April; alſo by planting ſlips of the roots and branches, and by cuttings; but ſeed is the only way to raiſe a quantity of the common ſort; and the other methods to continue the varieties, or for a general ſupply.

Tragopogon porrifolium, ſalſafy——An eſculent root, by ſeeds annually in ſpring.

Tropæolum, Indian creſs, or naſturtium, naſturtium minus, naſturtium majus; their flowers for garniſh and ſallads, and their ſeeds to pickle——Raiſed annually from ſeeds ſown at different times in ſpring.

Valeriana locuſta, corn ſallad or lamb's lettuce——By ſeed ſown in ſpring and autumn.

Vicia faba, the bean, early Mazagan, early Liſbon, long-pod, Turkey long-pod, toker bean, Sandwich bean, Windſor-bean, white bloſſomed, red-bloſſomed, Spaniſh bean, nonpareil bean, dwarf fan bean, very low——By ſeed ſown annually

nually, at different times from October until June, but principally in the early ſpring months.

More full explanations of the nature of the culture, application, and uſe of each, will be given under the different heads to which they particularly belong.

KI-TCHENG, in *Geography*, a town of Corea; 65 miles E.N.E. of Kiang-ki-tao.

KITCHIK-JOURLOU, a town of Natolia; 16 miles N. of Iſbarteh.

KITCHWARA, a circar of Hindooſtan, in Malwa, bounded on the N. by the circar of Cotta, on the E. by Chandaree, on the S. by Malwa, and on the W. by Oudipour and Banſwaleh.

KITE, in *Ornithology*. See Falco *Milvus*. Its motion in the air diſtinguiſhes it from all other birds; being ſo ſmooth and even as to be ſcarcely perceptible: ſometimes it will remain quite motionleſs for a long while: at other times, glide through the ſky, without the leaſt apparent action of its wings, from whence it derived the old name *glead*, of the Saxon *glida*. Lord Bacon obſerves, that when kites fly high it portends fair and dry weather. Pliny thinks that the invention of the rudder aroſe from the obſervation made of the various motions of the tail, when the kite was ſteering through the air. Lib. x. c. 10.

The kite is a deſtructive bird to farmers, &c. on which account it is neceſſary to guard againſt its depredations as much as poſſible. This laſt purpoſe may ſometimes be effected by laying ſuch animal ſubſtances as have been infuſed in ſome ſort of liquid with *nux vomica*, in the places where they come in order to feed.

Kite, in *Electricity*. See Conductor.

KITLOLL, in *Geography*, a town of Bengal; 15 miles S.S.W. of Goragot.

KITNAISE, a town of Egypt, on the left branch of the Nile; 20 miles S. of Faoué.

KITOISKA, a town of Ruſſia, in the government of Irkutſk, ſituated on the Kitoi, which runs into the Angara: 68 miles N.N.W. of Irkutſk.

KITORAH, a town of Hindooſtan, in Boggilcund; 25 miles N.N.E. of Rewah.

KITRIANI, a town on the S. coaſt of the iſland of Siphanto. N lat. 36° 55′. E. long. 24° 49′.

KITTATINNY Mountains, a ridge of the Alleghany mountains, which runs through the northern parts of New Jerſey and Pennſylvania.

KITTEN Island, a ſmall iſland in the Mergui Archipelago, near the S.E. coaſt of Cat iſland.

KITTER, a town of Hindooſtan, in Bahar; 37 miles N. of Hajypour.

KITTERY, a townſhip of York county, in the ſtate of Maine incorporated in 1653, and conſiſting of three pariſhes, which contain 3114 inhabitants. It is ſituated between Piſcataqua and York rivers, 67 miles N. of Boſton.

KITTILA, a town of Swediſh Lapland; 103 miles N. of Kemi.

KITTIWAKE, in *Ornithology*, a ſpecies of the gull kind, being the *larus riſſa* of Linnæus: the head, neck, belly, and tail are of a ſnowy whiteneſs; behind each ear is ſometimes a duſky ſpot; the back and wings are grey; the bill is yellow, tinged with green; the legs are duſky, and have a ſmall knob inſtead of the back toe. This bird inhabits the romantic cliffs of Flamborough-head, the Baſs iſle, the rocks near the caſtle of Slains, in the county of Aberdeen, and Prieſtholm-iſle. The young of theſe birds are a favourite diſh before dinner, for whetting the appetite, in North Britain, but they have a rank taſte and ſmell. Pennant. See Larus.

KITT's, St., in *Geography*. See *St.* Christopher's.

KITWADA, a town of Japan, in the iſland of Niphon; 45 miles N.W. of Meaco.

KITZBUHL, a town of the county of Tyrol, on the Acha; 36 miles E. of Inſpruck. N. lat. 47° 25′. E. long. 12° 27′.

KITZINGEN, a town of the duchy of Wurzburg, on the Maine; it is a large, handſome town, owing its riſe to a convent of Benedictines, founded in 745 by duke Pepin. Moſt of the inhabitants are Lutherans; 10 miles E.S.E. of Wurzburg. N. lat. 49° 42′. E. long. 10° 12′.

KIU, a city of China, of the firſt claſs, in the province of Tche-kiang; pleaſantly ſituated near a fine river, and between two others that run into it. It borders on Kiang-ſi and Fo-kien; but to the laſt province the paſſage is difficult on account of the intervening mountains. N. lat. 29° 2′. E. long. 118° 39′.

KIVA. See Khieva.

KIVAK, a town of Perſia, in the province of Khoraſan; 300 miles N. of Herat.

KIVALORE, a town of Hindooſtan, in the Carnatic; 8 miles W. of Negapatam.

KIVIJARVI, a town of Sweden, in the government of Waſa; 70 miles S.E. of Jacobſtadt.

KIUKA, a town of Sweden, in the government of Abo; 30 miles S.S.E. of Biorneborg.

KIULO, a town of Sweden, in the government of Abo; 30 miles S.S.E. of Biorneborg.

KIUN-TCHEOU, a city of China, of the firſt claſs, and capital of the iſland of *Hainan*, which ſee. It ſtands on a promontory, and ſhips often anchor at the bottom of its walls. Two different kinds of Mandarins command here, as in all the other provinces of China; the firſt are called literati; the ſecond, mandarins of arms, or military officers. Its juriſdiction extends over three cities of the ſecond claſs, and ten of the third. N. lat. 20°. E. long. 109° 38′.

KIURAWASI, town of Sweden, in the government of Kuopio; 15 miles N N.W. of Kuopio.

KIUSIU, an iſland of Japan, alſo termed Saikokf, or the weſtern country, ſituated on the S.W. The length of Kiuſiu from N. to S. is about two degrees, or 140 Britiſh miles, and the greateſt breadth about 90. See Ximo.

KIUTAJA, or Cutaja, a town of Aſiatic Turkey, capital of a ſangiakate, and reſidence of the beylerbeg of Natolia, ſituated at the foot of a mountain, near the river Purſak, which runs into the Sakaria. It contains ſeveral moſques, and three Armenian churches. The ſoil is fertile, and the air healthy. Near it are ſome warm baths, in high eſtimation for ſeveral diſorders; 136 miles E. of Conſtantinople. N. lat. 39° 14′. E. long. 30° 30′.

KIWACZE, a town of Poland, in the palatinate of Brzeſk; 20 miles E. of Brzeſk.

KIZ, a town of Kharaſm; 290 miles N.W. of Samarcand.

KIZELGICK, a town of Natolia, on or near the ſcite of the ancient Euromus; 9 miles N.N.W. of Melaſſo.

KIZIDANY, a town of Samogitia; 20 miles E.S.E. of Roſienne.

KIZILBASCH, or Kezelbasch, a Turkiſh term ſignifying *red-head*: applied by way of obloquy to the Perſians, ever ſince Iſhmael Sophi, founder of the family laſt reigning in Perſia, who ordered his ſoldiers to wear a red cap, round which is a ſcarf or turban with a dozen plaits in it, in memory of twelve imams, ſucceſſors of Ali, from whom he pretended to deſcend.

Viginere writes the word *kezeilbaſs*, and adds, that according to the vulgar interpretation among the Perſians, the twelve plaits ſignify the twelve ſacraments of their law. But not contented with this, he looks out for another original, and tells us there is a myſtery in it, derived from the ancient paganiſm, when the Perſians adored fire, whoſe heat is denoted by the red colour, which in ſome meaſure ſymbolizes with the ſun, held by them in the higheſt veneration. He adds, that the twelve plaits ſhew the twelve months of the year, and twelve ſigns in which that luminary performs his courſe.

KIZILERMAK, or Kizil-irmak, the celebrated *Halys* of antiquity, in *Geography*, a river of Aſiatic Turkey, which riſes in mount Taurus, a few miles S. of Kaiſarieh, in Caramania, and runs into the Black ſea, N. lat. 41° 40'. E. long. 36°, on the coaſt of the gulf of Sanſoun.

KIZIL-KHAN, a town of Aſiatic Turkey, in Diarbekir; 12 miles W. of Merdin.

KIZILAGADJE, a town of Perſia, in the province of Ghilan; 25 miles N. of Aſtara.

KIZILHIZAR, a town of Syria; 8 miles E. of Antab.

KIZIL-OZAN, or Sefid Bud, called by Hanway *Seſiltrood*, a river of Perſia, which M. D'Anville derives from the mountain of Elwend, not far N. of Hamadan; ſo that, by a very winding courſe to the Caſpian ſea, its length doubles what is aſſigned in more recent maps. This river is the Mardus of antiquity, and the Swidura of Gmelin, riſing on the confines of Turkey, and falling into the ſea below Langorod. It ſupplies numerous pike, carp, and other kinds of fiſh, eſteemed by the Perſians. Gmelin ſays that it abounds in ſturgeon.

KIZILRABAT, a town of the Arabian Irak; 10 miles N.N.E. of Shehrban.

KIZIL-TASH, or Taman, an iſland at the mouth of the river Kuban, between the Black ſea and the ſea of Azoph; inhabited by Coſſack Tartars. N. lat. 45°. E. long. 37°.

KIZIZANAN, a town of Moravia, in the circle of Brunn; 15 miles S.E. of Brunn. N. lat. 49° 8'. E. long. 16° 52'.

KIZLIAR, or Kislar, a Ruſſian town, fortreſs, and port, in the government of Caucaſus, eſtabliſhed in the year 1735, near the eaſtern coaſt of the Caſpian, and covering the frontiers towards the limits of Perſia. Veſſels formerly entered the ſouthern branch of the Terek; but as the mouths of that river are now choaked up, the merchandize is landed in a ſmall bay, at the diſtance of 34 miles. Kiſlar draws from Aſtrachan the European commodities neceſſary for the Perſian traffic, together with corn and proviſion for the Ruſſian colonies on the Terek, and for the neighbouring diſtrict of mount Caucaſus. Beſides the goods which are diſpoſed of at Kiſlar, and ſent to the Perſian ports, the inhabitants carry on a contraband trade to Shamakee, Derbent, and even Teflis, in Georgia, which is exceedingly precarious from the numerous banditti who pillage the caravans. The environs of Kiſlar are very fertile in corn and fruit, with plenty of game; 160 miles S.S.W. of Aſtrachan. N. lat. 44° 50'. E. long. 46° 44'.

KIZLUK, a town of Ruſſia, lately in the palatinate of Braclaw; 16 miles E. of Braclaw.

KLACKS, a ſmall iſland on the W. ſide of the gulf of Bothnia. N lat. 61° 21'. E. long. 17° 4'.

KLADNO, a town of Bohemia, in the circle of Schlan; 10 miles N.W. of Prague.

KLAN, a town of Iſtria; 13 miles N.E. of Pedana.

Klan, or *Clano*, a town of the duchy of Carniola; 28 miles E. of Trieſte.

KLANG Point, a cape on the S. coaſt of the iſland of Java. S. lat. 7° 40'. E. long. 109° 32'.

KLATTAU, a town of Bohemia, in the circle of Pilſen, built in 775, and ſurrounded with walls in 1000; having ſome ſilver mines in its vicinity; 21 miles S. of Pilſen. N. lat. 49° 24'. E. long. 13° 15'.

KLEBANI, a town of Poland, in the palatinate of Braclaw; 10 miles S. of Braclaw.

KLEBANON, a town of Poland, in Podolia; 60 miles N. of Kaminiec.

KLEBER, J. B. in *Biography*, a French general, was born at Straſburgh in 1759, and was bred an architect. Accident led him to enter himſelf into the Auſtrian ſervice, in which he continued eight years, and then returning to his native country, became inſpector of the public buildings in Upper Alſace. The revolution of France rekindled his military ardour, and he obtained a commiſſion in the ſervice. He diſplayed great bravery and judgment at the ſiege of Mayence, after which he was employed in La Vendée; but the ſanguinary ſcenes there ſo diſguſted him, that he obtained his recall, and was afterwards engaged in the north, where he defeated the Auſtrians, took Mons, and drove the enemy from Louvain. He captured Maeſtricht, and contributed to the taking of ſeveral other ſtrong places. Diſcontented with the Directory, he left the army and returned to Paris, where he led a private life, writing his military memoirs, till Bonaparte, being appointed general of the army of Egypt, choſe Kleber as his companion. At the ſiege of Alexandria he was wounded on the head as he was climbing the ramparts, but he did not retire till he received a ſecond wound. He defeated the Turks in ſeveral actions; and Bonaparte, on quitting Egypt, left Kleber in the chief command. In a ſhort time he ſigned the treaty of El-Ariſh with ſir Sidney Smith, by which the French agreed to leave Egypt; but it was annulled by the Britiſh government, and hoſtilities were renewed. Kleber, though reduced, did not bend under his misfortunes, but defeated the Turks at the obeliſk of Heliopolis. He next took Cairo by ſtorm, and formed an alliance with Murat Bey; but he was aſſaſſinated by a Turk, named Solyman, who gave him four ſtabs with a dagger, in the year 1800.

KLECK, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek, 24 miles W.N.W. of Sluck.

KLEIN, a town of the duchy of Stiria; 12 miles E.S.E. of Landſperg.

KLEINENBERG, a town of Weſtphalia, in the biſhopric of Paderborn; 8 miles N.W. of Warburg.

KLEINHOVIA, in *Botany*, was ſo deſignated by Linnæus, in honour of Mr. Kleinhoff, a ſedulous and ingenious cultivator of the botanic garden eſtabliſhed in the iſland of Java. Linn. Gen 468. Schreb. 324. Willd. Sp. Pl. v. 2. 871. Cavan. Diſſ. v. 2. 288. Mart. Mill. Dict. v. 3. Juſſ. 278. Lamarck. Dict. v. 3. 367. Gærtn. t. 137. Claſs and order, *Dodecandria Monogynia*. Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth deciduous, of five, oblong, nearly equal leaves; the lower one rather ſhorter than the reſt. *Cor.* Petals five, lanceolate, ſeſſile, a little longer than the calyx; the upper one ſhorter, broader, curved and truncated; nectary central, ſupported by a column the length of the calyx, ſurrounded with glandules at the baſe, aſcending at the top, bell-ſhaped, very ſmall, divided half way down into five recurved ſegments. *Stam.* Filaments 15, very ſmall, three placed on each ſegment of the nectary; two of them are terminal, the other rather lower; anthers of two lobes. *Piſt.* Germen ſuperior, ovate, five-ſided, placed in the hollow of the nectary; ſtyle ſimple; ſtigma ſlightly notched. *Peric.* Capſule five-lobed, five-ſided, inflated. *Seeds* ſolitary, roundiſh, ſomewhat muricated.

Obſ. This genus is, according to Linnæus, who places it in *Gynandria*, allied to *Ayenia*, but perfectly diſtinct from it.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectary bell-ſhaped, five lobed, bearing the ſtamens, and affixed to the column of the germen. Capſule five-ſided, inflated, conſiſting of five ſingle-ſeeded cells.

1. *K. Hoſpita.* Linn Sp. Pl. 1365. Cavan. Diſſ. v. 2. t. 146.—(Catti-marus; Rumph. Amboin. v. 3. 177. t. 113.) A native of Java, Amboina, and the Philippine iſlands, flowering throughout the year, and bearing fruit in October.—*Stem* like that of a common apple-tree, thick, incurved, and knotty. *Branches* ſmooth. *Leaves* alternately ſcattered, ſomewhat heart-ſhaped, broad, ovate, acute, ſeven-ribbed, with arched veins. *Stipulas* lanceolate. *Flowers* bright purple. *Fruit* at firſt greeniſh purple, afterwards reddiſh. Rumphius has remarked, that the younger leaves, when bruiſed, emit an odour like violets, on which account the natives of Amboina waſh their heads with an infuſion of them. This handſome tree is univerſally admired among the Malays for the beauty of its foliage as well as for the firmneſs and excellence of its wood, of which their quivers are generally formed.

KLEINIA, named in honour of the celebrated German zoologiſt, James Theodore Klein, F.R.S. well known for his critical oppoſition to Linnæus in that department of natural hiſtory. His claim to botanical diſtinction is founded chiefly on a treatiſe concerning the plant now called *Cacalia Kleinia*; nor would this perhaps have excited much attention, but for the abſurdity of the phraſe by which he diſtinguiſhes it, *Nec Cacalia, nec Cacaliaſtrum, an Tithymaloides.* This is cited in the *Critica Botanica* of Linnæus, as an inſtance of the confuſion that muſt enſue from botaniſts not beſtowing new names upon new plants.—Klein flouriſhed in the firſt half of the eighteenth century, having been born in 1685, and living till 1759.—Schreb. 545. Willd. Sp. Pl. v. 3. 1738. Jacq. Amer. 215.—Claſs and order, *Syngeneſia Polygamia Æqualis.* Nat. Ord. *Compoſitæ Diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Obſ. For an account of the ſeparation of this genus from *Cacalia*, ſee that article.

Gen. Ch. *Common Calyx* perfectly ſimple, oblong, cylindrical, compoſed of five, linear, lanceolate, pointed, equal leaves. *Cor.* compound, uniform, tubular: Florets all fertile, numerous, equal, a little longer than the calyx, funnel-ſhaped; tube ſlender, very long; limb ſomewat bell-ſhaped, five-cleft *Stam.* Filaments five, capillary, very ſhort; anthers cylindrical, tubular. *Piſt.* Germen ſuperior, linear, half as long as the calyx; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma bifid, revolute. *Peric.* none. The whole calyx is bent backwards when in fruit. *Seeds* ſolitary, linear; ſeed-down capillary. *Recept.* naked, flattiſh.

Eſſ. Ch. Receptacle naked. Down ſimple. Calyx ſimple, equal, of five leaves.

1. K *ruderalis.* Willd. n. 1. Jacq. Amer. t. 127. (Cacalia ruderalis; Swartz. Prod. 110.)—Leaves oblong-lanceolate, acute at each end, nearly entire.—Found in gravelly waſte ground and on walls, in Jamaica, St. Domingo, and Martinico.—*Root* annual. *Stem* erect, about three feet high, very ſmooth. *Leaves* moſtly alternate, ſometimes undivided, ſometimes waved or cut, of a glaucous green. *Flowers* greeniſh-yellow, inodorous.

2. K. *Porophyllum.* Willd. n. 2. (Cacalia Porophyllum; Linn. Sp. Pl. 1169. Cavan. Ic. v. 3. 11. t. 222.)—Leaves elliptical, obtuſe, beſprinkled with tranſparent dots.—A native of Peru. It flowered in the royal garden of the Eſcurial during the month of November.—*Stem* ſtraight, ſimple, ſmooth, ſlightly ſtriated, about a foot and half high. *Leaves* numerous, ſcattered, on footſtalks, oval or elliptical, crenate, and dotted with ſmall diaphanous ſpots. *Flowers* terminal, cylindrical.

3. K. *angulata.* Willd. n. 3. (Cacalia angulata; Vahl. Symb. v. 3. 92. C. ſonchifolia; Forſk. Ægypt-Arab. n. 485.)—"Lower leaves on footſtalks, oblong, toothed, angulated; upper ones lanceolate, entire."—A native of Arabia Felix.—*Stem* herbaceous, divided at the upper part, ſtriated. The flowering *branches* elongated and naked upwards. *Leaves* very ſmooth, about an inch and half long. *Flowers* corymboſe.

4. K. *ſuffruticoſa.* Willd. n. 4. (Cacalia ſuffruticoſa; Linn. Mant. 109. C. Linaria; Cavan. Ic. v. 3. 29. t. 257.)—"Leaves linear, entire, with pellucid dots. Stem rather ſhrubby."—A native of New Spain, and ſent by Arduino to Linnæus from Braſil.—*Stems* about ſix inches high, thread-ſhaped. *Leaves* ſcattered, entire, ſmall, fleſhy. *Flower-ſtalks* terminal, ſingle-flowered, erect. *Flowers* numerous, of a purple-colour, and very ſimilar to thoſe of *K. Porophyllum*, but the herbage is totally unlike that ſpecies.

KLEIST, CHRISTIAN EWALD VON, in *Biography*, was born at Zoeblin, in Pomerania, in 1715. His parents, who were of the order of nobility, ſent him to the Jeſuits' college in Upper Poland, whence he was ſent to the academy of Dantzic, and afterwards to the univerſity of Konigſberg. At the age of twenty-one he entered the Daniſh military ſervice, but having an attachment to literature he did not forget the Muſes amidſt his other avocations. Once he was ſo intent on reading Milton, that he forgot to relieve guard. He did not remain long in the Daniſh ſervice, but entered into that of Pruſſia. Frederic the Great gave him a commiſſion in the regiment of prince Henry, and in this ſituation he formed an intimacy with all the great characters at Potſdam. He was particularly noticed by the king, and advanced in the army. He requeſted and obtained leave to take an active part in the campaign of the year 1759, but this inſtance of military ardour proved fatal to him, and deprived Germany of one of its beſt poets. He was preſent at the battle of Kunnerſdorff, and after the moſt heroic diſplays of valour in the ſucceſſive attacks of four batteries, he fell covered with wounds, of which, after much ſuffering, he died in the forty-fourth year of his age. His principal work, as a poet, was entitled "Spring," which was firſt publiſhed in 1749. On account of this poem he was called the imitator of Thomſon: he is reckoned to excel in painting the ſweet and beautiful ſcenes of nature, in a ſtyle ſingularly elegant and harmonious. The Spring was tranſlated into ſeveral languages. He wrote Idylis in the manner of Geſner, which poſſeſs great ſimplicity and neatneſs. He was author, likewiſe, of ſome moral treatiſes, and "Reflections on the Art of War." He publiſhed an edition of his works in 1756, with additions, among which is a deſcription of an inundation, a piece of the terrific kind. Gen. Biog.

KLEMPENOW, or CLEMPENOW, in *Geography*, a town of Anterior Pomerania; eight miles N. of Treptow.

KLEMS, a town of Moravia, in the circle of Olmutz; eight miles S.E. of Olmutz.

KLEPOT, a town of Tranſylvania; 14 miles S. of Hunyad.

KLEPS, a town of Norway; 11 miles S. of Stavanger.

KLESAKU, a town of Walachia; 21 miles W.S.W. of Bechareſt.

KLETTGAU, a landgravate of Germany, called alſo "The county of Sulz," ſituated near the Rhine as it leaves the lake of Conſtance.

KLEWAH, a town of Ruſſian Poland, in Volhynia; 24 miles E.N.E. of Lucko.

KLIMATOVSKOI, a town of Ruſſia, in the government of Novgorod; 44 miles W.N.W. of Novgorod.

KLIMATZSKOI, an iſland of Ruſſia, in the lake of Onetzkoi; 48 miles N.N.E. of Petrovadſk.

KLIMIA, or CLIMIA, in the *Materia Medica*, the name given by the Arabian writers to the lapis calaminaris. Avicenna and Serapion never call it by any other name. Some pronounce the word *calimia*. Hence the modern Greeks have formed their *celimia*, which is the name of the ſame ſubſtance; and our calaminaris is evidently deduced from the ſame original.

KLIMOVA, in *Geography*, a town of Ruſſia, in the government of Tobolſk, on the Tunguſka; 200 miles E of Eniſeiſk.—Alſo, a town of Ruſſia, in the government of Tobolſk, on the Mura; 232 miles E.S.E. of Eniſeiſk.

KLIMOVIGI, or KLIMOVITCHI, a town of Ruſſia, and diſtrict of the government of Mogilev, or Mohilef, on the river Oſteg, which falls into the Soſh; 80 miles E. of Mogilev.

KLIN, a town of Ruſſia, and diſtrict of the government of Moſcow, on the river Seſtra, falling into the Dubna, which joins the Volga; 36 miles N.N.W. of Moſcow.—Alſo, a ſmall iſland in the N. Pacific ocean, near the E. coaſt of Kamtſchatka.

KLINGENFEL, a town of the duchy of Carniola; nines miles S.W. of Landſtraſs.

KLINGENTHAL, a town of Saxony, in the Vogtland, inhabited chiefly by miners and woodmen, driven out of Bohemia an account of their religion; 12 miles E. of Oelſnitz.

KLINGERSKOI, a town of Ruſſia, in the government of Irkutſk; 76 miles S.S.E. of Nertchinſk.

KLINGNAN, a town of Switzerland, in the county of Baden; nine miles N. of Baden.

KLINGSTEIN, in *Mineralogy*, *Pierre Sonante*, Broch. Its colour is dark greeniſh-grey, paſſing into yellowiſh and aſh-grey, a light olive-green or liver-brown. It occurs in maſs. The croſs fracture is almoſt dull, the longitudinal fracture is gliſtening. The former is ſplintery, paſſing into conchoidal, the latter is more or leſs ſlaty. It branches into indeterminate ſharp-edged, ſometimes tabular fragments. Uſually tranſlucent on the edges, conſiderably hard, and not eaſily frangible. When ſtruck with a hammer, it gives a ringing metallic ſound, whence its name. Sp. gr. 2.57. It melts eaſily before the blow-pipe, and yields a clear, almoſt colourleſs glaſs. According to Klaproth's analyſis, it conſiſts of

Silex	57.25
Alumine	23.5
Lime	2.75
Oxyd of Iron	3.25
——— Manganeſe	0.25
——— Soda	8.1
——— Water	3.0
	98.1

Werner refers it to the floetz-trap formation, reſting upon baſalt, into which it frequently paſſes. It often contains cryſtals of feldſpar, and then forms ſlate porphyry. Reuſs reckons it to belong to the primitive rocks. It occurs in the middle mountains of Bohemia, particularly the Donnerſberge, near Milbſchau, a conical mountain above 2500 feet high, which conſiſts entirely of this mineral. It has alſo been obſerved by Jamieſon in the iſland of Landaſh, in the Frith of Clyde. Very beautiful varieties of it alſo occur in rock maſſes between Llanberris and Caernarvon in North Wales. Aikin's Dict. of Chem. and Miner.

KLINKETS, in *Fortification*, a ſort of ſmall gates made through paliſadoes, for ſallies.

KLINKOSEE, in *Geography*, a town of Poland, in Podolia; 52 miles N.N.E. of Kaminiec.—Alſo, a river of Poland, which runs into the Dnieſter; eight miles S. of Kaminiec.

KLIP FISH, in *Ichthyology*, a name by ſome authors ſuppoſed to mean the lupus piſcis, or wolf-fiſh; and by others, the common cod-fiſh.

Of the former opinion is Fabricius, who ſuppoſes the lupus ſo called, becauſe it is able to climb up rocks, or generally lies hid among rocks: the word *klip*, in the German, ſignifying a *rock*. Of the other is Schonefeldt, who ſuppoſes the cod has its name of klip-fiſh, or rock-fiſh, from its being uſually dried upon the rocks.

KLIP-*fiſh* is alſo a name by which the Dutch in the Eaſt Indies call a flat fiſh, caught frequently on thoſe ſhores, and ſometimes called alſo *ſoldaten viſch*, or the ſoldier's fiſh. It ſomewhat reſembles the bream in ſhape. Its general ſize is about ſix or ſeven inches in length, and it is of a very white and ſilvery hue. It differs very greatly, however, from the bream in many particulars. The nerves of its back fin are prickly, as in the perch; its tail is pointed, not forked; and the iriſes of its eyes are yellow. It is one of the fineſt fiſh of the Eaſt Indies. Its fleſh is very firm, and falls into large pieces, when dreſſed, like that of the cod, and is very well taſted. See CHÆTODON *teira*, *cornutus*, and *ſtriatus*.

KLIPPEN, in *Geography*, a ſmall iſland in the Atlantic, near the coaſt of Africa. S. lat. 32° 10′.

KLOBUK, a town of Moravia, in the circle of Hradiſch; 20 miles E. of Hradiſch.

KLODAWA, a town of the duchy of Warſaw; 12 miles N.W. of Lenczicz.

KLOETZEN, a town of Weſtphalia, in the principality of Luneburg-Zelle; 45 miles E. of Zelle. N. lat. 52° 41′. E. long. 11° 8′.

KLOKLSBERG, a town of Bohemia, in the circle of Bechin; 12 miles S.E. of Roſenberg.

KLOKOTZ, a town of Croatia; 24 miles S. of Carlſtadt.

KLOPSTOCK, FREDERIC THEOPHILUS, in *Biography*, a German poet, was born at Quedlinburg in 1724. He was the eldeſt of eleven children, and diſtinguiſhed himſelf in his youth among his companions in bodily and mental exerciſes. At the age of ſixteen he went to college, and being placed under an able tutor, he made himſelf familiar with the languages, and acquired a taſte for the beauties of the beſt claſſical authors. He made attempts in compoſition both in proſe and verſe. In the latter he wrote ſome paſtorals, but not contented with theſe humbler efforts, he formed the reſolution of compoſing an epic poem, and fixed upon the "Meſſiah" as his ſubject. In 1745, he went to the univerſity of Jena, where he commenced the ſtudy of theology, but in the midſt of his academical purſuits he was planning his projected work, and ſketched out his three firſt cantos. In 1746, he removed from Jena to Leipſic, and became a member of a ſociety of young men who had formed themſelves into a literary club for mutual improvement. About this time he exerciſed his genius in lyric compoſitions. Several of his odes, together with the three firſt cantos of his

Meſſiah, appeared in a periodical paper, entitled "Bremen Contributions." The publication of ten books of his Meſſiah made his name known throughout Germany, and raiſed his reputation very high. This work was extremely popular among thoſe who had hearts to feel the beauties of poetry and the warmth of devotion. The Meſſiah was quoted again and again from the pulpit by the younger divines, while thoſe more advanced cenſured the fictions in which the poet had indulged himſelf on ſacred topics, and rigid grammarians made ſevere ſtrictures on the ſtyle and verſification. He travelled into Switzerland in 1750, to pay a viſit to Bodmer of Zurich, in conſequence of an invitation, where he was received with every token of reſpect. The ſublime ſcenery of that country, the ſimplicity of the inhabitants, and the freedom they enjoyed, were much ſuited to the taſte of Klopſtock. Here he intended to have ſpent the remainder of his life, but baron Bernſtorff cauſed an invitation to be ſent to him to reſide at Copenhagen, with aſſurances of ſuch a penſion as would make him independent. Klopſtock acceded to the propoſal, and ſet out in 1751, by the way of Brunſwick and Hamburgh, at which latter place he became acquainted with Miſs Muller, a lady perfectly adapted to his own mind, whom he ſoon after married. They ſeemed by Providence deſtined to be one of the happieſt couples upon earth, but he was ſoon deprived of her, for ſhe died in childbed: her memory, however, was ſacred to Klopſtock to the laſt moment of his exiſtence. He lived chiefly at Copenhagen, till the year 1771, after which he reſided at Hamburgh as Daniſh legate, and counſellor of the margrave of Baden, who gave him a penſion. The latter part of his life was little varied by incidents, and after he had brought the Meſſiah to a concluſion, he continued to employ himſelf in compoſition, and in the correction and reviſion of his works. He died at Hamburgh, in March 1803, being 79 years of age. By thoſe who were intimate with him, he is repreſented as a truly amiable man, happieſt in a ſmall circle of private friends, and particularly fond of the ſociety of young perſons. The character of Klopſtock, as a poet, is that of exuberance of imagination and ſentiment. His ſublimity is almoſt unparalleled, he is apt to loſe himſelf in myſtical abſtraction, and his exceſs of feeling ſometimes betrays him into rant and extravagance. An able critic claims for the author of the Meſſiah a rank among the firſt poets. His odes and lyric poems have likewiſe been much admired by his countrymen, and his dramas diſplay great force and dignity, but they are better adapted to the cloſet than the ſtage. To his talents as a proſe writer, his "Grammatical Dialogues" will bear witneſs: they abound with judicious remarks, and the object of them is worthy of a true patriot, *viz.* an attempt to prove that the German tongue is capable of all the ſtrength and nobleneſs of a claſſical language.

KLOTEN, in *Geography*, a town of Switzerland, in the canton of Zurich; 5 miles N. of Zurich.

KLOTZ, Christian Adolphus, in *Biography*, an eminent German critic, was born in the year 1738 at Biſchofswerden, near Dreſden, where his father was ſettled as a clergyman. He diſplayed, at an early period, ſuch an attachment to letters, that his parents ſpared no expence to gratify his taſte, and to enable him to cultivate his talents to the beſt advantage. He employed thoſe leiſure hours, which other lads devote to amuſement, in compoſing and reciting German verſes. At Gerlitz, he ſtudied under Baumgarten the Greek and Roman claſſics, and gave a ſpecimen of his powers in verſification, by a poem compoſed on the "Deſtruction of Zittau," which was laid waſte in the year 1757. In 1758, he proceeded to Leipſic to ſtudy juriſprudence, and while here, he publiſhed ſeveral papers in the "Acta Eruditorum," and ſome ſeparate pieces. In 1761, he publiſhed his "Opuſcula Poetica," containing twenty-three odes, three ſatires, and as many elegies. From Leipſic he repaired to Jena, where he opened a ſchool, which was well attended. Having accepted of an invitation to a profeſſorſhip at the univerſity of Gottingen in 1762, he ſet off for that place, and almoſt immediately after his arrival he was attacked by a ſevere illneſs, from which, however, he recovered, and immediately publiſhed a treatiſe, "De Verecundia Virgilii," to which were added three diſſertations relative to the eclogues of the poet. He alſo publiſhed "Miſcellanea Critica," and applied himſelf to the ſtudy of ancient gems and paintings, with which he became well acquainted. His celebrity had now increaſed ſo much, that he received two offers in the ſame day, one from the prince of Heſſe Darmſtadt, to be profeſſor of the Oriental languages at Gieſſen, and the other from his Pruſſian majeſty, to be profeſſor of eloquence at Halle. While he was deliberating reſpecting the choice he ſhould make, he was nominated by his Britannic majeſty to be profeſſor of philoſophy at Gottingen, with an increaſed ſalary, which induced him to remain in that city, till ſome attempts were made to ruin his reputation. He then quitted Gottingen, and accepted an offer made him by his Pruſſian majeſty, of being profeſſor of philoſophy and eloquence at Halle, with the rank and title of aulic counſellor. While preparing for his departure, he publiſhed "Hiſtoria Nummorum Contumclioſorum et Satyricorum," containing a hiſtory of theſe coins; and on his removal to Halle he gave the public another work of the ſame kind, and at the ſame time he effected, what had been often attempted before without ſucceſs, the inſtitution of a new ſociety, called the "Literary Society of Halle," which afforded great ſatisfaction to the liberal-minded part of the learned in Germany. In 1766, he was invited by his Poliſh majeſty to Warſaw to ſuperintend the education of the children of the Poliſh nobility, which he would gladly have accepted, as it afforded him an opportunity of viſiting new countries, but the king ordered him to remain at Halle, conferred upon him the rank of privy-counſellor, and accompanied this mark of honour with a conſiderable addition to his ſalary. He died in 1771, leaving behind him many other works beſides thoſe to which we have referred. Before his death, he reviſed every thing which he had written on coins, and publiſhed "Opuſcula, nummaria quibus Juris Antiqui Hiſtoriæque nonnulla Capita explicantur." Gen. Biog.

KLUMP-FISH, in *Ichthyology*. See Tetrodon *Mola*.

KLYDAU, Lill, in *Geography*, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 60° 37'. E. long. 20 54'.

Klydau, *Stor*, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 60° 39'. E. long. 20° 48'.

KLYSSA, a town of Pruſſia, in Pomerelia; 33 miles S.S.W. of Dantzic.

KMIDOMOUKA, a town of Poland, in the palatinate of Kiev; 32 miles S.S.E. of Bialacerkiev.

KNAG, a term uſed by country people for a knot in wood; alſo for the branches which grow out in the hart s-horn, near the forehead.

KNAP's Bay, in *Geography*, a bay in Hudſon's bay. N. lat. 61° 15'. W. long. 94 54'.

KNAPPIA, in *Botany*, ſo named by the writer of the preſent article, in honour of John Leonard Knapp, eſq. F. L. S. and A. S. author of "Gramina Britannica, or Repreſentations of the Britiſh Graſſes, with Remarks and occaſional Deſcriptions," an elaborate work in quarto, with

119 coloured plates, drawn by the author, publiſhed in 1804.—Sm. Fl. Brit. 1387. Engl. Bot. v. 16. 1127. (Chamagroſtis; Schrad. Germ. v. 1. 158.)—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

Gen. Ch. *Cal.* Glume of two erect, equal, oblong, abrupt, keeled valves, without awns, containing a ſingle floret. *Cor.* the length of the calyx, ovate, obtuſe, cloſed, conſiſting of innumerable, ſimple or branched, parallel fibres, denſely matted together, united at their baſe, without awns. *Stam.* Filaments three, capillary, twice as long as the corolla; anthers of two elliptical pointed lobes, ſeparate at the baſe and ſummit. *Piſt.* Germen ſuperior, ovate, ſmooth; ſtyles two, very ſhort; ſtigmas very long, capillary, acute, downy. *Peric.* none, except the permanent corolla and calyx. *Seed* one, elliptical, unconnected with the glumes, but enveloped in them.

Eſſ. Ch. Calyx of two abrupt awnleſs valves, ſingle-flowered. Corolla compoſed of denſely-compacted fibres, cloſed, permanent. Seed unconnected.

1. K. *agroſtidea.* Engl. Bot. t. 1127. Knapp Gram. t. 110. Hull. ed. 2. 23. (Chamagroſtis minima; Schrad. Germ. 158. Agroſtis minima; Linn. Sp. Pl 93. Willd. Sp. Pl. v. 1. 372. Sm. Fl. Brit. 82. Hudſ. 32 With. 134. Gramen minimum, paniculis elegantiſſimis; Bauh. Theatr. 26. G. minimum, Anglo-Britannicum; Raii Syn. Indic. Pl. Dub. G. ſparteum, capillaceo folio minimum; Dill. Giſſ. 172. t. 16. excellent.)—A native of ſandy paſtures, eſpecially near the ſea, in various parts of Europe; as Germany, the ſouth of France, and the ſouth-weſt coaſt of Angleſea, at which laſt place it has been obſerved in plenty by the Rev. H. Davies. It is a ſmall, delicate, annual graſs, flowering in the early ſpring, after which it ſoon withers and diſappears. The *root* conſiſts of a few long ſimple fibres. *Stems* from one to three inches high, ſimple, ſlender, ſtraight, ſmooth, naked, except at the bottom. *Leaves* almoſt entirely radical, ſhort, linear, channelled, blunt, with very broad ſheathing membranous baſes. *Spike* ſimple, terminal, hadly an inch long, of eight or ten little purpliſh or green *flowers*, placed alternately, each on a ſhort ſtalk, on a ſlender, zig-zag, common ſtalk, to which, when in ſeed, they become cloſely preſſed.

The name of *Knappia* cannot be ſuperſeded by *Chamagroſtis*, the latter being untenable, as compoſed of another eſtabliſhed generic name *Agroſtis*, and contrary to the rule of Linnæus, Phil. Bot. ſect. 225, "a generic name, with one or two ſyllables prefixed, ſo as to make it apply to a totally different genus from what it originally deſignated, is to be rejected." We cannot but wonder, therefore, that the excellent Schrader ſhould have been led, by any of his leſs learned countrymen, to adopt ſuch a name, when another was already before him, liable to no objection. S.

KNAPSACK, in *Military Language*, is a rough leather or canvas bag, which a ſoldier carries on his back, containing all his neceſſaries. Square knapſacks are moſt convenient, and ſhould be made with a diviſion to hold the ſhoes, black-balls, and bruſhes, ſeparate from the linen. White goat-ſkins are ſometimes uſed. Soldiers are put under ſtoppages for the payment of their knapſacks, which, after ſix years, become their property.

KNAPWEED, in *Botany*. See JACEA.

KNAPWEED, a common name given to a kind of weed, which is ſometimes called blue-bottle. It infeſts arable land greatly in many caſes.

KNARED, in *Geography*, a town of Sweden, in the province of Halland; 14 miles E.S.E. of Halmſtad.

KNARESBOROUGH, a borough, market-town, and pariſh in the wapentake of Claro, Weſt-Riding of Yorkſhire, England, is ſituated on a rocky mountain, at the foot of which runs the river Nid. It is one of the ancient burghs that were part of the demeſnes of the crown, found under the title of Terra Regia, in Domeſday Book, and other records. The ſcite of Knareſborough correſponds with the deſcription given of the towns of the Britons; being placed on the bank of a river for the ſupply of water, and on the ſkirt of a foreſt, for conveniency of hunting and paſture. The remains of a ditch and rampart, which may yet be traced, include an area of 900 feet in length, and 600 in breadth. Soon after the Norman conqueſt, a ſtrong caſtle was built here by Serlo de Burgh, who accompanied the conqueror to England, and received this manor, with ſeveral others, as a reward for his ſervices. The caſtle, having fallen to the crown, was granted by Henry III. to his brother Richard, earl of Cornwall, in the year 1257. In 1327, it was taken by John de Lilburn, an officer belonging to the earl of Lancaſter: but, being beſieged by the king's order, and Lilburn finding no proſpect of relief, he ſurrendered, having firſt deſtroyed all the records, and every memorial of the liberties and privileges of the burgh. In 1371, the caſtle and manor were granted by Edward III. to his ſon, John of Gaunt, duke of Lancaſter: from whoſe time it has been an appendage to the duchy of Lancaſter. The town and caſtle had a conſiderable ſhare in the civil war of the 17th century: after a brave reſiſtance, the caſtle ſurrendered to lord Fairfax; and was ordered by the houſe of commons to be rendered untenable. The walls and towers have ever ſince been mouldering away. This caſtle contained nearly two acres and a half within its walls, which were flanked with eleven towers: theſe, with ſeveral other buildings in the different wards, afforded accommodation for a numerous garriſon. Part of the principal tower is ſtill remaining, and appears to have been built about the time of Edward III. It conſiſts of three ſtories above the keep or dungeon. The firſt room on the ground-floor has been, from time immemorial, the repoſitory of the ancient records. On the ſecond ſtory is a ſtate-room, called the king's-chamber, in which Richard II. was impriſoned after his depoſition. Beneath this tower is the dungeon, to which there is a deſcent by twelve ſteps: the roof is arched with ſtone, and ſupported by one round pillar, nine feet in circumference. In a part of the ruins are the remains of a ſecret cell, or hiding place, conſtructed in the middle of the wall: this receptacle is three feet four inches high, two feet eight inches wide, and more than twenty feet in length. In the caſtle-yard is the entrance to an arched ſubterraneous paſſage leading to the moat. Leland, ſpeaking of this caſtle, ſays, "It ſtandeth magnificently and ſtrongly on a rock, having a deep ditch hewn out of the rock, where it was not defended by the river Nid."

The church of Knareſborough, dedicated to St. John the Baptiſt, was a grant from the crown at the beginning of the 12th century. On the north ſide of the choir is a chapel belonging to the Slingſby family: on an altar-tomb are whole length figures of ſir Francis Slingſby and his lady; the knight in complete armour; the lady in a long robe, with folding plaits down to the feet: here are alſo figures of ſir William Slingſby and Henry Slingſby, eſq. and various other monuments and inſcriptions. On the ſouth ſide of the choir is a chapel belonging to the Plumptons of Plumpton, though no traces now remain of that ancient family, except their arms ſtained on glaſs in the window. The ſeats on either ſide of the choir, and a pulpit facing the eaſt window, appear to be ancient.

Knareſborough was ſummoned to ſend members to parliament in the firſt year of queen Mary; from which time it has returned two repreſentatives: the right of election is veſted in the holders of burgage tenures, 84 in number. In the diary of ſir Henry Slingſby, who was elected in 1640, is the following note:—"There is an evil cuſtom at ſuch elections, to beſtow wine on all the town, which coſt me ſixteen pounds at leaſt." The practice of purchaſing the burgage-houſes began about the year 1714; ſince which a majority of the votes have been in the poſſeſſion of the dukes of Devonſhire, who have nominated the two members. The town, though a borough, is not incorporated; but is governed only by a bailiff and conſtable. Here are a ſpacious market-place, and a neat market-croſs, which was erected in the year 1719. Over the river is a good ſtone bridge. On the eaſt ſide of the church is a free-ſchool, endowed, in 1616, by the Rev. Robert Challoner, a native of Goldborough, and rector of Amerſham, in Buckinghamſhire. The preſent building was erected by ſubſcription in 1741. In Windſor-lane is a Diſſenters' chapel, founded by lady Hewley, of Bell-hall, near York; the preſent edifice was built, on the ancient ſcite, in 1778. In Gracious-ſtreet is a Quaker's meeting-houſe, erected in 1701. A conſiderable manufacture of linen has been carried on here for many ages, and is ſtill in a flouriſhing condition; upwards of 1000 pieces, each 20 yards in length, being often woven in a week. In the year 1764, an act of parliament was obtained for the better ſupply of river water, of which the conveyance before was, from the elevated ſituation of the town, rendered difficult and expenſive. In the Long walk, cloſe by the river Nid, is the *Dropping well*, or Petrifying ſpring, which iſſues from a lime-ſtone rock, about 40 yards from the bank of the river; and, after running about 20 yards, divides, and ſpreads itſelf over the top of a ledge of rock, whence it trickles or drops down from 30 or 40 places, into a channel hollowed for the purpoſe. The ſpring is ſuppoſed to ſend forth 20 gallons in a minute. This rock, which is about 10 yards high, 16 long, and from 10 to 16 broad, about the year 1704, ſtarted from the common bank, and left a chaſm between them. Tradition ſtates, that near this rock the famous Yorkſhire ſybil, Mother Shipton, was born, about the year 1488. From the Dropping well, the walk extends along the river ſide to the High-bridge; producing, as the river meanders very much, every 10 or 20 yards, a new point of view, which, though compoſed of the ſame objects, is ſurpriſingly variegated. From ſome parts of this walk are ſeen the venerable ruins of the caſtle, the hermitage, &c. with an intermixture of rocks and trees, over which part of the tower of Knareſborough church makes its appearance. On the other ſide of the river, at the foot of a perpendicular rock, is St. Robert's chapel, ſuppoſed to have been made, in the reign of king John, by a learned and pious hermit of that name. This chapel is hollowed out of the ſolid rock; its roof and altar are beautifully ornamented; at the entrance is the figure of a knight templar in the act of drawing his ſword. Near Grimbald-bridge is a hermitage called St. Robert's cave, ſuppoſed to have been the dwelling of the hermit above-mentioned. This cave has been rendered remarkable by a circumſtance, which, in the year 1758, led to the diſcovery of the murder of Daniel Clarke, committed 14 years before, by Eugene Aram, a ſchool-maſter of this town, a man of extraordinary learning, who pleaded his own cauſe in the moſt able manner. He was, however, convicted and executed. About half a mile from St. Robert's chapel, ſtood the priory, founded by the great earl of Cornwall, about the year 1257, for a ſociety of friars of the order of the Holy Trinity. The ſcite, at the diſſolution, was granted to the earl of Shrewſbury. It ſoon after became the property of the Slingſbys, in which family it has ever ſince remained. The chapel, priory, and other buildings, are now entirely demoliſhed; the ruins lying ſcattered in "many a mouldering heap." The remains of the fiſh-ponds ſhew them to be of a ſingular conſtruction, ſo that the water might be drawn off at pleaſure. On the oppoſite bank of the river ſtands a high rock, called Grimbald-cragg; from the top of which is a fine proſpect of the ſubjacent vale, the river, Birkham-wood, and the lofty ſummit of Almias-cliff. On the ſide of the rock is a cavern, which, by its rude remains, appears to have been the reſidence of a hermit, of the name of Grimbald.

Knareſborough is 17 miles diſtant from York, and 202 north of London. The population, as returned to parliament in the year 1800, was 3388, inhabiting 766 houſes. A market is held on Wedneſday, which is plentifully ſupplied with all kinds of proviſions: the quantity of corn ſold here weekly, is ſuppoſed to exceed that of any other market in the county. In the year 1708, queen Anne granted to the burgeſſes five annual fairs, with a court of Pie-poudre; a court held in fairs to redreſs diſorders committed in them.

On the eaſt ſide of the town is Hay-park, containing about 1200 acres, granted by the crown to an anceſtor of the late lord Bingley; and afterwards in the poſſeſſion of ſir John Hewley, whoſe widow appropriated the rents to charitable uſes.

Knareſborough foreſt extends from eaſt to weſt upwards of twenty miles, and in ſome places eight miles in breadth. By the Domeſday ſurvey, there were then only four townſhips in this foreſt; Birſtwith, Fuſton, Beckwith, Roſſett. But in the year 1368, there appear to have been three principal towns and ſixteen hamlets.

At a ſhort diſtance from Knareſborough is Bilton park, formerly in the poſſeſſion of the Slingſby family, afterwards in that of Stockdale for above an hundred years, from whom it paſſed by ſale to the Watſons; John Farſide Watſon, eſq. is the preſent poſſeſſor.

On a ſmall elevation above the river Nid, ſtands Conyngham houſe, formerly called Coghill hall: which for ſeveral centuries belonged to the Coghill family; but was purchaſed of ſir Thomas Coghill, bart. with 51 acres of land, by the counteſs of Conyngham in the year 1796. Hargrove's Hiſtory of the Caſtle, Town, and Foreſt of Knareſbrough, 1798, 12mo.

KNAVE, an old appellation for a man ſervant, and ſo uſed in 14 Edw. III. ſtat. 1. cap. 3.

The word is formed from the Saxon *cnapa*, or Flemiſh *knape*, which ſignify the ſame.

Knave alſo ſignifies a male-child, or boy, in which ſenſe *knave-child* has been frequently uſed in contradiſtinction to a *girl*; and in this ſenſe Wickliffe uſes the word in his tranſlation of Exod. i. 16. and other places of the Bible. In the old Saxon tranſlation of Mat. viii. 6. "Puer meus jacet in domo paralyticus," was termed *Myn knapa*.

Knave has ſometimes alſo been uſed as an addition; as Willielmus Cowper de Denbigh, knave, &c.

It is a common opinion, that Rom. i. 1. was tranſlated, *Paul, a knave of Jeſus Chriſt.* This miſtake was occaſioned by a Bible in the duke of Lauderdale's library, where the word *kneawe* is inſerted in leſs characters than the others, and a raſure might eaſily be diſcerned.

Knave-*Line*, in a *Ship*, a rope faſtened to the croſs-trees, under the main or fore-top, whence it comes down by the ties to the ram-head, and there it is reeved through a piece of wood of about two feet long, and ſo is brought to the ſhip's ſide, and there hauled up taught to the rails.

KNAUTIA, in *Botany*, received its appellation in honour of two botaniſts, Chriſtopher Knaut, the father, and Chriſtian Knaut, the ſon, who lived at Halle, in Saxony, about the end of the 17th, and beginning of the 18th centuries, and who diſtinguiſhed themſelves by ſome paradoxical opinions reſpecting the methodical arrangement of plants. The method of the former is an alteration of that of Ray, without any improvement.—The latter was abſurd enough to ſuppoſe that the eſſence of a flower conſiſted in its corolla.—Linn. Gen. 49. Schreb. 65. Willd. Sp. Pl. v. 1. 561. Mart. Mill. Dict. v. 3. Sm. Prod. Fl. Græc. p. 1. 85. Ait. Hort. Kew. ed. 2. v. 1. 231. Juſſ. 195. Lamarck Dict. v. 3. 367. Illuſtr. t. 58. Gærtn. t. 86.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Aggregatæ*, Linn. *Dipſaceæ*, Juſſ.

Gen. Ch. *Cal.* Common perianth, containing the florets diſpoſed in a ſimple orb, cylindrical, oblong, erect, divided into as many ſegments as there are florets; proper perianth very ſmall, crowning the germen. *Cor.* univerſal, equal; *proper* of one petal, unequal; tube the length of the calyx; limb unequal, in four ſegments, of which the outer one is larger and ovate. *Stam.* Filaments four, longer than the tube of the corolla, inſerted into the receptacle; anthers oblong, incumbent. *Piſt.* Germen inferior; ſtyle thread-ſhaped, as long as the ſtamens; ſtigma thickiſh, bifid. *Peric.* none. *Seeds* ſolitary, ſquare with a woolly tip. *Recept. common*, very ſmall, flat, naked.

Obſ. This genus is diſtinguiſhed from *Scabioſa* in having a tubulated calyx, and the florets arranged in a ſimple orb.

Eſſ. Ch. Common calyx oblong, ſimple, containing about five flowers: proper calyx ſimple, ſuperior. Florets irregular. Receptacle naked.

1. K. *orientalis.* Linn. Sp. Pl. 146. Till. Piſ. t. 48.—"Leaves cut. Florets five, longer than the calyx."—A native of the Levant, flowering from June to September, and frequently to be ſeen in our gardens. *Root* annual. *Stem* branched, about four feet high. *Branches* terminated by ſingle peduncles, each ſupporting a *flower.* *Florets* of a bright-red colour. *Leaves* on the middle of the ſtem pinnated; the reſt are ſerrated. *Seeds* compreſſed, hairy, many-toothed at top. *Down* a concave crown, with many briſtle-ſhaped, unequal teeth.

2. K. *propontica.* Linn. Sp. Pl. 1666. Willd. n. 2. (Scabioſa orientalis villoſa, flore ſuaverubente, fructu pulchro oblongo; Tourn. Cor. 35.)—"Upper leaves lanceolate, entire. Florets ten, equal with the calyx."—A native of the Eaſt, from whence Forſkal ſent ſeeds of it to Linnæus, who raiſed plants from them in his garden, from one of which he made the following deſcription.—"*Stem* biennial, the thickneſs of a finger, two feet in height, villoſe, reſembling *Cheiranthus incanus.* *Leaves* roughiſh, ſerrated; the upper ones a ſpan long. *Calyx* oblong, cylindrical, compoſed of eight or ten leaves, awl-ſhaped at the point. *Corolla* four-cleft, purpliſh; anthers of the ſame colour; filaments and piſtils white. It differs from the laſt ſpecies in having the upper leaves undivided; florets about ten, inſtead of five, whilſt the ſeed-crown is fifteen-toothed and fringed."—It appears to us, nevertheleſs, to be a mere variety.

K. *palæſtina* and *plumoſa* of Linnæus are referred by Dr. Smith, in his *Prodromus Floræ Græcæ*, to the genus *Scabioſa*, to which they moſt indubitably belong.

Knautia, in *Gardening*, contains plants of the herbaceous, annual, and biennial kinds; of which the ſpecies cultivated are, the oriental knautia (K. orientalis); and the Levant knautia (K. propontica).

Method of Culture.—Plants of this kind may be eaſily increaſed by ſeeds, which, when permitted to ſcatter in the autumnal ſeaſon, produce good plants. After they this may be taken up, and planted out in the clumps and borders of pleaſure-grounds, among other low ſhrubs near the walks. In this way the plants live through the winter, and flower in June. There is no particular ſort of culture requiſite afterwards, but to keep the plants perfectly clean from weeds. The ſeeds fall to the ground as ſoon as they become fully ripe.

Theſe plants are capable of affording variety among other hardy flowering plants which are of ſimilar growths.

KNAWEL, in *Botany*, ſaid to be a word of German origin, but of its ſignification Dillenius confeſſes himſelf, "though a German," to be ignorant. He adopts it, in his *Nova Plantarum Genera*, 94. t. 3, for what Linnæus more happily called *Scleranthus*, of which we ſhall treat in its place.

KNECK, in the *Sea Language*, the twiſting of a rope or cable, as it is veering out.

KNEE, Genu, in *Anatomy*. See Extremities.

Knee, *Preternatural Cartilaginous Subſtances in*, in *Surgery*. See Joints, *Diſeaſes of.*

Knee, *Dropſy of.* See Joints, *Diſeaſes of.*

Knee, *White Swelling of.* See White Swelling.

Knee, *Diſlocation of.* See Luxation.

Knee-*Cap*, a ſort of bandage employed for keeping up a ſteady, equal, and effectual preſſure on the knee, when the nature of the caſe requires ſuch treatment, as for inſtance, when there are preternatural cartilaginous ſubſtances in the joint, and it is not judged proper to ſubmit to the operation of exciſion. See Joints, *Diſeaſes of.*

Knee-*Pan*, in *Anatomy*. See Extremities.

Knee-*Pan*, *Diſlocations of*, in *Surgery*. See Luxation.

Knee-*Pan*, *Fractures of.* See Fracture.

Knee, in the *Manege*, is the joint of the fore-quarters, that joins the fore-thigh to the ſhank.

Knees, in a *Ship*, are the crooked parts of oak timber which ſecure the beams to the ſides of the ſhip, and are diſtinguiſhed by the terms hanging-knees and lodging-knees; the former are thoſe whoſe arms fay to the ſide in a perpendicular direction, whereas the latter fay next the timber upon the clamps in the direction of the hang of the deck. The ſcarcity of thoſe articles has compelled the ſhip-builder to introduce knees of iron; but being inferior in point of contact with the ſhip's ſides, and as the bolts cannot be drove tight in the iron-knees if the ſhip ſtrains, they conſequently muſt work looſe, theſe, therefore, ſhould only be reckoned as an inferior ſubſtitute.

Knee *of the Head*, by ſailors called the *cut-water*, an aſſemblage of pieces of oak timber, tabled or coaked together edgeways, upon account of its great breadth: it extends from the fore-part of the ſtern to the figure-head, which it ſupports, as likewiſe the rails and all other compartments of the head, and is ſecured to the bows by large knees, called cheeks of the head, and through the ſtern, &c. by bolting.

Knee *Holm*, or Knee *Holly*, in *Botany*. See Ruscus *aculeatus.*

Knee *Lake*, in *Geography*, a lake of North America. N. lat. 55°. W. long. 95°.

KNEELING. See Genuflexion.

KNEEP Head, in *Geography*, a cape on the E. coaſt of the iſland of Lewis. N. lat. 58° 19′. W. long. 6° 9′.

KNEKINIEC, a town of Auſtrian Poland, in Galicia; 28 miles S.E. of Lemberg.

KNELLER, *Sir* Godfrey, *Baronet*, in *Biography*, a portrait painter, more liberally encouraged, more praiſed and paid than any other man who ever trod the ſame path with the ſame portion of real power in the art of painting. A rapid pencil and a ready talent of taking likeneſſes were the foundation of his reputation; and a moſt fortunate ignorance of the art among the beſt informed even of the public, by whom he was employed, aided his progreſs. Not but that he was equal to the production of good works if he had been more carefully trained, and had lived amongſt thoſe who knew how to value works of art upon juſt principles; but he was amongſt the moſt vain of mankind, and had no regard whatſoever for that poſthumous fame which leads men to ſacrifice preſent enjoyments to future glory. His motto was, "to live whilſt he lived," and, conſequently, to make money was a matter of greater moment with him than to make good pictures; and he ſucceeded fully; for although he loſt 20,000*l.* by the South-ſea ſpeculation, he left, at his death, an eſtate of 2000*l.* a-year. His prices, whilſt he painted here, were 15 guineas for a head; 20 if with one hand; 30 for a half, and 60 for a whole length.

He was born at Lubec about the year 1648. His father was ſurveyor-general of the mines, and inſpector of count Manſfeldt's revenues. At firſt Godfrey was deſtined for a military life, but painting was his paſſion. His father acquieſced in his wiſhes, and placed him under Bol, at Amſterdam. He had even ſome inſtructions from Rembrandt. He viſited Italy in 1672, and remained ſome time at Venice, where he painted ſome of the firſt families, and amongſt them the cardinal Baſſadonna. It is probable that he here learnt that free, looſe ſtyle of execution in which he delighted, but by no means excelled; with him it fell to negligence and clumſineſs, particularly in his draperies, whilſt ſometimes his heads exhibit a perfect maſter of the pencil.

Kneller did not ſtay long in Italy, as in 1674, he came to England with his brother, John Zachary, who aſſiſted him in painting, without intending to reſide here; but being recommended to Mr. Banks, a Hamburgh merchant, he painted him and his family. Mr. Vernon, ſecretary to the duke of Monmouth, ſaw them, and ſat to Kneller; and perſuaded the duke alſo to ſit. His grace was delighted, and engaged the king his father to have his picture by the new artiſt, at a time when the duke of York had been promiſed the king's picture by Lely. Charles, unwilling to have double trouble, propoſed that both artiſts ſhould paint him at the ſame time. Lely, as the eſtabliſhed artiſt, choſe his light and ſtation: Kneller took the next beſt he could, and performed his taſk with ſo much expedition and ſkill, that he had nearly finiſhed his piece when Lely's was only dead-coloured. The circumſtance gained Kneller great credit; and Lely obtained no leſs honour, for he had the candour to acknowledge and admire the abilities of his rival. This ſucceſs fixed Kneller here, and the immenſe number of portraits he executed, prove the continuance of his reputation.

He was equally encouraged by Charles, James, and William; and had the honour of painting the portraits of ten ſovereigns (*viz.* Charles II. James II. and his queen, William and Mary, Anne, George I. Louis XIV. the czar Peter the Great, and the emperor Charles VI.), which is more than can be ſaid of any other painter. His beſt friend was William, for whom he painted the beauties of Hampton Court; and by whom he was knighted in 1692, and preſented with a gold medal and chain worth 300*l.* In his reign, he alſo painted ſeveral of the admirals for Hampton Court, and the Kit-Cat club. He lived to paint George I. and was made a baronet by him. In 1722, ſir Godfrey was ſeized with a violent fever, from the immediate danger of which he was reſcued by Dr. Meade. He languiſhed, however, ſome time, and died in October 1723. His body lay in ſtate, and was buried at his country-ſeat called Wilton; but a monument was erected to him in Weſtminſter Abbey, for which he left 300*l.* and gave particular inſtructions for the execution of it to Ryſbrach.

During the latter part of his time, that is, after the death of Lely, in 1680, Kneller ſtood at the head of the profeſſors of his art in this country, and that moſt conſpicuouſly. It is not therefore ſurpriſing that he experienced the encouragement he did. He has left ſome few good pictures behind him as proofs of the natural powers he poſſeſſed; but his moſt ſincere admirers, who are judges, muſt acknowledge that the far greater portion of thoſe he allowed to paſs into the world under his name, are a diſgrace to him and his patrons. His picture of the converted Chineſe at Windſor, he is ſaid to be moſt proud of, as juſtly he might be. This, however, ſhews his profligacy in principle, as it exhibits that he really knew what was good, and could produce it if he choſe. According to his own doctrine, he did as much and no more than was neceſſary to paſs current among his employers. "Hiſtory painters," he ſaid, "make the dead live, and don't begin to live till they are dead. I paint the living, and they make me live."

There is a ſingular paucity of imagination in Kneller's pictures. He did indeed (and Walpole juſtly commends him for it) indulge in an ideal drapery for women, inſtead of the monſtrous dreſſes they wore at the time; but his ingenuity does not appear equal to aſſiſt them ſo much; ſo that there is a ridiculous mixture of poſitive formality in the ſtiff neckloths and wired ſkirts of coats of the one, and of an affected flow and grace in the looſe robes of the other, which conſiſt of nothing more than a chemiſe thrown open, and diſcovering the boſom, and a robe-de-chambre looſely drawn over it.

All that Kneller can be juſtly praiſed, or deſervedly eſteemed for, generally ſpeaking, is, that his heads, or rather his faces, have a good deal of livelineſs and gentility. It ſeldom amounts to character in the general run of his portraits. Now and then the maſter-hand appears, when the ſubject or the moment were favourable. There is, at Petworth, a head of ſir Iſaac Newton that would be an honour to any man to have produced; and portraits of branches of the Seymour family, which are a diſgrace to the name they bear.

The artiſts who ſucceeded him, dazzled by his ſucceſs, and allured by the profeſſed admiration of his taſte, moſt unaccountably loſt ſight of the infinitely greater beauties of Vandyke's manner, and followed his alone. In conſequence, the art ſunk to the loweſt ebb, till it was ſomewhat redeemed by Richardſon's writings, and Hudſon's and Ramſay's talents in painting. But true taſte was not reſtored till Reynolds took up the pencil; and now, happily, the weakneſſes as well as the merits of Kneller are duly appreciated, and hundreds of his works conſigned to the oblivion he probably wiſhed they might experience. When the maſs may be thus diſpoſed of, and the ſelect only remain, then he will obtain, unalloyed, the praiſe his talents, when carefully exerted, fully deſerved.

KNEMA, in *Botany*, a genus named by Loureiro, is derived from κνημη, *the ſpoke of a wheel*, on account of the anthers being diſpoſed into a ſtar-like, or wheel-ſhaped form.—Loureir. Cochinch. 604.—Claſs and order, *Diœcia Monadelphia.* Nat. Ord. . . .

Gen. Ch. Male, *Cal.* none. *Cor.* of one petal, fleſhy; tube thick, ſhort; limb in three, acute, ſegments, woolly on the outſide. *Stam.* a ſingle filament, ſhort, turbinated;

anthers 10 or 12, ovate, two-celled, expanded horizontally about the top of the filament. Female, (flowers on a diſtinct plant.) *Cal.* Perianth inferior, very ſhort, ſomewhat truncated, permanent. *Cor.* as in the male. *Piſt.* Germen ſuperior, roundiſh, hairy; ſtyle none; ſtyle laciniated, erect. *Peric.* Berry ovate, ſucculent. *Seed* ſolitary, ovate, tunicated.

Eſſ. Ch. Male, Calyx none. Corolla three-cleft. Anthers formed into a ſtar, about the filament. Female, Calyx rather truncated. Corolla three-cleft. Stigma one. Berry ſuperior, ſingle-ſeeded.

1. K. *corticoſa.* Loureir.—A native of the woods of Cochinchina. This is a large *tree,* with a thick brown, or reddiſh *bark.* *Branches* aſcending. *Leaves* lanceolate, entire, ſmooth, alternate, on foot-ſtalks. Both male and female *flowers* nearly terminal, on many-flowered ſtalks. *Corolla* brown on the outſide, yellowiſh red within. *Berry* ſmall, pulpy, red.

It ſeems to us that Loureiro refers this genus to the order *Monandria* rather inadvertently, becauſe he deſcribes 10 or 12 anthers as pertaining to the generic character.

KNEVELS, in a *Ship.* See Kevels.

KNIAGININ, in *Geography,* a town of Ruſſia, in the government of Nizagorod, on a rivulet that falls into the Volga; 40 miles E.N.E. of Niznei Novgorod.

KNIASE, a town of Poland, in Volhynia; 50 miles S.W. of Lucko.

KNIFA, in *Botany,* one of Adanſon's whimſical names, of whoſe origin or meaning no account is given. He uſes it to deſignate a genus of his own, compoſed of the Linnæan *Hypericum mutilum* and *ſetoſum,* whoſe flowers have but two ſtyles, and their capſules two cells.

KNIFE is a well known inſtrument made for cutting, and adapted in form to the uſes for which it is deſigned.

Knives are ſaid to have been firſt made in England in 1563, by one Matthews, on Fleet-bridge, London. Anderſ. Hiſt. Com. vol. i. p. 402.

Surgeons have various ſorts of knives. See Bistoury, &c.

KNIFVEN, in *Geography,* a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 60° 38′. E long. 17° 30′.

KNIGHT, Eques, among the *Romans,* was the ſecond degree of nobility; following immediately that of the ſenators.

At the time of building the city of Rome, the whole army of Romulus conſiſted of 3000 foot and 300 horſe, which 300 horſe were the original of the Roman *equites* or knights. Theſe made the ſecond order that had places in the ſenate.

Manutius and Sigonius are of opinion, that beſide the equeſtrian order, and thoſe knights immediately below the ſenators, Romulus inſtituted a military order, whereof the Roman cavalry was compoſed. But no ancient author takes notice of any order of knighthood inſtituted on purpoſe for the war, nor any other knights but thoſe 300, which, as we have obſerved, were the firſt foundation of the equeſtrian order.

The knights had horſes kept for them at the public charge; but when they were admitted among the ſenators, they reſigned that privilege. To be a knight, it was neceſſary they ſhould have a certain revenue, that their poverty might not diſgrace the order; and when they failed of the preſcribed revenue, they were expunged out of the liſts of knights, and thruſt down among the plebeians. Ten thouſand crowns are computed to have been the revenue required.

The knights grew ſo very powerful, that they became a balance between the power of the ſenate and the people. They neglected the exerciſes of war, and betook themſelves principally to civil employments in Rome; inſomuch that Pliny obſerves, in his time, they had no longer a horſe kept at the public expence.

Some ſay that the order of knights, as diſtinct from the people, did not begin before the time of the Gracchi; others ſay, the privilege was then firſt granted them, that no judge ſhould be choſen, but out of their order: ſome time after which they admitted them into the ſenate. This, however, is certain, it was only from that time that a certain revenue was neceſſary, and that this entitled them to the knighthood, without being deſcended from ancient knights.

Knight, in a more modern ſenſe, properly ſignifies a perſon, who, for his virtue and martial proweſs, is, by the king, raiſed above the rank of gentlemen, into a higher claſs of dignity and honour.

The word knight, in its original German, *knecht,* ſignifies a *ſervant;* and has ſince been uſed for a ſoldier or man of war. We have but one inſtance among us where knight is uſed in the firſt ſenſe, and that is in *knight of the ſhire,* who properly *ſerves* in parliament for ſuch a county. In the Latin, French, Spaniſh, Italian, and Dutch languages, knight is expreſſed by a word (*equites*) which properly ſignifies a *horſeman,* as being uſually employed on horſeback. Indeed our common law calls them *milites, ſoldiers,* becauſe they formed a part of the royal army, in virtue of their feodal tenures: one condition of which was, that every one who held a "knight's fee" immediately under the crown was obliged to be knighted; to ſerve the king as ſoldiers in his wars, in which ſenſe the word *miles* was uſed *pro vaſſalo;* or fine for non-compliance.

The exertion of this prerogative, as an expedient to raiſe money, in the reign of Charles I., gave great offence, though warranted by law, and the recent example of queen Elizabeth; but it was by the ſtatute 16 Car. I. c. 16. aboliſhed: and this kind of knighthood has, ſince that time, fallen into great diſregard.

Knighthood was the firſt degree of honour in the ancient armies, and was uſually conferred with a great deal of ceremony on thoſe who had diſtinguiſhed themſelves by ſome notable exploit in arms. They were originally ſaid to be adopted, *adoptabantur in militem,* which we now call *dubbed;* as being ſuppoſed, in ſome meaſure, the ſons of him who knighted them.

The cuſtom of the ancient Germans was to give their young men a ſhield and a lance in the great council: this was equivalent to the "toga virilis" of the Romans. Before this, they were not permitted to bear arms, but were accounted as a part of the father's houſehold; after it, as part of the community. (Tacit. de Mor. Germ. § 13.) Hence ſome derive the uſage of knighting, which has prevailed all over the weſtern world, ſince its reduction by colonies from thoſe northern heroes. See Knighthood, *Military, infra.*

The ceremonies at the creation of a knight have been various. The principal were a box on the ear, and a ſtroke with a ſword on the ſhoulder. Then they put on him a ſhoulder-belt, gilt ſword, ſpurs, and the other military accoutrements; after which, being armed as a knight, he was led in great pomp to the church.

The manner of making a knight with us, is deſcribed by Camden in a few words: "Qui equeſtrem dignitatem ſuſcipit, flexis genibus leviter in humero percutitur: princeps his verbis Gallice affatur: ſus vel ſois chevalier au nom de Dieu, ſurge vel ſis eques in nomine Dei." This is meant of knights-bachelors, which are the loweſt, though the moſt ancient order of knighthood among us; for we have an inſtance of king Alfred's conferring this order on his ſon Athelſtan. Will. Malmſb. lib. ii.

Knights grew ſo very numerous, that the dignity became of much leſs repute. Charles V. is ſaid to have made five hundred in a ſingle day: on which account, therefore, new orders of knighthood were inſtituted, in order to diſtinguiſh the more deſerving from the crowd. For the ſeveral kinds of knights among us, ſee BACHELOR, BANNERET, BARONET, BATH, GARTER, &c.

KNIGHT is alſo underſtood of a perſon admitted into any order either purely military, or military and religious, inſtituted by ſome king or prince, with certain marks and tokens of honour and diſtinction.

Such are the *knights of the Garter*, *of the Elephant*, *of the Holy Ghoſt*, *of Malta*, &c. All which ſee under GARTER, ELEPHANT, &c.

KNIGHT *Marſhall*. See MARSHALL.

KNIGHTS *of St. Ampulla*. See AMPULLA.

KNIGHTS *of Annunciata*. See ANNUNCIADE.

KNIGHTS *of St. Anthony*. See ANTHONY.

KNIGHTS *of St. Bridget*. See BRICIANI.

KNIGHTS *of St. Catharine of Mount Sinai*. See CATHARINE.

KNIGHTS *of the Chapel*. See CHAPEL.

KNIGHTS *of Chriſt*. See CHRIST.

KNIGHTS *of the Collar*. See COLLAR.

KNIGHTS *of the Dragon*. See DRAGON.

KNIGHTS *of the Elephant*. See ELEPHANT.

KNIGHTS *of the Ermin*. See ERMIN.

KNIGHTS-*Errant*, a pretended order of chivalry, whereof ample mention is made in the old romances.

They were a kind of heroes, who travelled the world in ſearch of adventures, redreſſing wrongs, reſcuing damſels, and taking all occaſions of ſignalizing their prowelſs. This romantic bravery of the old knights was heretofore the chimera of the Spaniards; amongſt whom there was no cavalier but had his miſtreſs, whoſe eſteem he was to gain by ſome heroic action. The duke of Alva, notwithſtanding his age and gravity, is ſaid to have vowed the conqueſt of Portugal to a young lady.

KNIGHTS *of St. George*. See GEORGE.

KNIGHTS *Hoſpitalers*. See HOSPITALERS and MALTA.

KNIGHTS *of St. Louis*. See LOUIS.

KNIGHTS *of Malta*. See MALTA.

KNIGHTS *of St. Mark*. See ST. MARK.

KNIGHTS *of Mary*. See MARY.

KNIGHTS *of the Mine*. See MINE.

KNIGHTS *of Mount Carmel*. See CARMEL.

KNIGHTS, *Rad*. See RAD.

KNIGHTS *of the Round Table*. See TABLE.

KNIGHTS *of the Temple*. See TEMPLARS.

KNIGHTS *Teutonic*. See TEUTONIC.

KNIGHTS *of the Thiſtle*. See THISTLE.

KNIGHTS *of the Shire*, or KNIGHTS *of Parliament*, are two gentlemen of worth, choſen on the king's writ in pleno comitatu, by ſuch of the freeholders of every county as have the value of 40*s*. *per ann.* within the county, clear of all taxes and deductions except parliamentary and parochial taxes, to repreſent ſuch county in parliament.

This qualification of electors for knights of the ſhire or county members, is ſettled by ſtat. 8 Hen. VI. c. 7. and 10 Hen. VI. c. 2. amended by 14 Geo. III. c. 58. According to the eſtimate of biſhop Fleetwood in his "Chronicon Precioſum," 40*s*. in the reign of Henry VI. was equal to 12*l*. *per annum* in the reign of queen Anne; and as the value of money has been lowered ſince, judge Blackſtone concludes that 12*l*. in the biſhop's days muſt have been equivalent to 20*l*. in his own time; and the depretiation of money in later times muſt have made the difference much greater. (See DE-EXPENSIS.) The other qualifications of the electors for counties in England and Wales, collected from ſtatutes are; that no perſon under twenty-one years of age ſhall be capable of voting; nor any perſon convicted of perjury or ſubornation of perjury: that no perſon ſhall vote in right of any freehold granted to him fraudulently to qualify him to vote: that every voter ſhall have been in the actual poſſeſſion or receipt of the profits of his freehold to his own uſe for twelve calendar months before, except it came to him by deſcent, marriage, marriage ſettlement, will, or promotion to a benefice or office: that no perſon ſhall vote in reſpect of an annuity or rent-charge, unleſs regiſtered with the clerk of the peace twelve calendar months before: that in mortgaged or truſt eſtates, the perſon in poſſeſſion ſhall have the vote: that only one perſon ſhall be admitted to vote for any one houſe or tenement, to prevent the ſplitting of freeholds: that no eſtate ſhall qualify a voter, unleſs the eſtate has been aſſeſſed to ſome land-tax aid, at leaſt twelve months before the election: and that no tenant by copy of court-roll ſhall be permitted to vote as a freeholder. (7 and 8 W. III. c. 25. 10 Ann. c. 23. 2 G. II. c. 21. 10 G. II. c. 18. 31 G. II. c. 14. 3 G. III. c. 24.) By ſtatute 22 G. III. c. 41. no commiſſioner, or officer, employed in managing the duties of exciſe, cuſtoms, ſtamps, ſalt, windows or houſes, or revenue of the poſt-office, ſhall be capable of voting in the election of a member of parliament.

Theſe knights, when every man who had a knight's-fee was cuſtomarily conſtrained to be a knight, were of neceſſity to be *milites gladio cincti*, for ſo the writ runs to this day; but now cuſtom admits eſquires to be choſen to this office.

It is required by 23 Hen. VI. c. 15. that all knights of the ſhire ſhall be actual knights, or ſuch notable eſquires and gentlemen as have eſtates ſufficient to be knights; and by no means of the degree of yeomen: and more preciſely by 9 Ann. c. 5. that every knight of the ſhire ſhall have a clear eſtate of freehold or copyhold to the value of 600*l*. *per annum*, except the eldeſt ſons of peers and of perſons qualified to be knights of ſhires. For other qualifications, ſee PARLIAMENT.

The expences of knights of the ſhire, are to be defrayed by the county, during their ſitting in parliament, at the rate of four ſhillings a day. This rate of wages was eſtabliſhed in the reign of Edw. III. (See alſo 35 Hen. VIII. c. 11.) It is hardly neceſſary to add, that theſe are never now required.

KNIGHT'S *Croſs*, in *Botany*. See CAMPION.

KNIGHT-*Heads*, or *Bollard Timbers*, are oak timbers with large upper parts or heads, which are fayed and bolted together, one on each ſide the ſtern, or with a filling between, as they muſt open at the heads ſufficient to admit the bowſprit between them, and running high enough to ſupport the ſame above the ſtern.

KNIGHTS *Fee*, an ancient *law*-term, ſignifying ſo much land of inheritance as was eſteemed ſufficient to maintain a knight with ſuitable retinue; which, in the days of H. III., was reckoned at 15*l*. *per ann.* And by ſtat. 1 Edw. II. ſuch as had 20*l*. *per ann.* in fee, or for life, might be compelled to be knights. But this ſtatute is repealed by 16 Car. I. Sir T. Smith rates a knight's fee at 40*l*. yearly. According to Coke, a knight's fee contained twelve carucates, or plough-lands. Stow ſays, that there were found in England, at the time of the Conqueror, 60,211 knight's fees; according to others there were 60,215; whereof the religious houſes, before their ſuppreſſion, were poſſeſſed of 28,015. See Fee.

In conſequence of the introduction of the feodal ſyſtem upon the Norman conqueſt, all the lands in the kingdom were divided into knight's fees, in number, as Stow ſays, above 60,000; and for every knight's fee, a knight or ſoldier, *miles*, was bound to attend the king in his wars, for 40 days in a year; in which ſpace of time, before war was reduced to a ſcience, the campaign was generally finiſhed, and a kingdom either conquered or victorious. By this means, the king had, without any expence, an army of 60,000 men always ready at his command. Accordingly we find among the laws of William the Conqueror, one, (c. 58.) which in the king's name commands, and firmly enjoins, the perſonal attendance of all knights and others; "quod habeant et teneant ſe ſemper in armis et equis, ut decet et oportet: et quod ſemper ſint prompti et parati ad ſervitium ſuum integrum nobis explendum et peragendum, cum opus adfuerit ſecundum quod debent de feodis et tenementis ſuis de jure nobis facere." This perſonal ſervice in time degenerated into pecuniary commutations or aids, and at laſt the military part of the feodal ſyſtem was aboliſhed at the reſtoration, by ſtat. 12 Car. II. c. 24.

Knights *ſervice*, *ſervitium militare*, a tenure whereby ſeveral lands in this nation were anciently held of the king. This was the firſt, moſt univerſal, and eſteemed the moſt honourable ſpecies of tenure, called in Latin "ſervitium militare," and in law-French "chivalry" or "ſervice de chivaler," anſwering to the "fief d'haubert" of the Normans; a name that frequently occurs in the Mirror. It differed in few reſpects from a pure and proper feud, being entirely military, and the genuine effect of the feodal eſtabliſhment in England. In order to make this tenure, a quantity of land, called a knight's fee "feudum militare," was neceſſary; and he who held this proportion of land (or a whole fee) by knight-ſervice, was bound to attend his lord to the wars for 40 days in every year, if called for; and this attendance was his "reditus" or return, his rent or ſervice for the land he claimed to hold. If he held only half a knight's fee, he was only bound to attend 20 days, and ſo in proportion. This tenure had all the marks of a ſtrict and regular feud; it was granted by words of pure donation, *dedi et conceſſi* (Co. Litt. 9.); was transferred by inveſtiture or delivering corporal poſſeſſion of the land, uſually called livery of ſeiſin; and was perfected by homage and fealty. It alſo drew after it theſe ſeven fruits and conſequences, as inſeparably incident to the tenure in chivalry; *viz.* aids, relief, primer ſeiſin, wardſhip, marriage, fines for alienation, and eſcheat; which ſee reſpectively. It was by this tenure of knight-ſervice that the greateſt part of the lands in this kingdom was holden, and that principally of the king *in capite*, till the middle of the 17th century; and which was created, as ſir Edward Coke expreſsly teſtifies (4 Inſt. 192.), for a military purpoſe; *viz.* for defence of the realm by the king's own principal ſubjects, which was judged to be much better than to hirelings or foreigners. The deſcription above given relates to knight-ſervice proper; which was to attend the king in his wars. There were alſo ſome other ſpecies of knight-ſervice; ſo called, though improperly, becauſe the ſervice or render was of a free and honourable nature, and equally uncertain as to the time of rendering it, as that of knight ſervice proper, and becauſe they were attended with ſimilar points and conſequences. Such was the tenure by *grand ſerjeanty*, which ſee; and of this tenure that by *cornage* (which ſee) was a ſpecies.

Knight's *Canal*, in *Geography*, an inlet of the Pacific ocean, on the W. coaſt of North America, extending in an E. and N.E. direction about 50 miles. Its entrance from an arm of the ſea lies in N. lat. 50° 45'. E. long. 233° 16'.

Knight's *Iſland*, a ſmall iſland in Beering's bay, N.W. of Eleanor's ſound, ſeparated from the American continent by a narrow channel, which is navigable. N. lat. 59° 45'. E. long. 220° 47'.—Alſo, an iſland in Prince William's ſound, about 30 miles in length from N. to S., and from two to five broad. N. lat. 60° 24'. E. long. 212° 52'.—Alſo, a ſmall iſland in Hudſon's bay. N. lat. 61° 50'. W. long. 93° 30'.—Alſo, an iſland in the Pacific ocean, and the largeſt of thoſe called by Capt. Vancouver the "Snares;" diſcovered by Broughton, commander of the Chatham under Vancouver, in November 1791. Some parts of the iſland preſented a very barren appearance, not unlike the W. ſide of Portland, compoſed of whitiſh rocky cliffs. The rocky iſlets are five in number, ſome of which are of a pyramidical form. It did not appear to be inhabited. The ſouth point is ſituated in S. lat. 48° 15'. E. long. 166° 44'.

Knights, *Poor*, a group of ſmall iſlands, ſo called by lieutenant Cook, who diſcovered them in November 1769, on the coaſt of New Zealand, when he was in S. lat. 36° 36', at the diſtance of three leagues N.E. by N.

KNIGHTEN-GILD, in our *Old Writers*, a gild or company in London, conſiſting of nineteen knights, which king Edgar founded, giving them a portion of void ground lying within the walls of the city, now called Portſoken-ward.

KNIGHTHOOD, a military order, or honour; or a mark or degree of ancient nobility, or reward of perſonal virtue and merit.

There are four kinds of knighthood; *military*, *regular*, *honorary*, and *ſocial*.

Knighthood, *Military*, is that of the ancient knights, who acquired it by high feats of arms.

Theſe are called *milites*, in ancient charters and titles, by which they were diſtinguiſhed from mere *bachelors*, &c. Theſe knights were girt with a ſword, and a pair of gilt ſpurs; whence they were called *equites aurati*.

Knighthood is not hereditary, but acquired. It does not come into the world with a man like nobility; nor can it be revoked. The ſons of kings, and kings themſelves, with all other ſovereigns, heretofore had knighthood conferred on them as a mark of honour. They were uſually knighted at their baptiſm or marriage, at their coronation, before or after a battle, &c.

Between the age of Charlemagne and that of the Cruſades, the ſervice of the infantry was degraded to the Plebeians; the cavalry formed the ſtrength of the armies, and the honourable name of *miles*, or ſoldier, was confined to the gentlemen who ſerved on horſeback, and were inveſted with the character of knighthood. The dukes and counts, who had uſurped the rights of ſovereignty, divided the provinces among their faithful barons; the barons diſtributed among their vaſſals the fiefs or benefices of their juriſdiction; and theſe military tenants, the peers of each order, and of their lord, compoſed the noble or equeſtrian order, which diſdained to conceive the peaſant or burgher as of the ſame ſpecies with themſelves. The dignity of their birth was preſerved by pure and equal alliances; their ſons alone, who could produce four quarters or lines of anceſtry, without ſpot or reproach, might legally pretend to the honour of knighthood; but a valiant plebeian was ſometimes enriched and enrolled by the ſword, and became the father of a new race. A ſimple knight could impart, according to his judgment, the character which he received; and the warlike ſovereigns of Europe

rope derived more glory from this perſonal diſtinction than from the luſtre of their diadem. This ceremony, of which ſome traces may be found in Tacitus and the woods of Germany, was, in its origin, ſimple and profane; the candidate, after ſome previous trial, was inveſted with the ſword and ſpurs; and his cheek or ſhoulder was touched with a ſlight blow, as an emblem of the laſt affront, which it was lawful for him to endure. But ſuperſtition mingled in every public and private action of life; in the holy wars, it ſanctified the profeſſion of arms; and the order of chivalry was aſſimilated in its rights and privileges to the ſacred orders of prieſthood. The bath and white garment of the novice were an indecent copy of the regeneration of baptiſm; his ſword, which he offered on the altar, was bleſſed by the miniſters of religion; his ſolemn reception was preceded by faſts and vigils; and he was created a knight in the name of God, of St. George, and of St. Michael the archangel. He ſwore to accompliſh the duties of his profeſſion; and education, example, and the public opinion, were the inviolable guardians of his oath. As the champion of God and the ladies ("I bluſh," ſays Gibbon, "to unite ſuch diſcordant names"), he devoted himſelf to ſpeak the truth; to maintain the right; to protect the diſtreſſed; to practiſe *courteſy*, a virtue leſs familiar to the ancients; to purſue the infidels; to deſpiſe the allurements of eaſe and ſafety; and to vindicate in every perilous adventure the honour of his character. The abuſe of the ſame ſpirit provoked the illiterate knight to diſdain the acts of induſtry and peace; to eſteem himſelf the ſole judge and avenger of his own injuries; and proudly to neglect the laws of civil ſociety and military diſcipline. Yet the benefits of this inſtitution, to refine the temper of barbarians, and to infuſe ſome principles of faith, juſtice, and humanity, were ſtrongly felt, and have been often obſerved. The aſperity of national prejudice was ſoftened; and the community of religion and arms ſpread a ſimilar colour and generous emulation over the face of Chriſtendom. Abroad, in enterprize and pilgrimage, at home in martial exerciſe, the barriers of every country were perpetually aſſociated; and impartial taſte muſt prefer a Gothic tournament to the Olympic games of claſſic antiquity.

The lance was the proper and peculiar weapon of the knight; his horſe was of a large and heavy breed; but this charger, till he was rouſed by the approaching danger, was uſually led by an attendant, and he quietly rode a pad or palfrey of a more eaſy pace. His helmet and ſword, his greaves and buckler, it is needleſs to deſcribe in this place; but at the period of the cruſades the armour was leſs ponderous than in later times; and inſtead of a maſſy cuiraſs, his breaſt was defended by an hauberk or coat of mail. Each knight was attended to the field by his faithful ſquire, a youth of equal birth and ſimilar hopes; he was followed by his archers and men at arms, and four, or five, or ſix ſoldiers, were computed as the furniture of a complete "lance." In the expeditions to the neighbouring kingdoms or the Holy Land, the duties of the feudal tenure no longer ſubſiſted; the voluntary ſervice of the knights and their followers was prompted by zeal or attachment, or purchaſed with rewards and promiſes; and the number of each ſquadron were meaſured by the power, the wealth, and the fame of each independent chieftain. They were diſtinguiſhed by his banner, his armorial coat, and his cry of war; and the moſt ancient families of Europe muſt ſeek in theſe achievements the origin and proof of their nobility. Gibbon's Decl. and Fall of the Rom. Emp. vol. xi. For a further account of the character of the ancient knights and the beneficial effects of chivalry and the cruſades: ſee the articles Chivalry and Croisades.

Theſe ſervices, both of chivalry and of grand-ſerjeanty, were all perſonal, and as to their quantity or duration uncertain. But perſonal attendance in knight-ſervice being found inconvenient and troubleſome, the tenants found means of compounding for it; firſt, by finding others to ſerve in their ſtead, and in proceſs of time by making a pecuniary ſatisfaction to the lords in lieu of it. (See Escuage.) When knight-ſervice, or perſonal military duty degenerated into eſcuage, or pecuniary aſſeſſments, all the advantages (promiſed or real) of the feodal conſtitution were deſtroyed, and nothing but the hardſhips remained. Theſe hardſhips, which were numerous and grievous, were from time to time palliated by ſucceſſive acts of parliament, till at length the humanity of king James I. conſented, (4 Inſt. 202.), in conſideration of a proper equivalent, to aboliſh them all, upon a plan ſimilar to that, which he had formed and began to put in execution, for removing the feodal grievance of heritable juriſdiction, in Scotland, which has ſince been purſued and effected by the ſtatute 20 Geo. II. c. 43. By another ſtatute of the ſame year (20 Geo. II. c. 50.) the tenure of "ward-holding" (equivalent to the knight-ſervice of England) is for ever aboliſhed in Scotland. At length the military tenures, with all their heavy appendages, (having during the uſurpation been diſcontinued) were totally deſtroyed by the ſtatute 12 Car. II. c. 24. Blackſt. Com. b. ii. See Tenure.

Knighthood, *Regular*, is applied to all military orders, which profeſs to wear ſome particular habit, to bear arms againſt the infidels, to ſuccour and aſſiſt pilgrims in their paſſage to the Holy Land, and to ſerve in hoſpitals where they ſhould be received; ſuch were the knights Templars, and ſuch ſtill are the knights of Malta, &c.

Knighthood, *Honorary*, is that which princes confer on other princes, and even on their own great miniſters and favourites; ſuch are the knights of the Garter, St. Michael, &c.

Knighthood, *Social*, is that which is not fixed, nor confirmed by any formal inſtitution, nor regulated by any laſting ſtatutes; of which kind there have many orders been erected on occaſion of factions, of tilts and tournaments, maſquerades, and the like.

The abbot Bernardo Juſtiniani, at the beginning of his hiſtory of knighthood, gives us a complete catalogue of the ſeveral orders: according to this computation, they are in number ninety-two. Favin has given us two volumes of them under the title of Theatre d'Honneur & de Chevalerie. Menenius has publiſhed Deliciæ Equeſtrium Ordinum, and Andr. Mendo has written De Ordinibus Militaribus. Beloi has traced the original, and Geliot, in his Armorial Index, has given us their inſtitutions.

To theſe may be added, Father Meneſtrier de la Chevalerie Ancienne & Moderne, Michieli's Treſor Militaire, Caramuel's Theologia Regolare, Miræus's Origines Equeſtrium ſive Militarium Ordinum: but above all, Juſtiniani's Hiſtorie Chronologiche del' Origine de gl' Ordine Militari, e di tutte le Religione Cavalereſche: the edition which is fulleſt, is that of Venice in 1692, in two vols. fol.

KNIGHTON, Henry, in *Biography*, who flouriſhed at the cloſe of the 14th century under Richard II. is celebrated as an ancient chronicler. He was a canon-regular of Leiceſter abbey, and wrote a hiſtory of Engliſh affairs in five books, from the conqueſt to the year 1395. He wrote likewiſe an account of the depoſition of Richard II. His works are printed with the ten Engliſh hiſtorians publiſhed by the learned Selden. He is reckoned an exact and faithful narrator of events within his own times.

KNIGHTON, or *Tref-y-clawdd*, in *Geography*, a market-town and pariſh in the hundred of Knighton, and county of Radnor, South Wales; is ſeated in a valley, through which the river Teme meanders at the diſtance of 17 miles W. of Ludlow, and 33 S. of Shrewſbury. The valley of Teme, in the vicinity of this town, is ſkirted by lofty hills, the ſides of which are well clothed with wood and verdure. The town contains ſome good houſes, ranged on the ſides of ſtreets, which in parts are ſteep. Here is a free grammar ſchool. The church has rather a ſingular appearance, from its irregular form, detached tower, with ſtrange ſpire. Knighton has a weekly market, and an annual fair: and contained, in the year 1800, 221 houſes and 785 inhabitants.

On the weſtern ſide of the town, is part of the noted boundary embankment called Offa's Dyke, which was formed in the year 760, and intended to be the line of demarcation between England and Wales. Harold made a law, that if any Welſhman was found on the eaſtern ſide of this dyke, he ſhould loſe his right hand. See PRESTEIGN.

KNIN, a town of Bohemia, in the circle of Beraun, near which is a gold mine, 12 miles S.E. of Beraun. N. lat. 49° 49'. E. long. 14° 18'.—Alſo, a fortified town of Dalmatia, ſtrengthened by a deep ditch, and ſituated on a narrow neck where the river Kerka is joined by another ſtream, called Butim-ſchiza. This is ſuppoſed to be the ancient caſtle called "Arduba," taken by Germanicus, 40 miles E. of Zara. N. lat. 43° 55'. E. long. 16° 55'.

KNIP BAY, a bay on the W. coaſt of the iſland of Curaçoa.

KNIPHAUSEN, a ſea-port town of Germany, in the lordſhip of Jever, taking its name from an ancient caſtle, where the tribunal of juſtice is held; 5 miles E.S.E. of Jever. N. lat. 53° 29'. E. long. 8°.

KNISTENEAUX, otherwiſe called *Killiſtinons* or *Kiſtinons*, the name of a people, who are ſpread over a conſiderable extent in the centre of the northern part of America. We are indebted to Mr. Mackenzie (ſee Voyage from Montreal, &c. Introd. p. 91, &c.) for a particular account of theſe people. Their language is the ſame as that of the people who inhabit the coaſt of Britiſh America on the Atlantic, the Eſquimaux excepted, and continues along the coaſt of Labrador, and the gulf and banks of St. Lawrence to Montreal. The line then follows the Utawas river to its ſource, and continues from thence nearly W. along the highlands, which divide the waters that fall into Lake Superior and Hudſon's Bay. It then proceeds till it ſtrikes the middle part of the river Winipic, following that water through the lake Winipic, to the diſcharge of the Saſkatchiwina into it; from thence it accompanies the latter to Fort George, when the line, ſtriking by the head of the Beaver river to the Elk river, runs along its banks to its diſcharge in the lake of the Hills, from which it may be carried back E. to the iſle à la Croſſe, and ſo on to Churchill, by the Miſſiſippi. The whole of the tract between this line and Hudſon's bay and ſtraits, that of the Eſquimaux in the latter excepted, may be ſaid to be excluſively the country of the Kniſteneaux. Some of them, indeed, have penetrated farther W. and S. to the Red river, to the S. of lake Winipic, and the S. branch of the Saſkatchiwina.

Theſe people are of a moderate ſtature, well proportioned, with few examples of deformity, and very active. Their complexion is copper-coloured, and their hair black, in which they reſemble all the natives of North America. It is cut in various forms, according to the fancy of the ſeveral tribes, and by ſome it is left in the long, lank flow of nature. They very generally extract their beards, and both ſexes manifeſt a diſpoſition to pluck the hair from every part of the body and limbs. Their eyes are black, keen, and penetrating; their countenance is open and agreeable, and they are fond of decorating their perſons. In the uſe of vermilion, to which they are much accuſtomed, they contraſt it with their native blue, white, and brown earths, to which they frequently add charcoal. Their dreſs is ſimple and commodious. It conſiſts of tight leggins, reaching near the hip: a ſtrip of cloth, or leather, called Aſſian, about a foot wide, and five feet long, whoſe ends are drawn inwards and hang behind and before, covering a belt tied round the waiſt for that purpoſe; a cloſe veſt or ſhirt reaching down to the former garment, and cinctured with a broad ſtrip of parchment faſtened with thongs behind; and a cap for the head, conſiſting of a piece of fur, or ſmall ſkin. with the bruſh of the animal as a ſuſpended ornament; a kind of robe is thrown occaſionally over the whole of the dreſs, and ſerves both night and day. Theſe articles, with the addition of ſhoes and mittens, conſtitute the variety of their apparel. The materials vary according to the ſeaſon, and conſiſt of dreſſed mooſe-ſkin, beaver prepared with the fur, or European woollens. The leather is neatly painted, and fancifully wrought in ſome parts with porcupine quills, and mooſe-deer hair; the ſhirts and leggins are alſo adorned with fringe and taſſels; nor are the ſhoes and mittens without ſomewhat of appropriate decoration, and worked with a conſiderable degree of ſkill and taſte. Their head-dreſſes are compoſed of the feathers of the ſwan, the eagle, and other birds. The teeth, horns, and claws of different animals are alſo the occaſional ornaments of the head and neck. Their hair is always beſmeared with greaſe. The making of every article of dreſs is a female occupation; and they pay particular attention to the appearance of the men, whilſt they neglect no decoration of their own perſons; and their faces are painted with more care than thoſe of the women.

The female dreſs is formed of the ſame materials with thoſe of the men, but they are differently made and arranged. Their ſhoes are commonly plain, and their leggins gathered below the knee. The coat, or body-covering, falls down to the middle of the leg, and is faſtened over the ſhoulders with cords, a flap or cape turning down about eight inches, both before and behind, and agreeably ornamented with quill-work and fringe; the bottom is alſo fringed, and fancifully painted as high as the knee. Being looſe, it is incloſed round the waiſt with a ſtiff belt, decorated with taſſels, and faſtened behind. The arms are covered to the wriſt, with detached ſleeves, ſewed as far as the bend of the arm, from thence they are drawn up to the neck, and the corners of them fall down behind, as low as the waiſt. The cap, when a cap is uſed, conſiſts of a quantity of leather or cloth, ſewed at one end, by which means it is kept on the head, and, hanging down the back, is faſtened to the belt as well as under the chin. The upper garment is a robe like that of the men. Their hair is divided on the crown, and tied behind, or ſometimes faſtened in large knots over the ears. They prefer European articles to their own commodities. Their ornaments, like thoſe of ſavages in general, conſiſt of bracelets, rings, and ſimilar baubles. Some of the women tattoo three perpendicular lines, which are ſometimes double: one from the centre of the chin to that of the under lip, and one parallel on either ſide to the corner of the mouth.

The Kniſteneaux women are the moſt comely of any ſeen by Mr. Mackenzie on the American continent: they are well proportioned, and the regularity of their features would be acknowledged by the more civilized people of Europe; and their complexion is leſs darkly tinged than that of thoſe ſavages who have leſs cleanly habits. Theſe people are in general ſubject to few diſorders. The lues venerea, however, is common, and is cured by the uſe of ſimples, with the virtue of which they are well acquainted. They are alſo ſubject to fluxes, and pains in the breaſt. They are naturally mild and affable, as well as juſt in their dealings; they are generous and hoſpitable, and extremely good natured, when not inflamed by ſpirituous liquors; indulgent to their children to exceſs; the father takes pains in qualifying them for the operations of war and hunting, and the mother is equally attentive to the inſtruction of the daughters. Illegitimacy is only attached to thoſe children who are born before their mothers have cohabited with any man by the title of huſband. Chaſtity does not ſeem to be a virtue among them, nor is fidelity thought to be eſſential to the happineſs of a wedded life. Sometimes, however, the infidelity of a wife is puniſhed with the loſs of her hair, noſe, and perhaps life. A temporary interchange of wives is not uncommon; and the offer of their perſons is conſidered as a neceſſary part of the hoſpitality due to ſtrangers. When a man loſes his wife, it is conſidered as a duty to marry her ſiſter, if ſhe has one; or he may have both, if he pleaſes, at the ſame time. Notwithſtanding the amiable traits of their character, they are not free from vices, even of the moſt atrocious kind. They are addicted to inceſt and beſtiality. When a young man marries, he lives with the father and mother of his wife, and is conſidered as a ſtranger, till after the birth of his firſt child; he then attaches himſelf more to them than to his own parents; and his wife gives him no other denomination than that of the father of her child.

The profeſſion of the men is war and hunting: they alſo ſpear fiſh, but the management of the nets is committed to the women. The females are ſubordinate, like thoſe of ſavages in other tribes; but their labour is alleviated by the contiguity of lakes and rivers, where they employ canoes. In winter, when the waters are frozen, they travel with ſledges drawn by dogs. They are ſubject, however, to every kind of domeſtic drudgery: they dreſs the leather, make the clothes and ſhoes, weave the nets, collect wood, erect the huts, fetch water, and perform every culinary ſervice; ſo that their life is an uninterrupted ſucceſſion of toil and pain. Under the impulſe of this feeling, they ſometimes deſtroy their female children. By the uſe of ſimples they alſo procure abortion; and this they do without any material injury to their own health.

Their funeral rites commence with ſmoking, and terminate with a feaſt: the body is dreſſed in the beſt habiliments poſſeſſed by the deceaſed, or his relations, and is then depoſited in a grave, lined with branches: ſome domeſtic utenſils are placed in it, and a canopy erected over it. During the ceremony, they make great lamentations; and when the deceaſed perſon is very much regretted, the near relations cut off their hair, pierce the fleſhy part of their arms and thighs with arrows, knives, &c. and blacken their faces with charcoal. If they have diſtinguiſhed themſelves in war, they are ſometimes laid on a kind of ſcaffolding; and it is ſaid, that women, as in the Eaſt, have ſacrificed themſelves to the manes of their huſbands. The whole property of the deceaſed perſon is deſtroyed, and the relations take in exchange for the wearing apparel any rags that will cover their nakedneſs. The feaſt which is given on this occaſion, and which in ſome caſes is repeated annually, is accompanied with eulogiums on the deceaſed; and on the tomb are carved or painted the ſymbols of his tribe, which are taken from the different animals of the country.

Theſe people have frequent feaſts; and at ſtated periods, as in ſpring and autumn, they practiſe long and ſolemn ceremonies. Dogs, and particularly thoſe that are fat and milk-white, are offered as ſacrifices. They alſo make large offerings of their property, of whatever kind it be. Theſe ceremonies are performed on the bank of a river or lake: and if any ſtranger, who is in want of any thing that is diſplayed as an offering, chance to paſs by, he has a right to take it, upon replacing ſomething of inferior value; but to take or touch any thing wantonly is conſidered as a ſacrilegious act, and highly inſulting to the great Maſter of life, to adopt their expreſſion, who is the ſacred object of their devotion. The ſcene of private ſacrifice is the lodge of the perſon who prepares it, and it is conducted with a variety of ceremonies. He begins by ſpreading the contents of his medicine-bag, containing various articles, on a piece of new cloth or well-dreſſed mooſe-ſkin neatly painted. The principal of theſe articles is a kind of houſehold-god, which is a ſmall carved image about eight inches long, and is an object of the moſt pious regard. The next article is his war-cap, decorated with the feathers and plumes of rare birds, beavers, eagle's claws, &c. From this is ſuſpended a quill or feather for every enemy whom the owner of it has ſlain in battle. The remaining contents of the bag are a piece of Braſil tobacco, ſeveral roots and ſimples in repute for their medicinal qualities, and a pipe. After certain previous ceremonies, an aſſiſtant lights the pipe, and preſents it to the officiating perſon, who, turning to the eaſt, draws a few whiffs, which he blows to that point. He practiſes the ſame ceremony towards the other three quarters, with his eyes conſtantly directed upwards. After ſome other ceremonies performed with this pipe, he makes a ſpeech, explaining the deſign of the attendants being called together, and concludes with an acknowledgment of paſt mercies, and a prayer for the continuance of them, from the Maſter of life. He then ſits down, and the whole company declare their approbation and thanks by uttering the word *ho!* with an emphatic prolongation of the laſt letter. The Aſſiſtant or Michiniwais again takes up the pipe, and holds it to the mouth of the officiating perſon, who, after ſmoking three whiffs out of it, utters a ſhort prayer, and then goes round with it in a courſe from eaſt to weſt, to every perſon preſent; and thus the pipe is ſmoked out: when, after turning it three or four times round his head, he drops it downwards, and replaces it in its original ſituation. He then returns the company thanks for their attendance, and wiſhes them, as well as the whole tribe, health and long life. Theſe ſmoking rites precede every matter of great importance, with more or leſs ceremony, but always with equal ſolemnity. The public feaſts are conducted in a ſimilar manner, but with ſome additional ceremony. At theſe ſeveral chiefs officiate, and the gueſts diſcourſe upon public topics, repeat the heroic deeds of their forefathers, and excite the riſing generation to follow their example. From theſe feaſts the women and children are excluded: but the women, who are forbidden to enter the places ſacred to theſe feſtivals, dance and ſing around them, and ſometimes beat time to the muſic within them; thus forming an agreeable contraſt.

As to their diviſions of time, the Kniſteneaux compute the length of their journies by the number of nights paſſed in performing them; and they divide the year by the ſucceſſion of moons, the names of which are deſcriptive of the ſeveral ſeaſons. Theſe people are acquainted with the medicinal virtues of many herbs and ſimples, and apply the roots of plants and the bark of trees with ſucceſs. But the conjurers, who monopolize the medical ſcience, blend myſtery with their art, and conceal their knowledge. Their materia medica they adminiſter in the form of purges and clyſters; but the remedies and ſurgical operations are ſuppoſed to derive much of their effect from magic and incantation. A ſharp flint ſerves them as a lancet for letting blood, as well as for ſcarification in bruiſes and ſwellings.

Among their various ſuperſtitions, they believe that the vapour which is ſeen to hover over moiſt and ſwampy places is the ſpirit of ſome perſon lately dead. They alſo fancy another ſpirit which appears in the ſhape of a man, upon the trees near the lodge of a perſon deceaſed, whoſe property has not been interred with him. He is repreſented as bearing a gun in his hand; and it is believed that he does not return to his reſt, till the property that has been withheld from the grave has been ſacrificed to it. Mr. Mackenzie has given examples (*ubi ſupra*) of the Kniſteneaux and Algonquin languages, between which there is a conſiderable reſemblance. See Algonquins.

KNITTERFELDT, a town of the duchy of Stiria, on the river Muehr; 20 miles S.W. of Pruck. N. lat. 47° 14′. E. long. 14° 36′.

KNITTLE, in *Sea Language*, a ſmall line, which is either plaited or twiſted, and uſed for various purpoſes at ſea; as to faſten the ſervice in the cable, to reef the ſails by the bottom, and to hang the hammocks between decks, &c.

KNITTLINGEN, in *Geography*, a town of Wurtemberg, the birth-place of Fauſt, one of the firſt printers; 22 miles S. of Heidelberg.

KNOCK-Head, a cape of Scotland, on the north coaſt of Banffſhire; 3 miles W.N.W. of Banff.

KNOCKING Mill. See Stamping.

KNOCKLAYD, in *Geography*, a mountain in the northern part of the county of Antrim, Ireland; about two miles S. of Ballycaſtle.

KNOCKMELEDOWN, a chain of mountains in Ireland, between the counties of Waterford and Tipperary, and extending into both. Theſe are rated by Smith amongſt the higheſt mountains in Ireland. On the ſummit of one of them, major Eeles, the electrician, was buried by his own deſire.

KNOCKNAREA, a cape of Ireland, in Sligo bay; 6 miles W. from Sligo.

KNOCKTOPHER, a poſt-town of the county of Kilkenny, Ireland; 63 miles S.W. from Dublin.

KNOLL, a term uſed in many parts of the kingdom for the top of a ſmall hill, or for the hill itſelf.

KNOLLES, Richard, in *Biography*, an Engliſh hiſtorian, a native of Northamptonſhire, was entered at the univerſity of Oxford about the year 1560. He was afterwards choſen maſter of the free-ſchool at Sandwich, and proved his fitneſs for this poſt by publiſhing a compendium of Latin, Greek, and Hebrew grammar. In 1610 he publiſhed, in folio, "A Hiſtory of the Turks," which had been the labour of twelve years, and was executed in a manner highly creditable to his reputation. It has paſſed through many editions; and continuations have been made to it, of which the beſt is that of Paul Rycaut, conſul at Smyrna. Mr. Knolles likewiſe wrote "A brief Diſcourſe of the Greatneſs of the Turkiſh Empire." He died at Sandwich, in 1610.

KNOLLIS, Francis, an Engliſh ſtateſman, was born at Grays, in Oxfordſhire; and after receiving an univerſity education, he went to court, and became a zealous friend to the reformation, in the reign of Edward VI., at whoſe death he went abroad. On the acceſſion of queen Elizabeth he returned, and was made privy counſellor, and vice chamberlain of the houſehold. He was employed in ſeveral important matters of ſtate: was one of the commiſſioners who ſat in judgment on Mary queen of Scots; was appointed treaſurer of the royal houſehold, and knight of the Garter. He died in 1596. Sir Francis wrote a treatiſe againſt the uſurpations of papal biſhops, printed after his death in 1608; and a general ſurvey of the Iſle of Wight, which has not been printed.

KNOLLS, in *Agriculture*, a provincial term uſed in ſome counties to ſignify turnips.

KNONAU, in *Geography*, a bailiwick of Switzerland, in the canton of Zurich.

KNOPPERS, a ſuperior kind of *Gall-nuts*; which ſee.

KNORR à Russenroth, Christian, in *Biography*, a learned German orientaliſt, was born in the year 1636. He purſued his ſtudies at various colleges, and then travelled for improvement into France, England, and Holland. The ſubjects which had engaged his attention were chemiſtry and the cabaliſtic art, of which he had been from his youth a great admirer. At Amſterdam he was introduced to the knowledge of the Oriental tongues, and Hebrew; and made ſuch progreſs in his favourite ſtudies, as to obtain the eſteem and friendſhip of Lightfoot, More, and Van Helmont. By the latter of theſe learned men he was introduced to the count palatine of Sulzbach, who, in 1668, nominated him one of his privy council, and afterwards gave him the appointment of his chancellor. The duties of theſe offices did not divert him from his literary, chemical, and myſtical purſuits. He tranſlated, into the German language, ſir Thomas Brown's "Inquiry into vulgar Errors," and various other pieces; but his reputation is chiefly founded on a work, entitled "Kabbala Denudata, ſeu Doctrina Hebræorum tranſcendentalis, et metaphyſica, atque theologica, &c." in 3 vols. 4to. This work abounds in wild reveries, fanciful chimeras, and myſtical abſurdities; but it contains, at the ſame time, very learned and valuable reſearches relative to the philoſophy of the Hebrews.

KNOTS, in *Gardening*, a term uſed to expreſs the rudiments of the firſt branches of plants, as they grow up from the ſeed. Thus, in the melon, the two firſt leaves or ſeed-leaves are called the ears, and the branches that grow from them are called, according to the order of their growth, the firſt, ſecond, and third knots. Mr. Quintiny's famous method of raiſing the beſt melons, depended principally on the cutting off every third knot of the plant as they grew up. Philoſ. Tranſ. N° 45.

In trees, the knot denotes that part from whence it ſhoots out branches, roots, or even fruit.

The wood is harder and cloſer in the knots than in any other part, but it is alſo more ſubject to ſplit there.

The uſe of the knots of plants is to ſtrengthen the ſtem: they ſerve alſo as ſearces to filtrate, purify, and refine, the juice raiſed up for the nouriſhment of the plant.

Knot, in *Military Language*, the wing or epaulette, commonly made of worſted, of a non-commiſſioned officer or corporal. When ſerjeants and corporals are ſentenced to be reduced to the ranks, the knot is generally cut off by the drum-major, in the preſence of the battalion, as a mark of infamy.

Knot *on board a Ship*, is a large knob formed on the extremity of a rope, by untwiſting the ends thereof, and interweaving them regularly amongſt each other. Of this there are ſeveral ſorts: the chief of which are the *wale* knot, which is ſo made with the lays of a rope, that it cannot ſlip, and ſerves for ſheats, tacks, and ſtoppers; the *bow-line* knot is ſo firmly made, and faſtened to the crengles of the ſails, that they muſt break, or the ſails ſplit, before it will ſlip; the *ſheep-ſhank* knot, which ſerves to ſhorten a rope without cutting it, which may be preſently looſened; the *diamond* knot, the *roſe* knot, &c. The knots are generally uſed to faſten one rope to another, by means of a ſmall cord attached to the neck of the knot, called the laniard, which is firmly tied about both ropes. They are alſo deſigned to prevent the end of a rope from ſliding through an eye, which the knot is intended to confine in a particular ſituation.

Knot-*Berries*. See Raspberries.

Knot-*Graſs*, in *Botany*. See Polygonum.

Knot-*Graſs*, in *Rural Economy*, a common name often given to couch-graſs. See Couch-*Graſs*.

Knot-*Graſs, Mountain*. See Whitlow-*Graſs*.

Knots *of the Log-Line*, at ſea, are the diviſions of it. See Log.

Knot is alſo uſed for the intrigue of a romance, or dramatic piece; being that part where the perſons are the moſt embarraſſed, by a conjuncture of affairs, whoſe end it is not eaſy to foreſee.

Ariſtotle, under this term, includes all the incidents of a tragedy, from its beginning to the place where it begins to unravel. The knot holds as long as the mind is kept ſuſpended about the event. The knot ought always to laſt to the middle of the fifth act, otherwiſe the reſt of the piece languiſhes.

Knot, *Order of the*, was the name of a military order in the kingdom of Naples, inſtituted in 1352, by queen Jane I. on occaſion of the peace eſtabliſhed between her and the king of Hungary, by means of her marriage with Louis prince of Tarentum. It was ſo called becauſe the knights wore for their badge a knot, like a true-lover's knot, embroidered on the breaſt of their coat in purple ſilk, intermixed with gold.

The order conſiſted of ſixty knights. Clement VI. approved of this order, and gave it the rule of St. Baſil: it choſe St. Nicolas for its protector; but it dwindled away after the death of its foundreſs.

Knot, in *Ornithology*, the name of an Engliſh bird of the ſnipe kind, not known among authors by any particular Latin name, unleſs it be the *calidrys nigra*, or black calidrys of Bellonius, which is doubtful from his deſcription; and ſaid to have obtained its Engliſh name from Canute, one of the Daniſh kings of this iſland, who was particularly fond of it: it is the *tringa Canutus* of Linnæus, which ſee.

Knot, or *Boſs*, in *Pointed Architecture*, the key ſtone of the groin, where all its ſpringers or ribs meet together.

KNOULTON Lake, in *Geography*, a lake of America, in the ſtate of Vermont. N. lat. 44° 48′. W. long. 71° 50′.

KNOUT, or Knoot, is the name of a puniſhment inflicted in Ruſſia, with a kind of whip called *knout*, and made of a long ſtrap of leather prepared for this purpoſe. This inſtrument is a hard thong, about the thickneſs of a crown piece, and ¾ of an inch broad, and tied to a thick plaited whip, which is connected, by means of an iron ring, with a ſmall piece of leather faſtened to a ſhort wooden handle. With this whip the executioners dextrouſly carry off a ſlip of ſkin from the neck to the bottom of the back laid bare to the waiſt, and repeating their blows, in a little while rend away all the ſkin off the back in parallel ſtrips. In the common knout, the criminal receives the laſhes ſuſpended on the back of one of the executioners: but in the great knout, which is generally uſed on the ſame occaſions as racking on the wheel in France, the criminal is raiſed into the air by means of a pulley fixed to the gallows, and a cord faſtened to the two wriſts tied together; a piece of wood is placed between his two legs alſo tied together; and another of a crucial form under his breaſt. Sometimes his hands are tied behind over his back, and when he is pulled up in this poſition, his ſhoulders are diſlocated. The executioners can make this puniſhment more or leſs cruel: and, it is ſaid, are ſo dextrous, that when a criminal is condemned to die, they can make him expire at pleaſure, either by one or ſeveral laſhes.

KNOWING, *Principles and Rules of*. See Principle, and Rule.

KNOWLEDGE may be conſidered either as an operation of the mind, or as the reſult of that operation. In the former ſenſe, it denotes the clear perception of truth; and in the latter, it ſignifies the treaſure of aſſociated ideas, that are laid up in the mind, in conſequence of clear perceptions; thus, mathematics, aſtronomy, ethics, hiſtory, &c. are branches of knowledge.

Knowledge, according to Mr. Locke, conſiſts in the perception of the connection and agreement, or diſagreement and repugnancy, of our ideas. See Idea.

In which ſenſe, knowledge ſtands oppoſed to ignorance.

To *know that white is not black*, is only to perceive that theſe two ideas do not agree. So, in knowing that the three angles of a triangle are equal to two right ones; what do we more than perceive, that equality to two right ones neceſſarily agrees to, and is inſeparable from, the three angles of a triangle?

Knowledge, *Kinds of*. As to what relates to the agreement or diſagreement of ideas, we may reduce the whole doctrine, and conſequently the whole ſtock of our knowledge, to four heads, *viz. identity* or *diverſity*, *relation*, *coexiſtence*, and *real exiſtence*.

With reſpect to the *identity* or *diverſity* of our ideas, we may obſerve, that it is the firſt act of the mind to perceive its own ideas; and, ſo far as it perceives them, to know what each is, and thereby to perceive their difference; that is, the one not to be the other: by this the mind clearly perceives each idea to agree with itſelf, and to be what it is: and all diſtinct ideas to diſagree. This it does without any pains, or deduction, by its natural power of perception and diſtinction; and, for doing this, men of art have eſtabliſhed certain general rules or principles; as that, what is, is; and that it is impoſſible for the ſame thing to be, and not to be. But no maxim can make a man know clearer, that round is not ſquare, than the bare perception of the two ideas, which the mind, at firſt ſight, perceives to diſagree.

The next kind of agreement, or diſagreement, the mind perceives, in any of its ideas, may be called *relative*, and is nothing but the perception of the relation between any two ideas, of what kind ſoever; that is, their agreement or diſagreement, one with another, in the ſeveral ways, or reſpects, the mind takes of comparing them.

The third ſort of agreement, or diſagreement, to be found in our ideas, is *coexiſtence*, or *non-coexiſtence*, in the ſame ſubject; and this belongs particularly to ſubſtances. Thus when we pronounce concerning gold, that it is fixed, it amounts to no more but this, that fixedneſs, or a power to remain in the fire unconſumed, is an idea which always accompanies that particular ſort of yellowneſs, weight, fuſibility, &c. which make our complex idea ſignified by the word *gold*.

The fourth ſort is that of *actual* and *real exiſtence*, agreeing to any idea.

Within theſe four ſorts of agreement, or diſagreement, ſeems contained all the knowledge we have, indeed all we are capable of; for all that we know, or can affirm, concerning any idea, is, that it is, or is not, the ſame with ſome other; as, that blue is not yellow: that it does, or does not, coexiſt with another in the ſame ſubject; as, that iron is ſuſceptible of magnetical impreſſions: that it hath that or this relation to ſome other ideas; as, that two triangles upon equal baſes, between the ſame parallels, are equal: or, that it has a real exiſtence without the mind; as, that God is.

The mind becomes poſſeſſed of truth in ſeveral manners, which conſtitute ſo many different ſpecies of knowledge. Thus, when the mind has a preſent view of the agreement or diſagreement of any of its ideas, or of the relation they have one with another, it is called *actual* knowledge.

Secondly, a man is ſaid to know any propoſition, when, having once evidently perceived the agreement or diſagreement of the ideas whereof it conſiſts, and ſo lodged it in his memory, that whenever it comes to be reflected on again, the mind aſſents to it without doubt or heſitation, and is certain of the truth of it: this may be called *habitual* knowledge. And thus a man may be ſaid to know all thoſe truths which are lodged in his memory, by a foregoing, clear, and full perception.

Of *habitual* knowledge, there are two ſorts: the one conſiſts of ſuch truths, laid up in the memory, as, whenever they occur to the mind, it actually perceives the relation that is between their ideas; and this is in all thoſe truths where the ideas themſelves, by an immediate view, diſcover their agreement or diſagreement one with another. The other is of ſuch truths, whereof the mind having been convinced, it retains the memory of the conviction, without the proofs. Thus a man that remembers certainly, that he once perceived the demonſtration, that the three angles of a triangle are equal to two right ones, knows it to be true, when that demonſtration is gone out of his mind, and cannot poſſibly be recollected; but he knows it in a different way from what he did before: namely, not by the intervention of thoſe intermediate ideas; whereby the agreement, or diſagreement, of thoſe in the propoſition was at firſt perceived; but by remembering, that is, knowing, that he was once certain of the truth of this propoſition, that the three angles of a triangle are equal to two right ones,—the immutability of the ſame relation between the ſame immutable things, is now the idea that ſhews him, that if the three angles of a triangle were once equal to two right ones, they will always be ſo. And hence he comes to be certain, that what was once true, is always true; what ideas once agreed, will always agree; and conſequently, what he once knew to be true, he will always know to be true, as long as he can remember that he once knew it.

KNOWLEDGE alſo may be uſefully diſtinguiſhed into three kinds; *hiſtorical*, *philoſophical*, and *mathematical*.

KNOWLEDGE, *Hiſtorical*, is merely the knowledge of facts, or of what is or happens in the material world, or within our own minds. Thus, that the ſun riſes and ſets, that trees bud in the ſpring, that we remember, will, &c. are inſtances of hiſtorical knowledge.

KNOWLEDGE, *Philoſophical*, is the knowledge of the reaſons of things, or of what is or happens. Thus he has a philoſophical knowledge of the motion of rivers, who can explain how it ariſes from the declivity of the bottom, and from the preſſure which the lower part of the water ſuſtains from the upper. So likewiſe the ſhewing how, and by what reaſon, deſire or appetite ariſes from the perception or imagination of its object, would be philoſophical knowledge.

KNOWLEDGE, *Mathematical*, is the knowledge of the quantity of things, that is, of their proportions or ratios to ſome given meaſure. Thus he who knows the proportion of the meridian heat of the ſun at the ſummer ſolſtice to its meridian heat at the winter ſolſtice, might ſo far be ſaid to have a mathematical knowledge of the ſun's heat. So likewiſe he has a mathematical knowledge of the motion of a planet in its orbit, who can diſtinctly ſhew how, from the quantity of the impreſſed and centripetal force, the velocity of the planet is produced; and how, from the action of the double force, the elliptical figure of the orbit ariſes.

Theſe three kinds of knowledge differ evidently, it being one thing to know that a thing is; another, the reaſon why it is; and a third, to know its quantity or meaſure.

It is alſo evident, that *hiſtorical* knowledge, though extenſively uſeful, and the foundation of the reſt, is the loweſt degree of human knowledge. Thoſe who aim at the greateſt certainty ought to join mathematical with philoſophical knowledge. Nothing can more evidently ſhew that an effect ariſes from a certain cauſe, than the knowledge that the quantity of the effect is proportional to the force of the cauſe. Beſides, there are many things in nature, the reaſons of which depending on certain figures or quantities, are not aſſignable but from mathematical principles.

KNOWLEDGE, *Degrees of*. As to the different degrees, or clearneſs of our knowledge, it ſeems to lie in the different way which the mind has of perceiving the agreement or diſagreement of any of its ideas. When the mind perceives this agreement or diſagreement of two ideas immediately by themſelves, without the intervention of any other, we may call it *intuitive* knowledge; in which caſe the mind perceives the truth, as the eye doth light, only by being directed towards it. Thus the mind perceives that white is not black; that three are more than two, and equal to one and two. This part of knowledge is irreſiſtible; and, like the bright ſunſhine, forces itſelf immediately to be perceived, as ſoon as ever the mind turns its view that way. It is on this intuition that all the certainty and evidence of our other knowledge depends, which certainly every one finds to be ſo great, that he cannot imagine, and therefore cannot require a greater. The next degree of knowledge is, where the mind perceives not this agreement, or diſagreement, immediately, or by the juxtapoſition, as it were, of the ideas; becauſe thoſe ideas, concerning whoſe agreement, or diſagreement, the inquiry is made, cannot, by the mind, be ſo put together as to ſhew it. In this caſe, the mind is obliged to diſcover the agreement, or diſagreement, which it ſearches for, by the intervention of other ideas: and this is that which we call *reaſoning*.

Thus, if we would know the agreement, or diſagreement, in bigneſs, between the three angles of a triangle and two right angles, we cannot do it by an immediate view and compariſon of them, becauſe the three angles of a triangle cannot be brought together at once, and compared with any other one or two angles; and ſo of this the mind has no immediate or intuitive knowledge. But we muſt find out ſome other angles, to which the three angles of a triangle have equality; and, finding thoſe equal to two right ones, we come to know the equality of theſe three angles to two right ones.

Thoſe intervening ideas, which ſerve to ſhew the agreement of any two others, are called *proofs*; and where the agreement, or diſagreement, is by this means plainly and clearly perceived, it is called *demonſtration*; and a quickneſs in the mind to find thoſe proofs, and to apply them right, is that which is called *ſagacity*.

This knowledge, though it be certain, is not ſo clear and evident as intuitive knowledge; it requires pains and attention, and ſteady application of mind, to diſcover the agreement, or diſagreement, of the ideas it conſiders; and there muſt be a progreſſion by ſteps and degrees, before the mind can, in this way, arrive at any certainty. Before demonſtration, there was a doubt, which, in intuitive knowledge, cannot happen to the mind, that has its faculty of perception left in a degree capable of diſtinct ideas, no more than it can be a doubt to the eye (that can diſtinctly ſee white and black), whether this ink and paper be all of a colour. Now, in every ſtep that reaſon makes in demonſtrative knowledge, there is an intuitive knowledge of that agreement, or diſagreement, it ſeeks, with the next intermediate idea, which it uſes as a proof; for, if it were not ſo, that yet would need a proof, ſince, without the perception of ſuch agreement, or diſagreement, there is no knowledge produced.

By which it is evident, that every ſtep in reaſoning, that produces knowledge, has intuitive certainty; which when the mind perceives, there is no more required, but to remember it, to make the agreement, or diſagreement, of the ideas, concerning which we inquire, viſible and certain. This intuitive perception of the agreement, or diſagreement, of the intermediate ideas in each ſtep and progreſſion of the demonſtation, muſt alſo be exactly carried in the mind; and a man muſt be ſure, that no part is left out, which, in long deductions, the memory cannot eaſily retain, and therefore this knowledge becomes more imperfect than intuitive, and men often embrace falſehoods for demonſtrations.

It has been generally taken for granted, that mathematics alone are capable of demonſtrative certainty: but to have ſuch an agreement, or diſagreement, as may be intuitively perceived, being, as we imagine, not the privilege of the ideas of number, extenſion, and figure alone, it may poſſibly be the want of due method and application in us, and not of ſufficient evidence in things, that demonſtration has been thought to have ſo little to do in other parts of knowledge. For, in whatever ideas the mind can perceive the agreement, or diſagreement, immediately, there it is capable of intuitive knowledge, and, where it can perceive the agreement, or diſagreement, of any two ideas, by the intuitive perception of the agreement, or diſagreement, they have with any intermediate ideas, there the mind is capable of demonſtration, which is not limited to the ideas of figure, number, extenſion, or their modes.

The reaſon why it has been generally ſuppoſed to belong to theſe only, is, becauſe, in comparing their equality or exceſs, the modes of numbers have every the leaſt difference very clear and perceivable: and, in extenſion, though every the leaſt exceſs is not ſo perceptible, yet the mind has found out ways to diſcover the juſt equality of two angles, extenſions, or figures; and both numbers and figures can be ſet down by viſible and laſting marks. But, in other ſimple ideas, whoſe modes and differences are made and counted by degrees, and not quantity, we have not ſo nice and accurate a diſtinction of their differences, as to perceive or find ways to meaſure their juſt equality, or the leaſt differences. For thoſe other ſimple ideas being appearances, or ſenſations produced in us, by the ſize, figure, motion, &c. of minute corpuſcles, ſingly inſenſible, their different degrees alſo depend on the variation of ſome or all of thoſe cauſes; which, ſince it cannot be obſerved by us in particles of matter, whereof each is too ſubtile to be perceived, it is impoſſible for us to have any exact meaſures of the different degrees of theſe ſimple ideas.

Thus, not knowing what number of particles, nor what motion of them, is fit to produce any preciſe degree of whiteneſs, becauſe we have no certain ſtandard to meaſure them by, nor means to diſtinguiſh every the leaſt difference; the only help we have is from our ſenſes, which in this point fail us. But where the difference is ſo great as to produce in the mind ideas clearly diſtinct, theſe ideas, as we ſee in colours of different kinds, blue and red for inſtance, are as capable of demonſtration as ideas of number and extenſion; and what is here ſaid of colours, holds true in all ſecondary qualities.

Theſe two then, *intuition* and *demonſtration*, are the degrees of our knowledge; and whatever comes ſhort of one of theſe, is only *faith*, or *opinion*, not *knowledge*, at leaſt in all general truths.

There is, indeed, another perception of the mind, employed about the particular exiſtence of finite beings without us, which going beyond probability, but not reaching to either of the foregoing degrees of certainty, paſſes under the name of knowledge.

Nothing can be more certain, than that the idea we receive from an external object is in our minds: this is intuitive knowledge; but whether we can thence certainly infer the exiſtence of any thing without us, correſponding to that idea, is that whereof ſome men think there may be a queſtion made; becauſe men may have ſuch an idea in their minds, when no ſuch thing exiſts, nor any ſuch object affects their ſenſes.

But it is evident, that we are invincibly conſcious to ourſelves of a different perception, when we look on the ſun in the day, and when we think on it by night; when we actually taſte wormwood, or ſmell a roſe, or only think on that ſavour or odour; ſo that we may add, to the two former ſorts of knowledge, this alſo of the exiſtence of particular external objects, by that perception and conſciouſneſs we have of the actual entrance of ideas from them; and allow theſe three degrees of knowledge, *viz. intuitive*, *demonſtrative*, and *ſenſitive*.

But, ſince our knowledge is founded on, and employed about, our ideas only, will it follow thence, that it muſt be conformable to our ideas, and that where our ideas are clear and diſtinct, obſcure and confuſed, there our knowledge will be ſo too? We anſwer, No; for our knowledge conſiſting in the perception of the agreement, or diſagreement, of any two ideas; its clearneſs or obſcurity conſiſts in the clearneſs or obſcurity of that perception, and not in the clearneſs or obſcurity of the ideas themſelves. A man (for inſtance), who has a clear idea of the angles of a triangle, and of equality to two right ones, may yet have but an obſcure perception of their agreement, and ſo have but a very obſcure knowledge of it: but obſcure and confuſed ideas can never produce any clear or diſtinct knowledge; becauſe, as far as any ideas are obſcure or confuſed, ſo far the mind can never perceive clearly, whether they agree or diſagree; or, to expreſs the ſame thing in other words, he that has not determined ideas to the words he uſes, cannot make propoſitions of them, of whoſe truth he can be certain.

From all this it follows; 1. That we can have no knowledge farther than we have ideas.

2. That we have no knowledge farther than we can have perception of the agreement, or diſagreement, of our ideas, either by intuition, demonſtration, or ſenſation.

3. We cannot have an intuitive knowledge, that ſhall extend itſelf to all our ideas, and all that we would know about them; becauſe we cannot examine and perceive all the relations they have one to another by juxtapoſition, or in immediate compariſon one with another. Thus, we cannot intuitively perceive the equality of two extenſions, the difference of whoſe figures makes their parts incapable of an exact immediate application.

4. Our rational knowledge cannot reach to the whole extent of our ideas; becauſe, between two different ideas which

we would examine, we cannot always find ſuch proofs, whereby we can connect one to another with an intuitive knowledge in all the parts of the deduction.

5. Senſitive knowledge, reaching no farther than the exiſtence of things actually preſent to our ſenſes, is yet much narrower than either of the former.

6. From all which it is evident, that the extent of our knowledge comes not only ſhort of the reality of things, but even of the extent of our own ideas. We have the ideas of a ſquare, a circle, and equality; and yet, perhaps, ſhall never be able to find a circle equal to a ſquare. See CIRCLE.

KNOWLEDGE, *Extent and Limits of.* The affirmations or negations we make concerning the ideas we have, being reduced to the four ſorts above-mentioned, *viz.* identity, co-exiſtence, relation, and real exiſtence, let us inquire how far our knowledge extends in each of theſe.

1. As to identity and diverſity, our intuitive knowledge is as far extended as our ideas themſelves; and there can be no idea in the mind, which it does not preſently, by an intuitive knowledge, perceive to be what it is, and to be different from any other.

2. As to the agreement or diſagreement of our ideas of co-exiſtence, our knowledge herein is very defective, though it is in this that the greateſt and moſt material part of our knowledge, concerning ſubſtances, conſiſts: for our ideas of ſubſtances being nothing but certain collections of ſimple ideas co-exiſting in one ſubject (our idea of flame, for inſtance, is a body, hot, luminous, and moving upwards); when we would know any thing farther concerning this, or any other ſort of ſubſtance, what do we but enquire what other qualities or powers, theſe ſubſtances have, or have not? which is nothing elſe but to know what other ſimple ideas do, or do not exiſt with thoſe which make up ſuch complex ideas. The reaſon of this is, that the ſimple ideas, which make up our complex ideas of ſubſtances, have no viſible neceſſary connection, or inconſiſtence, with other ſimple ideas, whoſe co-exiſtence with them we would inform ourſelves about. Theſe ideas being likewiſe, for the moſt part, ſecondary qualities, which depend upon the primary qualities of their minute or inſenſible parts, or on ſomething yet more remote than theſe from our comprehenſion, it is impoſſible we ſhould know which have a neceſſary union, or inconſiſtence, one with another; ſince we know not the root from whence they ſpring, or the ſize, figure, and texture of parts on which they depend, and from which they reſult. Beſides this, there is no diſcoverable connection between any ſecondary quality, and thoſe primary qualities that it depends on. We are ſo far from knowing what figure, ſize, or motion, produces (for inſtance) a yellow colour, or ſweet taſte, or ſharp ſound, that we can by no means conceive how any ſize, figure, or motion, can poſſibly produce in us the idea of any colour, taſte, or ſound, whatſoever; there being no conceivable connection between the one and the other.

Our knowledge, therefore, of co-exiſtence reaches little farther than experience. Some few, indeed, of the primary qualities have a neceſſary dependence, and viſible connection, one with another: as figure neceſſarily ſuppoſes extenſion; receiving or communicating motion by impulſe ſuppoſes ſolidity: but qualities co-exiſtent in any ſubject, without this dependence and connection, cannot certainly be known to co-exiſt, any farther than experience, by our ſenſes, informs us. Thus, though, upon trial, we find gold yellow, weighty, malleable, fuſible, and fixed; yet, becauſe none of theſe have any evident dependence, or neceſſary connection, with the other, we cannot certainly know, that, where any four of theſe are, the fifth will be there alſo, how highly probable ſoever it may be. But the higheſt degree of probability amounts not to certainty, without which there can be no true knowledge; for this co-exiſtence can be no true knowledge; for this co-exiſtence can be no farther known than it is perceived; and it cannot be perceived, but either, in particular ſubjects, by the obſervation of our ſenſes, or, in general, by the neceſſary connection of the ideas themſelves.

As to incompatibility, or repugnancy to co-exiſtence, we know, that no ſubject can have of each ſort of primary qualities more than one particular at once, as one extenſion, or one figure; and ſo of ſenſible ideas peculiar to each ſenſe: for whatever, of each kind, is preſent in any ſubject, excludes all other of that ſort; for inſtance, one ſubject cannot have two ſmells, or two colours, at the ſame time.

As to powers of ſubſtances, which make a great part of our enquiries about them, our knowledge reaches little farther than experience; becauſe they conſiſt in a texture and motion of parts, which we cannot by any means come to diſcover; and I doubt, whether, with thoſe faculties we have, we ſhall ever be able to carry our general knowledge much farther in this part. Experience is that, which, in this part, we muſt depend on: and it were to be wiſhed, that it were more improved. We find the advantages ſome men's generous pains have this way brought to the ſtock of natural knowledge; and if others, eſpecially the philoſophers by fire, had been ſo wary in their obſervations, and ſincere in their reports, as thoſe who call themſelves *philoſophers* ought to have been, our acquaintance with the bodies here about us, and our inſight into their powers and operations, might have been yet much greater.

As to the third ſort, the agreement, or diſagreement, of our ideas in any other relation; this is the largeſt field of knowledge, and it is hard to determine how far it may extend: this part depending on our ſagacity in finding intermediate ideas, that may ſhew the habitudes and relations of ideas, it is a hard matter to tell when we are at an end of ſuch diſcoveries. They who are ignorant of algebra, cannot imagine the wonders of this kind that are to be done by it: and what farther improvements and helps, advantageous to other parts of knowledge, the ſagacious mind of man may yet find out, it is not eaſy to determine.

This, at leaſt, we may believe, that the ideas of quantity are not the only ones capable of demonſtration and knowledge; and that other, and, perhaps, more uſeful parts of contemplation, would afford us certainty, if vices, paſſions, and domineering intereſt, did not oppoſe or menace endeavours of this kind.

As to the fourth ſort of knowledge, *viz. of the real, actual exiſtence of things,* we have an intuitive knowledge of our own exiſtence, a demonſtrative knowledge of the exiſtence of God, and a ſenſitive knowledge of the objects that preſent themſelves to our ſenſes.

Hitherto we have examined the extent of our knowledge, in reſpect of the ſeveral ſorts of beings that are: there is another extent of it, in reſpect of univerſality, which will alſo deſerve to be conſidered; and this, in regard to our knowledge, follows the nature of our ideas. If the ideas, whoſe agreement, or diſagreement, we perceive are abſtract, our knowledge is univerſal; for what is known of ſuch general ideas, will be true of every particular thing, in which that eſſence, that is, that abſtract idea, is found: and what is once known of ſuch ideas, will be perpetually and for ever true; ſo that, as to all general knowledge, we muſt ſearch and find it only in our own minds; and it is only the examining our own ideas that furniſhes us with it. Truth belonging to eſſences of things (that is, to abſtract ideas) are eternal, and are to be found out by the contemplation only of thoſe eſſences; as the exiſtence of things is to be known only from experience.

Knowledge, *Reality of.* It is evident, that the mind knows not things immediately, but by the intervention of the ideas it has of them. Our knowledge, therefore, is real, only ſo far as there is a conformity between our ideas, and the reality of things. But how ſhall we know when our ideas agree with things themſelves? It is anſwered, There are two ſorts of ideas, that we may be aſſured agree with things: theſe are,

1. *Simple ideas*, which, ſince the mind can by no means make to itſelf, muſt be the effect of things operating upon the mind in a natural way, and producing therein thoſe perceptions, which, by the will of our Maker, they are ordained and adapted to. Hence it follows, that ſimple ideas are not fictions of our fancies, but the natural and regular production of things without us, really operating upon us, which carry with them all the conformity our ſtate requires, which is to repreſent things under thoſe appearances they are fitteſt to produce in us. Thus the idea of whiteneſs, as it is in the mind, exactly anſwers that power which is in any body to produce it there; and this conformity between our ſimple ideas, and the exiſtence of things, is ſufficient for real knowledge.

2. All our *complex ideas*, except only thoſe of ſubſtances, being archetypes of the mind's own making, and not referred to the exiſtence of things, as to their originals, cannot want any conformity neceſſary to real knowledge; for that which is not deſigned to repreſent any thing but itſelf, can never be capable of a wrong repreſentation. Here the ideas themſelves are conſidered as archetypes, and things are no otherwiſe regarded than as conformable to them. Thus, the mathematician conſiders the truth and properties belonging to a rectangle, or circle, only as they are ideas in his own mind, which poſſibly he never found exiſting mathematically, that is, preciſely true; yet his knowledge is not only certain, but real, becauſe real things are no farther concerned, nor intended to be meant by any ſuch propoſitions, than as things really agree to thoſe archetypes in the mind.

3. But the *complex ideas*, which we refer to archetypes without us, may differ from them; and ſo our knowledge about them may come ſhort of being real: and ſuch are our ideas of ſubſtances. Theſe muſt be taken from ſomething that does, or has exiſted, and not be made up of ideas arbitrarily put together, without any real pattern. Herein, therefore, is founded the reality of our knowledge concerning ſubſtances, that all our complex ideas of them muſt be ſuch, and ſuch only as are made up of ſuch ſimple ones as have been diſcovered to co-exiſt in nature: and our ideas, being thus true, though not, perhaps, very exact copies, are the ſubject of real knowledge of them. Whatever ideas we have, the agreement we find they have with others will be knowledge. If thoſe ideas be abſtract, it will be general knowledge; but to make it real concerning ſubſtances, the ideas muſt be taken from the real exiſtence of things. Wherever, therefore, we perceive the agreement, or diſagreement, of our ideas, there is certain knowledge; and wherever we are ſure thoſe ideas agree with the reality of things, there is certain, real knowledge.

Knowledge, *method of improving or enlarging.* It being the received opinion amongſt men of letters, that maxims are the foundation of all knowledge, and that ſciences are each of them built upon certain præcognita, from whence the underſtanding is to take its riſe, and by which it is to conduct itſelf in its enquiries in the matters belonging to that ſcience: the beaten road of the ſchool has been to lay down, in the beginning, one or more general propoſitions, called *principles*, as foundations whereon to build the knowledge that was to be had of that ſubject.

That which gave occaſion to this way of proceeding was, the good ſucceſs it ſeemed to have in mathematics, which of all the ſciences have the greateſt certainty, clearneſs, and evidence in them. But, if we conſider it, we ſhall find, that the great advancement and certainty of real knowledge men arrive to in theſe ſciences, was not owing to the influence of thoſe principles, but to the clear, diſtinct, and complete ideas their thoughts were employed about, and to the relation of equality and exceſs, ſo clear between ſome of them, that they had an intuitive knowledge, and by that a way to diſcover it in others, and this is without the help of thoſe maxims. For is it not poſſible for a lad to know, that his whole body is bigger than his little finger, but by virtue of this axiom, the whole is bigger than a part; nor be aſſured of it till he has learned that maxim? Let any one conſider which is known firſt and cleareſt by moſt people, the particular inſtance, or the general rule; and which it is that gives life and birth to the other: theſe general rules are but the comparing our more general and abſtract ideas, which ideas are made by the mind, and have names given them, for the eaſier diſpatch in its reaſonings: but knowledge began in the mind, and was founded on particulars, though afterwards, perhaps, no notice be taken thereof, it being natural for the mind to lay up thoſe general notions, and make the proper uſe of them, which is to diſburden the memory of the cumberſome load of particulars. The way to improve in knowledge is, not to ſwallow principles with an implicit faith, and without examination, which would be apt to miſlead men, inſtead of guiding them into truth; but to get and fix in our minds clear and complete ideas, as far as they are to be had, and to annex to them proper and conſtant names; and thus, barely by conſidering our ideas, and comparing them together, obſerving their agreement or diſagreement, their habitudes and relations, we ſhall get more true and clear knowledge by the conduct of this one rule, than by taking up principles, and thereby putting our minds into the diſpoſal of others.

We muſt, therefore, if we would proceed as reaſon adviſes us, adapt our methods of enquiry to the nature of the ideas we examine, and the truth we ſearch after. General and certain truths are only founded on the habitudes and relations of abſtract ideas; therefore, a ſagacious, methodical application of our thoughts for the finding out theſe relations, is the only way to diſcover all, that can with truth and certainty be put into general propoſitions. By what ſteps we are to proceed in theſe, is to be learned in the ſchools of the mathematicians, who from very plain and eaſy beginnings, by gentle degrees, and a continued chain of reaſonings, proceed to the diſcovery and demonſtration of truths, that, at firſt ſight, appeared beyond human capacity. This may reaſonably be ſaid, that, if other ideas that are real, as well as nominal eſſences of their ſpecies, were purſued in a way ſimilar to that of mathematicians, they would carry our thoughts farther, and with greater evidence and clearneſs, than poſſibly we are apt to imagine. This is reaſon ſufficient to advance that conjecture above mentioned; *viz.* "That morality is capable of demonſtration, as well as mathematics;" for moral ideas being real eſſences, which have a diſcoverable connection and agreement one with another, ſo far as we can find their habitudes and relations, ſo far we ſhall be poſſeſſed of real and general truths.

In our knowledge of ſubſtances, we are to proceed after a quite different method ; the bare contemplation of their abſtract ideas (which are but nominal eſſences) will carry us but a very little way in the ſearch of truth and certainty. Here experience muſt teach us what reaſon cannot ; and it is by trying alone, that we can certainly know what qualities co-exiſt, with thoſe of our complex idea ; for inſtance, whether that yellow, heavy, fuſible body, we call *gold*, be malleable, or not ; which experience (however it prove in that particular body we examine) makes us not certain that it is ſo in all, or any other yellow, heavy, fuſible bodies, but that which we have tried ; becauſe it is no conſequence, one way or other, from our complex idea. The neceſſity or inconſiſtence of malleability has no viſible connection with the combination of that colour, weight, and fuſibility, in any body. What is here ſaid of the nominal eſſence of gold, ſuppoſed to conſiſt of a body of ſuch a determinate colour, weight, and fuſibility, will hold true if other qualities be added to it. Our reaſonings from thoſe ideas will carry us but a little way in the certain diſcovery of the other properties in thoſe maſſes of matter wherein all thoſe are to be found. As far as our experience reaches, we may have certain knowledge, and no farther. It is not denied, but that a man, accuſtomed to rational and regular experiments, ſhall be able to ſee farther into the nature of bodies, and their unknown properties, than one that is a ſtranger to them : but this is but judgment and opinion, not knowledge and certainty.

This would make it ſuſpected, that natural philoſophy is not capable of being made a ſcience. From experiments, and hiſtorical obſervations, we may draw advantages of eaſe and health, and thereby increaſe our ſtock of conveniences for this life ; but beyond this, it is to be feared our talents reach not, nor are our faculties able to advance farther. See PHYSICS.

The ways to enlarge our knowledge, as far as we are capable, ſeem to be theſe two : the firſt is, to get and ſettle in our minds, as far as we can, clear, diſtinct, and conſtant ideas of thoſe things we would conſider and know ; for it being evident that our knowledge cannot exceed our ideas, where they are either imperfect, confuſed, or obſcure, we cannot expect to have certain, perfect, or clear knowledge. The other art is, of finding out the intermediate ideas, which may ſhew us the agreement or repugnancy of other ideas, which cannot be immediately compared.

That theſe two (and not relying on maxims, and drawing conſequences from ſome general propoſitions) are the right method of improving our knowledge in the ideas of other modes, beſides thoſe of quantity, the conſideration of mathematical knowledge will eaſily inform us ; where, firſt, we ſhall find, that he, who has not clear and perfect ideas of thoſe angles or figures, of which he deſires to know any thing, is utterly thereby incapable of any knowledge about them. Suppoſe a man not to have an exact idea of a right angle, ſcalenum, or trapezium, and it is clear, that he will in vain ſeek any demonſtration about them.

And farther, it is evident, that it was not the influence of maxims or principles that led the maſters of this ſcience into thoſe wonderful diſcoveries they have made : let a man of good parts know all the maxims of mathematics ever ſo well, and contemplate their extent and conſequences as much as he pleaſes, he will, by their aſſiſtance, ſcarce ever come to know, that the ſquare of the hypothenuſe in a right-angled triangle, is equal to the ſquares of the two other ſides. This, and other mathematical truths, have been diſcovered by the thoughts otherwiſe applied. The mind had other objects, other views before it, far different from thoſe maxims, which men, well enough acquainted with thoſe received axioms, but ignorant of their method who firſt made thoſe demonſtrations, can never ſufficiently admire.

Our knowledge, as in other things, ſo in this alſo, has ſo great a conformity with our ſight, that it is neither wholly neceſſary, nor wholly voluntary. Men, who have ſenſes, cannot chooſe but receive ſome ideas by them ; and, if they have memory, they cannot but retain ſome of them ; and if they have any diſtinguiſhing faculty, cannot but perceive the agreement, or diſagreement, of ſome of them one with another. As he that has eyes, if he will open them by day, cannot but ſee ſome objects, and perceive a difference in them ; yet he may chooſe whether he will turn his eyes towards an object, curiouſly ſurvey it, and obſerve accurately all that is viſible in it. But what he doth ſee he cannot ſee otherwiſe than he doth ; it depends not on his will to ſee that black which appears yellow. Juſt thus it is with our underſtanding : all that is voluntary in our knowledge, is the employing or withholding any of our faculties from this or that ſort of objects, and a more or leſs accurate ſurvey of them ; but, they being employed, our will hath no power to determine the knowledge of the mind one way or another ; that is done only by the objects themſelves, as far as they are clearly diſcovered. Thus, he that has got the ideas of numbers, and has taken the pains to compare one, two, or three, to ſix, cannot chooſe but know they are equal. He alſo, that hath the idea of an intelligent, but weak and frail being, made by, and depending on, another, who is eternal, omnipotent, and perfectly wiſe and good, will as certainly know, that man is to honour, fear, and obey God, as that the ſun ſhines when he ſees it. But yet, be theſe truths ever ſo certain, ever ſo clear, he may be ignorant of either or both of them, who will not take the pains to employ his faculties, as he ſhould, to inform himſelf about them.

KNOWLTON, in *Geography*, a townſhip of America, in Suſſex county, New Jerſey, containing 1937 inhabitants.

KNOWLTONIA, in *Botany*, ſo named by Mr. Saliſbury in memory of Mr. Thomas Knowlton, who is ſaid to have been Sherard's gardener at Eltham. Saliſ. Prodr. 372. Sims in Curt. Mag. v. 20. 775. (Anamenia ; Venten. Malmaiſ. 22.)—Claſs and order, *Polyandria Polygynia.* Nat. Ord. *Multiſiliquæ,* Linn. *Ranunculaceæ,* Juſſ.

Gen. Ch. *Cal.* none. *Cor.* Petals numerous, from ten to twenty, oblong, without any nectary, deciduous, the innermoſt longeſt and nearly linear ; outermoſt ſomewhat ovate, externally hairy. *Stam.* Filaments numerous, thread-ſhaped, much ſhorter than the petals ; anthers vertical, two-lobed, roundiſh, thick-edged, burſting at the edges. *Piſt.* Germens ſuperior, numerous, ovate, collected into a round head ; ſtyles lateral, awl-ſhaped ; ſtigmas ſimple, ſlightly recurved. *Peric.* Berries numerous, diſtinct, elliptical, pointed, of one cell. *Seed* ſolitary, large, ſmooth, of the ſhape of the pericarp, and attached to its baſe. *Receptacle* globoſe.

Eſſ. Ch. Calyx none. Petals numerous, oblong, deſtitute of a nectary. Receptacle of the fruit globoſe. Berries numerous, of one cell. Seeds ſolitary.

Obſ. Mr. Saliſbury ſeparated this very diſtinct genus from the Linnæan *Adonis*, and publiſhed it in 1796, by the above unexceptionable name, which therefore takes place of Ventenat's *Anamenia,* publiſhed ſeveral years after ; the latter being moreover liable to objection, from ſtrict Linnæan ſcholars, as being formed of an Arabic word.

1. K. *capenſis*. Hairy Knowltonia. (K. veſicatoria ; Sims in Curt. Mag. t. 775. Adonis capenſis ; Linn. Sp. Pl. 772.

Suppl. 272. Anamenia hirſuta; Venten. Malmaiſ. 22. n. 4. Chriſtophoriana trifoliata, foliis ſcabris, flore ſulphureo rariore; Burm. Afr. 145. t. 51.)—Hairy. Leaves twice ternate; leaflets elliptic-ovate. Petals linear.—Native of the Cape of Good Hope. With us it is a hardy green-houſe plant, flowering in the ſpring. *Root* perennial, and, as appears from Dr. Sims's deſcription, of long duration, the plant from which his figure was taken, in 1804, having come out of Dr. Fothergill's collection near 25 years before. *Leaves* ſeveral, radical, on long hairy ſtalks, twice ternate; their leaflets elliptical, or ſomewhat ovate, ſerrated, more or leſs hairy, the terminal ones uſually largeſt. *Stems* taller than the leaves, branched nearly from their very bottom, hairy, almoſt leafleſs; their branches elongated, ſubdivided, ſomewhat corymboſe; ultimate ones umbellate, ſingle-flowered, very hairy. *Bracteas* leafy; the upper ones narroweſt, lanceolate and entire. *Flowers* an inch broad, ſpreading, of a light yellowiſh green.

2. K. *veſicatoria.* Bliſtering Knowltonia. (Adonis veſicatoria; Linn. Suppl. 272. Willd. Sp. Pl. v. 2. 1307. Anamenia coriacea; Venten. Malmaiſ. 22. n. 1. t. 22. A. laſerpitiifolia; ibid. n. 2 Ranunculus æthiopicus, foliis rigidis, floribus ex luteo vireſcentibus; Comm. Hort. v. 1. t. 1. Imperatoria ranunculoides africana enneaphyllos, laſerpitii lobatis foliis rigidis, margine ſpinoſis; Pluk. Phyt. t. 95. f. 2.)—Smooth, leaves twice ternate; leaflets nearly heart-ſhaped, coriaceous; the lateral ones unequal at their baſe. Petals elliptic-oblong. Umbels compound, many-flowered.—Native of the Cape of Good Hope, and occaſionally kept in green-houſes, like the preceding, from which we cannot but think it ſpecifically different. The *leaves* are much larger, ſmooth, very thick and rigid, with ſtrong, almoſt pungent, ſerratures or teeth; ſometimes they are thrice compounded. *Stems* more umbellate in all their ſubdiviſions, the ultimate umbels conſiſting of very numerous ſtalks, which are but ſlightly hairy. *Bracteas* rather elliptical. *Petals* elliptic-oblong rather than linear. *Berries* purpliſh black. Thunberg ſays that the leaves are uſed at the Cape to raiſe bliſters, they having that property in common with ſome ſpecies of *Ranunculus* and *Clematis,* their near allies.

3. K. *gracilis.* Slender Knowltonia. (Anamenia gracilis; Venten. Malmaiſ. 22. n. 3. Adonis æthiopica; Thunb. Prodr. 94?)—"Leaflets ovate, deeply ſerrated, rigid, hairy. Stems branched at the top; branches erect, with few flowers." *Vent.*—We know nothing of this but from the definition of Ventenat, who ſaw it in Juſſieu's herbarium. Thunberg, whom he quotes with doubt, defines his plant thus. "Leaves more than twice compound; leaflets deeply toothed, divaricated. Stem villous."—With this we have no further acquaintance, unleſs, as we ſtrongly ſuſpect, it is the ſame as the following; but if ſo, it by no means anſwers to the character given in Ventenat's work.

4. K. *filia.* Fine-leaved Knowltonia. (Adonis filia; Linn. Suppl. 271. A. æthiopica; Thunb. Prodr. 94? A. daucifolia; Lamarck. Dict. v. 1. 46. Anamenia daucifolia; Venten. Malmaiſ. 22. n. 5.)—Leaves twice ternate; leaflets pinnatifid, deeply cut, ſmooth, their ſegments decurrent. Flower-ſtalks hairy.—The only ſpecimen we have ſeen was given to Linnæus, by Thunberg, who gathered it at the Cape. We preſume, therefore, it muſt be his *Adonis æthiopica*, with the character of which, cited under our laſt ſpecies, it ſufficiently tallies. The *leaves* are finely divided, but not ſufficiently like a *Daucus* to warrant Lamarck's change of the original name, however unmeaning that may be. The *ſtem* is tall and ſlender, bearing two hairy-ſtalked umbels. Lower *bracteas* compound. *Petals* nearly linear. Lamarck's account ſeems entirely taken from the *Supplementum* of Linnæus. S.

KNOX, John, in *Biography*, the intrepid and ſucceſsful promoter of the Reformation in Scotland, was deſcended from an ancient family, and born near Haddington, in Eaſt Lothian, in the year 1505. Having received the elementary parts of a good education, he was, at a proper time, ſent to the univerſity of St. Andrews, where he applied himſelf with uncommon diligence in the ſtudies of the place, made a very rapid proficiency, and was admitted to the degree of M.A. at an early age. Having determined to embrace the eccleſiaſtical profeſſion, he was admitted to prieſt's orders before the period uſually allowed by the canons. He now commenced teacher, and acquired great applauſe in that capacity. But by inſtructing others, he diſcovered the errors of the common ſyſtem in which he had been educated, and which he had endeavoured to eſtabliſh in the minds of the people. Feeling diſſatisfied with what he was engaged in, he choſe rather to be a hearer than a preacher, and frequented the diſcourſes of Thomas Williams, a black-friar, who publicly preached againſt the pope's authority, and who was the firſt from whom Mr. Knox received any taſte for the truth. About the ſame time, Mr. George Wiſhart, another celebrated reformer, coming from England, with the commiſſioners ſent by king Henry VIII. Knox learned from him the principles of the reformed religion, and with theſe he was ſo well pleaſed, that from this moment he renounced Popery and became a zealous Proteſtant. Mr. Knox had quitted St. Andrews a little before this entire change of his opinions, having been appointed tutor to the ſons of the lairds of Ormiſton and Langnidry, who were both favourers of the Reformation. Knox inſtilled into the minds of his pupils the principles of piety and the Proteſtant religion, notice of which being given to David Beaton, cardinal and archbiſhop of St. Andrews, that prelate proſecuted him with ſuch ſeverity that he was obliged to abſcond, and frequently to change the place of his concealment. He thought of retiring into Germany, but was diſſuaded from it by the fathers of his pupils, and he took ſhelter with them in St. Andrews caſtle, which was then in poſſeſſion of the Leſlies, the determined friends of the Reformation. In this aſylum he continued to inſtruct his pupils, and he gave them public lectures in theology, which he delivered at a ſtated hour in the chapel, within the walls of the caſtle. Theſe were frequented by ſeveral perſons of note in the city, who entreated Mr. Knox to take upon himſelf the office of preacher, to which, though with great reluctance, he agreed to comply. He began his public miniſtry at St. Andrews, in the year 1547, with that ſucceſs which always accompanies a bold and popular eloquence. He without heſitation ſtruck at the root of Popery, and attacked both the doctrine and diſcipline of the eſtabliſhed church with a vehemence peculiar to himſelf, but well adapted to the temper and wiſhes of the age. In his firſt ſermon he proved, to the ſatisfaction of his hearers, that the pope was antichriſt, and that the doctrine of the Roman church was contrary to the doctrine of Chriſt and his apoſtles. He ſhortly made converts of all the people in the caſtle, and of great numbers in the city, who even joined him in partaking of the Lord's ſupper. In the month of July 1547, an interruption took place in the exerciſe of Mr. Knox's miniſtry, in conſequence of the ſurrender of the caſtle to the French, when he was carried priſoner with the garriſon to France. He remained in confinement in the galleys till the latter end of the year 1549, when, being ſet at liberty, he paſſed over to England, and arriving at London, was licenſed either by Cranmer, or Somerſet, the protector, and appointed preacher, firſt at Berwick, and afterwards at Newcaſtle. In 1552, he was appointed one of ſix chaplains, whom the council thought proper to retain in the ſervice of king Edward VI., not only to attend the court, but to be itinerary preachers of the Proteſtant religion throughout the kingdom ; he had alſo the grant of forty pounds a year till ſome benefice ſhould be procured for him. Shortly after he was offered the living of All-hallows, which he refuſed, not chooſing to conform to the liturgy.. Soon after the acceſſion of queen Mary, he thought it right to retire from the impending ſtorm ; he accordingly went to Geneva, where he had not reſided long before he was invited by the Engliſh refugees at Frankfort to become their miniſter : this invitation he accepted, though againſt his will, through the interference of John Calvin, and he continued his ſervices among them till ſome internal diſputes about ceremonies broke up their ſociety. Some of the Engliſh, particularly Dr. Cox, afterwards biſhop of Ely, wiſhed for a liturgy according to king Edward's form, but Knox and others preferred the Geneva ſervice ; at length the party of Cox, to get rid of the Scotch reformer, taking advantage of certain unguarded expreſſions in one of his former publications, threatened to accuſe him of treaſon unleſs he quitted the place, which he did, and went again to Geneva. In 1555, he went to Scotland ; upon his arrival, finding the profeſſors of the Proteſtant religion greatly increaſed in number, he formed them into a ſociety, aſſociated with them, and commenced his preaching with the uſual vehemence. He had an opportunity, in the courſe of a few months, to preach in various parts of Scotland, and in all the places the people flocked in great crowds to hear him. The Popiſh clergy began to be alarmed at the conſequences of his diſcourſes, which were daily making converts, and ſummoned him to appear before them in the church of Black-friars in Edinburgh : he, having received aſſurances of ſupport from various perſons of rank and eſtimation, determined to obey the ſummons, but before the day arrived, his enemies thought fit to abandon the proſecution. Knox, however, went to Edinburgh, and as he was not allowed to vindicate his cauſe in the preſence of his opponents, he preached twice every day for ten days to the people, and had on theſe occaſions more numerous audiences than he had before witneſſed. Emboldened by ſucceſs, he wrote a letter to the queen regent, urging her to hear the Proteſtant doctrine, which ſhe declined, and Mr. Knox afterwards publiſhed his letter with ſome additions. In the ſummer of 1556, Mr. Knox ſet out for Geneva, at the earneſt entreaty of the Engliſh congregation, and almoſt the moment in which he embarked, the biſhops ſummoned him to appear before them, and upon his non-appearance, they paſſed ſentence of death upon him as a heretic, and burnt him in effigy at Edinburgh. Againſt this wicked ſentence he appealed, in a work which he printed at Geneva, and which contains a maſterly defence of religious independency, and is diſtinguiſhed for purity of ſtyle. In 1557, he was invited back to Scotland, and having conſulted Calvin and other perſons as to the prudence and neceſſity of the ſtep, he ſet out, and had proceeded as far as Dieppe, when he was adviſed that ſome of his beſt friends ſeemed, through timidity, to be abandoning their principles, and that therefore it would not be ſafe for him to proceed. He immediately wrote letters to thoſe who had invited him, complaining of their irreſolution, and even denouncing the ſevere judgments of God on all thoſe who ſhould betray the cauſe of truth and of their country, by weakneſs or apoſtacy. Theſe letters made ſuch an impreſſion on thoſe to whom they were immediately addreſſed, that they all came to a written reſolution, "that they would follow forth their purpoſe, and commit themſelves, and whatever God had given them, into his hands, rather than ſuffer idolatry to reign, and the ſubjects to be defrauded of the only food of their ſouls." To ſecure each other's fidelity to the Proteſtant cauſe, a common bond, or covenant, was entered into by them, dated at Edinburgh, December 3, 1557, and from this period they were diſtinguiſhed by the name of "The Congregation." In the mean time Mr. Knox returned to Geneva, where, in 1558, he publiſhed his treatiſe, entitled "The firſt Blaſt of the Trumpet againſt the monſtrous Regiment of Women ;" which was written in deteſtation of the cruel and infamous government of queen Mary, and of the endeavours of the queen-regent of Scotland to eſtabliſh arbitrary government in that kingdom. He intended to have followed this with "The ſecond Blaſt," but the death of Mary prevented him going any farther. He expected much from the government of Elizabeth. She had, however, been ſo diſguſted by what he had written againſt the government of women, that ſhe embraced an early opportunity of diſplaying her reſentment againſt him. She refuſed his requeſt of preaching to his friends in England, in his way from the continent, and rendered his abode there ſo uncomfortable, that he was glad to make the beſt of his road to Scotland, where he arrived in the month of May 1559. At this time a public proſecution was carried on againſt the Proteſtants, and their trial was juſt ready to commence at Stirling : Knox inſtantly hurried to ſhare with his brethren in the threatened danger, or to aſſiſt them in their common cauſe. Dr. Robertſon, in deſcribing this buſineſs, ſays, "While their minds were in that ferment which the queen's perfidiouſneſs and their own danger occaſioned, Knox mounted the pulpit, and, by a vehement harangue againſt idolatry, inflamed the multitude with the utmoſt rage. The indiſcretion of a prieſt, who, immediately after Knox's diſcourſe, was ſeen preparing to celebrate maſs, and began to decorate the altar for that purpoſe, precipitated them into immediate action. With tumultuous, but irreſiſtible violence, they fell upon the churches in that city, overturned the altars, defaced the pictures, broke in pieces the images, and proceeding next to the monaſteries, laid thoſe ſumptuous fabrics almoſt level with the ground. This riotous inſurrection was not the effect of any concert, or previous deliberation. Cenſured by the reformed preachers, and publicly condemned by the perſons of moſt power and credit with the party, it muſt be regarded merely as an accidental eruption of popular rage" From this time Mr. Knox continued to promote the reformation by every means in his power, ſparing no pains, nor fearing any danger. Mr. Knox, by his correſpondence with ſecretary Cecil, was chiefly inſtrumental in eſtabliſhing thoſe negociations between "The Congregation" and the Engliſh, which terminated in the march of an Engliſh army into Scotland to aſſiſt the Proteſtants, and to protect them againſt the perſecutions of the queen-regent. This army, being joined by almoſt all the great men of Scotland, proceeded with ſuch vigour and ſucceſs, that they obliged the French forces, who had been the principal ſupports of the tyranny of the regent, to quit the kingdom, and reſtored the parliament to its former independency. Of that body, a great majority had embraced the Proteſtant opinions, and encouraged by the zeal and number of their friends, they improved every opportunity in overthrowing the whole fabric of Popery. They ſanctioned the confeſſion of faith preſented to them by Knox, and the other reformed teachers : they aboliſhed the juriſdiction of the eccleſiaſtical courts, and transferred the cauſes to the cognizance of the civil courts; and they prohibited the exerciſe of religious worſhip, according to the rites of the Romiſh church. In the year 1561, Mary queen of Scots, the widow of Francis II. king of France, arrived in her native country, from which ſhe had been abſent more than twelve years, though ſhe was then ſcarcely nineteen. On the Sunday after her arrival ſhe commanded maſs to be celebrated in the chapel of her palace: the Proteſtants, from low murmurs, began to exclaim loudly againſt the practice, and Knox, with his uſual vehemence, declared from the pulpit, "that one maſs was more frightful to him than ten thouſand armed enemies landed in any part of the realm." Knox himſelf frequently inſulted her from the pulpit, and when admitted into her preſence, regardleſs of her ſex, her beauty, and her rank, behaved to her with very unjuſtifiable freedom. He avowed himſelf the author of "The Blaſt," and contended for the right of teaching and propagating doctrines contrary to the common opinion, and concluded a long conference by ſaying, "If the realm finds no inconveniency in the regiment [government] of a woman, I ſhall be well content to live under your Grace, as Paul was under Nero. And my hope is that ſo long as ye defile not your hands with the blood of the ſaints of God, neither I nor the book ſhall either hurt you or your authority; for in very deed, madam, that book was written moſt eſpecially againſt the wicked Jezebel of England." In 1562, Mr. Knox was employed in bringing about a reconciliation between the earls of Bothwell and Arran, which ſhews in what eſtimation he was held by perſons of the higheſt rank in the ſtate. In the ſame year he was appointed, by the general aſſembly, commiſſioner to the counties of Kyle and Galloway, and by his influence ſeveral gentlemen entered into a bond or covenant at Ayr, ſimilar to that entered into at Edinburgh in 1557. About the ſame time he accepted a challenge, made by the prior of Whithorn, to a public diſputation upon the maſs, which continued for the ſpace of three days, and the ſubſtance of which was afterwards publiſhed. In 1563, during the queen's abſence on a progreſs to the weſt of Scotland, the Proteſtants at Edinburgh excited a riot in the chapel royal while maſs was celebrating: of theſe ſome of the moſt active were ſeized in order to be brought to trial. Knox, determined to aſſiſt and ſuccour them, and being authorized by the laſt general aſſembly to give information to the whole body of Proteſtants in Scotland, ſhould any circumſtance ariſe that might threaten danger to the reformation; iſſued circular letters, requiring all who profeſſed the true religion, or were concerned in its preſervation, to aſſemble at Edinburgh on the day of trial, that they might comfort and aſſiſt their diſtreſſed brethren. One of theſe letters fell into the hands of the queen, and it was immediately conſtrued into an act of treaſon, for which he was indicted, brought to trial, and acquitted. His conduct was alſo approved by the general aſſembly of the church, which met ſoon afterwards. In 1565, lord Darnley, who had lately married the queen, conſented, at the deſire of his friends, to hear Mr. Knox preach, in hopes thereby of conciliating him, inſtead of which he took occaſion to declaim againſt the government of wicked princes, who, for the ſins of the people, are ſent as tyrants and ſcourges to torment them. Darnley complained of the inſult, and the council ſilenced the preacher for ſeveral days. In the ſame year he was appointed by the aſſembly to viſit and eſtabliſh the churches in the ſouth; and he was the bearer of a letter from the aſſembly to the biſhops of England, drawn up by himſelf; the purport of which was to complain of the ſevere treatment of the Engliſh Puritans, and to ſolicit indulgence for them. In 1571, he found it expedient to conſult his own ſafety by withdrawing from Edinburgh, and in the following year, as he knew his enemies were plotting his deſtruction, he went firſt to Abbot's-hall, in Fife, and from thence to St. Andrews, where he remained till Auguſt 1572. When the troubles of the country were in ſome meaſure abated, the people of Edinburgh, who had been obliged to leave it, returned, and ſent a deputation to St. Andrews, to invite Mr. Knox to reſume his miniſtry among them. He accepted the invitation, on condition that they would allow him to ſpeak to them according to the dictates of his conſcience, as in former times, and on the laſt day of Auguſt he preached to them in the great kirk. His voice was, however, very weak, and his health was evidently declining. The news of the accurſed maſſacre of Proteſtants at Paris gave the finiſhing blow to his already ſhattered conſtitution: he, nevertheleſs, muſtered ſufficient ſtrength to preach againſt the bloody deed, and with much energy denounced God's vengeance on the wicked actors in it, of which he deſired the French ambaſſador might be informed. From the moment that he had finiſhed his diſcourſe, his approaching diſſolution was obſerved with the utmoſt concern by his friends. During a long illneſs he diſcovered the utmoſt fortitude, and met the approaches of death with a magnanimity worthy of his high character. He anticipated with joy the proſpects of immortality, and exulted in the expectation of being releaſed from the infirmities of the body. He died November 24th, 1572, in the ſixty-ſeventh year of his age: his corpſe was attended to the grave by ſeveral of the nobility then in Edinburgh, particularly by earl Morton, who was regent at the time, and who exclaimed, when he ſaw the body depoſited in the ground, "there lies he, who never feared the face of man; who hath often been threatened with the dagger, but hath yet ended his days in peace and honour: for he had God's providence watching over him in an eſpecial manner, when his very life was ſought." The private life of this eminent reformer was irreproachable and exemplary, and the world is not a little indebted to him for that degree of light and religious liberty which it enjoys: "He was," ſays Dr. Robertſon, "the prime inſtrument of ſpreading and eſtabliſhing the reformed religion in Scotland. Zeal, intrepidity, diſintereſtedneſs, were virtues which he poſſeſſed in an eminent degree. He was acquainted, too, with the learning cultivated among divines in that age, and excelled in that ſpecies of eloquence, which is calculated to rouſe and inflame. His maxims, however, were often too ſevere, and the impetuoſity of his temper exceſſive. Rigid and uncomplying himſelf, he ſhewed no indulgence to the infirmities of others. Regardleſs of the diſtinctions of rank and character, he uttered his admonitions with acrimony and vehemence, more apt to irritate than to reclaim. This often betrayed him into indecent and undutiful expreſſions with reſpect to the queen's perſon and conduct. Thoſe very qualities, however, which now render his character leſs amiable, fitted him to be the inſtrument of Providence for advancing the reformation among a fierce people, and enabled him to face dangers, and to ſurmount oppoſition, from which a perſon of a more gentle ſpirit would have been apt to ſhrink back." After the death of this great man, his "Hiſtory of the Reformation of Religion in the Realm of Scotland, &c." was publiſhed in a folio volume. To the fourth edition of which, printed in 1732, ſeveral of his other pieces were added. There are, among the Harleian MSS. in the Britiſh Muſeum, two pieces attributed to Mr. Knox, one is a letter to his wife, and the other a treatiſe addreſſed to the faithful in London, Newcaſtle, and Berwick. Biog. Brit. Robertſon's Hiſt. of Scotland.

Knox, in *Geography*, a county of Kentucky, containing 1119 inhabitants.—Alſo, a county of Teneſſee, in Hamilton diſtrict, bounded on the S. by Blount county and W. by the Indiana territory, and watered by the rivers Holſton and Clinch It contains 11,981 inhabitants, of whom 1122 are ſlaves.—Alſo, a county in the Indiana territory, erected in June, 1790, and containing 2517 inhabitants, of whom 28 are ſlaves. Fort Knox is in the ſame territory.—Alſo, one of the two iſlands diſcovered by captain Ingraham; the other being Hancock, called by captain Roberts, who ſoon after diſcovered them, Freeman and Langdon. Theſe iſlands had every appearance of fertility. Their latitude is from 83° to 85° S., and their longitude very nearly 141° W. from Greenwich.

KNOXIA, in *Botany*, a genus named by Linnæus, in honour of Robert Knox, an Engliſhman, who ſpent many years in examining the natural productions of Ceylon, and who publiſhed at London, in folio, an "Hiſtorical relation" of that iſland in the year 1681. In this work, "the botanical deſcriptions," ſays Haller, "ſhew him to have been well ſkilled in the knowledge of plants." It was tranſlated into German, and publiſhed in quarto at Leipſic in 1689. A French edition of it appeared, in two volumes octavo, at Amſterdam, in 1693.—Linn. Gen. 51. Schreb. 68. Willd. Sp. Pl. v. 1. 582. Mart. Mill. Dict. v. 3. Juſſ. 197. Lamarck. Dict. v. 3. 369. Illuſtr. t. 59. Gærtn. t. 25.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Stellatæ*, Linn. *Rubiaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, ſmall, deciduous, of four acuminated leaves; one lanceolate, triple the ſize of the reſt. *Cor.* of one petal, funnel-ſhaped; tube thread-ſhaped, long; limb deeply divided into four, equal, rather oblong, rounded ſegments. *Stam.* Filaments four, capillary, ſituated within the throat of the corolla; anthers oblong, equal. *Piſt.* Germen roundiſh, inferior; ſtyle thread-ſhaped, as long as the ſtamens; ſtigmas two, capitate. *Peric.* Fruit naked, ſomewhat globular, pointed, furrowed. *Seeds* two, roundiſh, pointed, outwardly convex, marked with three ſtreaks; flat within, and affixed at the upper part to a thread-like receptacle.

Eſſ. Ch. Corolla of one petal, funnel-ſhaped. Seeds two, furrowed. One leaf of the calyx larger than the reſt.

1. K. *zeylanica.* Linn. Sp. Pl. 151. Fl. Zeylan. 189. Burm. Ind. 34. t. 13. f. 2. (Veronicæ affinis; Pluk. Phyt. t. 114. f. 2.)—"Flowers in ſpikes. Leaves ſmooth."—Found in Ceylon, upon the trunks of rotten trees.—This plant in appearance is like a *Plumbago* or *Lychnis*. *Stem* erect, a foot high, ſmooth, jointed. *Leaves* oppoſite, lanceolate, nearly ſeſſile. *Spikes* long, narrow, with ſcattered, ſeſſile flowers.

2. K. *corymboſa.* Pootumby of the Malabars. Willd. n. 2. (Planta Maderaſpatana; Pluk. Amalth. 172. t. 454. f. 2. K. ſtricta; Gærtn. v. 1. 122. t. 25. f. 8?)—"Flowers corymboſe. Leaves downy beneath."—A native of the Eaſt Indies and found near Velore.—*Stem* pubeſcent. *Leaves* two together, pointed, on footſtalks, lanceolate, ſmooth above, covered on the under ſide with ſhort thick hairs. The *infloreſcence* in ſize and habit is like that of *Valeriana dioica*. *Flowers* on footſtalks. *Seeds* ſmall, ſtriated, diſpoſed in an umbel at the ſummit of the ſtem. We have little doubt but that Willdenow is perfectly correct in preſuming this to be the *K. ſtricta* of Gærtner.

KNOXVILLE, in *Geography*, a poſt-town of America, the metropolis of the ſtate of Teneſſee, ſituated in Knox county, on the N. ſide of Holſton river, where it is 300 yards wide, on a beautiful ſpot of ground, 22 miles above the junction of the Holſton with the Teneſſee, and four below the mouth of French Broad river. This town is flouriſhing, and communicates by poſt with every part of the United States. It is regularly laid out, and contains 518 inhabitants, a court-houſe, gaol, and barracks large enough to contain 700 men. The ſupreme courts of law and equity for the diſtrict of Hamilton are held here every half year, and the courts of pleas and quarter-ſeſſions for Knox county are alſo held here. A college has been eſtabliſhed in this town by government, called "Blount college." N. lat. 35° 48′. W. long. 83° 44′.

KNUCKLE Point, a cape on the N.E. coaſt of New Zealand. S. lat. 34° 51′. W. long. 186° 21′.

Knuckle-*Timbers*, in a *Ship*, are the upper or top timbers next the beak-head, whoſe heads ſtanding perpendicular, and the heels or lower part partaking of the hollow of the top ſide, form an angle or knuckle near the plank-ſheer.

KNUD's Hoved, in *Geography*, a cape of Denmark, on the E. coaſt of Sleſwick, eight miles N.E. of Haderſleben. N. lat. 55° 20′. E. long. 9° 40′—Alſo, a cape of Denmark, on the E. coaſt of the iſland of Fyen, projecting into the Great Belt, and forming a bay on the S. of the town of Nyeborg. N. lat. 55° 17′. E. long. 10° 52′.—Alſo, a cape of Denmark, on the S.W. coaſt of the iſland of Zealand. N. lat. 55° 5′. E. long. 11° 37′.

KNUTSFORD, a conſiderable market town in the hundred of Bucklow, and county of Cheſter, England, is ſeated on the great road from London to Liverpool, being 173 miles from the former, 30 from the latter, 24 from Cheſter, and 15 from Mancheſter. It was formerly a chapelry within the pariſh of Roſtherne, but was made a diſtinct pariſh, by act of parliament, in the year 1741, and comprizes the townſhips of Over-Knutsford, Nether-Knutsford, Bexton, Ollerton, and Toft.

William de Tabley, who was lord of both the Knutsfords, about the year 1292, granted a charter of privileges to his burgeſſes of Knutsford, which is printed in ſir Peter Leiceſter's Hiſtory of Bucklow hundred; this William, about the ſame time, procured a charter for a market on Saturday, which ſtill continues, and a fair for three days, at the feſtival of St. Peter and St. Paul; the charter was confirmed to William Tabley the younger, 1332; this fair alſo is ſtill continued; there is another on the 8th of Nov. and a third has been eſtabliſhed within theſe few years on the 23d of April; none of them are noted as great marts for the ſale of any particular commodities. A charter for a Wedneſday's market at Over-Knutsford, on Knutsford-Booth, was granted in 1335, to Ellen Legh, with a fair on Tueſday and Wedneſday in Whitſun-week; this market has been long diſcontinued, but the fair is ſtill held.

Knutsford is not a corporate town, but it appears that its chief officer was called a mayor in the reign of king Edward I.; it has now no peculiar government. The quarter-ſeſſions for the county are held in this town at Midſummer and Michaelmas. In the year 1777, an account having been taken of the population of Knutsford, it was found that there were 375 families, and 1674 inhabitants; annual average of deaths for the ten years then preceding had been only one in forty, being about the ſame proportion as in the city of Cheſter, and very much below the uſual average of towns. According to the returns made to parliament, under the population act in 1801, there were then 543 families in Over and Nether-Knutsford, and 2372 inhabitants, of whom 782 were employed in trade, manufactures, or handicraft. A manufacture of thread has been long eſtabliſhed in this town. There is no cotton factory, but a great deal of cotton ſpinning and weaving is done in private houſes.

Under an act of parliament paſſed in the year 1741, Knutsford was made a diſtinct pariſh and vicarage, and the ancient chapel in Nether-Knutsford taken down; the new pariſh church, then built in the Tentry-croft, was conſecrated in the year 1744, and dedicated to St. John the Baptiſt; the patronage is veſted, by the act, in the lords of Over-Knutsford, Nether-Knutsford and Ollerton, Toft, and Bexton, who preſent in rotation. Knutsford is divided into two parts by a ſmall rivulet, and from the relative ſituation, theſe diviſions are called Upper and Lower. Annual races are held in the vicinity of this town. Immediately in the neighbourhood are ſome ſeats diſtinguiſhed for their antiquity and pictureſque features. To the north is Tatton-hall, the ſeat of Wilbraham Egerton, eſq. a large ſtone manſion, recently erected from the deſigns of Samuel Wyatt, eſq. The adjoining park comprizes about 2000 acres of land, ſome of which is annually in tillage. Weſt of the town is Tabley-houſe, the ſeat of ſir John F. Leiceſter, bart., a large brick manſion, in a ſpacious park, which is ornamented with a large lake and fine foreſt trees. The houſe is particularly noted for its noble gallery of pictures, all executed by Engliſh artiſts. Lyſons's Magna Britannia, vol. ii. 4to. 1810.

KNUTWEIL, a bailiwick of Switzerland, in the canton of Lucerne.

KNUTZEN, Mathias, in *Biography*, a native of Oldenſworth, in the duchy of Sleſwick, was educated at Konigſberg, in Pruſſia. He is the only perſon on record who openly profeſſed and taught the principles of Atheiſm. It has been aſſerted that he had, at one time, 1000 diſciples in the different parts of Germany. They aſſumed the title of "Conſcientiarians," becauſe they maintained that people were bound to lay aſide all conſideration of God and religion, and to follow the dictates of reaſon and conſcience alone. Reaſon, ſaid Knutzen, teaches every man the three fundamental principles of the law of nature: "to hurt nobody"—"to live honeſtly"—and "to give to every man his due." In the year 1674, he diſperſed a Latin letter, and two dialogues in German, explanatory of his doctrines, which aſſumed that there was neither God nor devil: that neither magiſtrates nor prieſts were to be regarded, and that there is no life but the preſent. Muſæus publiſhed an anſwer to his Letter and Dialogues, as well to refute the abſurdity and wickedneſs of his ſyſtem, as to contradict the fact reſpecting the number of the diſciples. He probably died in contempt, as no notice is taken of the latter part of his life by hiſtorians. Moreri, Bayle.

Knutzen, Martin, a profeſſor of philoſophy in Pruſſia, was born at Konigſberg in the year 1713. He filled, for ſome years, the philoſophical chair in the univerſity of his native place, and occupied the poſt of librarian. He died in 1751, when he was only about thirty-eight years of age. He was author of ſeveral learned works, of which the principal are, "Syſtema Cauſarum Efficientium;" "Elementa Philoſophiæ Rationalis, Methodo Mathematico demonſtrata;" "Theoremata de Parabolis infinitis;" and "A Defence of the Chriſtian Religion." This laſt is ſaid to be a very excellent piece, and one that is honourable to his virtues and talents.

KNYSNA, in *Geography*, an arm of the ſea on the coaſt of Africa, in the colony of the Cape of Good Hope, at the diſtance of about 18 miles to the weſtward of Plettenberg's bay, which, in the opinion of Mr. Barrow, may one day become an important ſtation. He has given a plan of it in the ſecond volume of his "Travels in Southern Africa." The tide ſets into it through a narrow paſſage, or portal, as into a dock. The depth of water, and great extent of it, running into the centre of very fine foreſts, render it a moſt eligible place for building and repairing ſhips. Veſſels of 500 tons and upwards, deeply laden, may paſs the portal, and thoſe that are much larger might be built in it and ſent out light, to be completed in Plettenberg's bay. The foreſts contain ſeveral different kinds of durable and well-grown timber fit for that valuable purpoſe, as well as abundance of maſts and yards.

KNYSZYN, a town of the duchy of Warſaw; 36 miles N. of Bielſk.

KOADGWAH, a town of Hindooſtan, in the circar of Jenhat; 20 miles W.N.W. of Gujurat.

KOALA, in *Zoology*, a ſpecies of the *Wombat*, the peculiarities of which have been deſcribed by Mr. E. Home in the Phil. Tranſ. for 1808, part. ii. The koala inhabits the foreſts of New Holland, about 50 or 60 miles to the S.W. of Port Jackſon, and was firſt brought to that place in Auguſt, 1803. It is commonly about two feet long and one high, in the girth about one and a half foot: it is covered with fine ſoft fur; lead-coloured on the back, and white on the belly; the ears are ſhort, erect, and pointed; the eyes generally ruminating, ſometimes fiery and menacing; reſembling the bear in the fore part of its body; it has no tail; and its poſture is commonly ſitting. The New Hollanders eat the fleſh of this animal, and are therefore diligent and active in the purſuit of it; aſcending the loftieſt gum trees, and following the animal from bough to bough, till at length they are able either to kill it with the tomahawk, or to take it alive. In the day time the koala feeds upon the tender ſhoots of the blue gum tree, and in the night it deſcends, and prowling about, ſcratches the ground in ſearch of ſome particular roots. It ſeems to creep rather than walk; when incenſed or hungry, it utters a long ſhrill yell, and aſſumes a fierce and menacing look. Theſe animals are found in pairs, and the mother carries the young on its ſhoulders. The koala appears ſoon to form an attachment to the perſon who feeds it. Theſe animals ſeem to form the intermediate link between the opoſſum and kanguroo. See Wombat.

KOAMAROO, Cape, in *Geography*, the S.E. projection of land at the entrance of Queen Charlotte's Sound, on the iſland of Tavai-Poenammoo, one of the New Zealand iſlands. S. lat. 41° 34′. E. long. 176° 30′.

KOANG-TCHEOU, a town of Corea; 150 miles S. of King-ki-tao. N. lat. 35° 6′. E. long. 125° 41′.

KOB, in *Zoology*. See Antelope *Lerwia*.

KOBA, in *Geography*, a town of Africa, in Kullo. N. lat. 12° 20′. W. long. 9°.—Alſo, a town of Arabia, in the province of Hedsjas; three miles N.W. of Medina.—Alſo, a town of Turkeſtan; 70 miles E. of Toueat.

Koba of Buffon, in *Zoology*, *Antelope Koba*, is referred by Gmelin, with ſome heſitation, to Antelope *Pygarga*, (which ſee); but Pennant refers the koba to the ſpecies we are now to deſcribe; *i. e.* his Senegal antelope, the Cervus temamaçama of Seba, the antilope Bubalis of Pallas, la grande vache brunne of Adanſon. The horns are thick and annulated, very cloſe at the roots, much bent in the middle, then approaching and receding at the ends, which are ſmooth, ſharp, and bent backwards. This animal inhabits Senegal; it is a large ſpecies, ſeven feet long; the head is large and clumſy, with large ears, ſeven inches long; the horns are ſeventeen inches long, and are ſurrounded with fifteen prominent rings; the head and body are of a light reddiſh-brown colour, with a narrow black liſt down the hind part of the neck; the rump is dirty white; there is a duſky mark on each knee, and above each fetlock joint the tail is about a foot long, and is covered with longiſh black hairs.

KOBACK, in *Geography*, a town of Sclavonia, on the Save ; 20 miles E.S.E. of Belgrade.—Alſo, a town of Africa, in the kingdom of Yani.

KOBAD, a diſtrict of Perſia, in the N.W. part of Farſiſtan.

KOBAK, a town of Sweden, in Weſt Bothnia ; ſeven miles N.W. of Umea.

KOBAN KUPRI, a town of Turkiſh Armenia ; 27 miles E. of Erzerum.

KOBELNIKA, a town of Auſtrian Poland, in Galicia ; 34 miles W. of Lemberg.

KOBELWIES, a town in the canton of St. Gallen, in Switzerland, at the foot of the Kamor. About two miles above Kobelwies are the caves known by the name of the *Cryſtal Caves*. Theſe are difficult of acceſs, the only poſſible mode of entering them being in a creeping poſture. From the firſt of theſe caves you deſcend into the ſecond, and aſcend again in order to arrive at the third, out of which iſſues a brook, which ſupplies forty baths at Kobelwies. The interior of the caves is ſtudded all over, not with rock cryſtals, but with calcareous ſpar, which is partly coated with a yellow kind of clay ; it is found white and of an aſh-grey colour, ſeparates into brilliant large grains with a ſmooth ſurface, and when burnt yields the fineſt and whiteſt ſort of lime which is applied for the purpoſes of art. The water iſſuing out of the caves is very clear ; it is impregnated with lime and ſulphuric acid, and the baths it ſupplies (eſpecially when taken warm) are very efficacious in the cure of the ague prevailing in the marſhy parts of the country bordering on the Rhine.

KOBEN, a town of Sileſia, in the principality of Glogau, on the Oder. N. lat. 51° 31′. E. long. 16° 26′.

KOBI, a town of Ruſſia, in the government of Caucaſus ; 60 miles S.E. of Ekaterinograd.

KOBIELE, a town of Lithuania, in the palatinate of Troki ; 20 miles N.N.E. of Grodno.

KOBIELEN, a town of the duchy of Warſaw ; 28 miles W. of Kaliſh.

KOBIL, a town of Ruſſia, in the government of Peterſburg, on the E. coaſt of the Tchudſkoi lake ; 24 miles N. of Pſkov.

KOBILINKAIA, a town of Ruſſia, in the country of the Coſſacks ; 156 miles E.N.E. of Azoph.

KOBIN, a town of Perſia, in the province of Segeſtan ; 30 miles S. of Zareng.

KOBINIKI, a town of Lithuania, in the palatinate of Wilna ; 52 miles E.N E. of Wilna.

KOBRESIA, in *Botany*, ſo called by profeſſor Willdenow, in honour of a nobleman at Vienna, named de Kobres, whom he celebrates as an eminent promoter of natural hiſtory.—Willd. Sp. Pl. v. 4. 205.—Claſs and order, *Monoecia Triandria*. Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ.

Gen. Ch. Male, *Cal.* the inner ſcales of a catkin, each oblong, ſlightly concave, ſingle-flowered, permanent, ſometimes wanting. *Cor.* none. *Stam.* Filaments three, capillary, erect, longer than the calyx ; anthers vertical, linear, erect.

Female, *Cal.* the outer ſcales of the ſame catkin, rather larger, ſheathing, elliptic-oblong, ſingle-flowered, permanent. *Cor.* none. *Piſt.* Germen ſuperior, triangular ; ſtyle cylindrical, ſhort ; ſtigmas three, briſtle-ſhaped, downy. *Peric.* none, except the permanent ſcales. *Seed* one, triangular, pointed, hard, naked.

Eſſ. Ch. Male, Calyx the inner ſcales of an imbricated catkin, ſolitary. Corolla none.

Female, Calyx the outer ſcales of the ſame catkin, ſheathing, permanent. Corolla none. Stigmas three. Seed triangular, naked.

Obſ. This genus differs from *Carex* in the want of a tunic to the ſeed, which is ſo remarkable in that, and has been called ſometimes a corolla or nectary ; as well as in the diſpoſition of the flowers. Theſe in *Kobreſia* ſtand in pairs, the males being internal, and ſmaller. In one known inſtance only they want their ſcale or calyx, ſo that there is no ſeparation between the ſtamens and piſtil, and the flowers become apparently united, or hermaphrodite. Three ſpecies only are known.

1. K. *ſcirpina*. Willd. n. 1. (Carex Bellardi ; Allion. Pedem. v. 2. 264. t. 92. f 2. Schkuhr. Car. 12. t. D. f. 16. C. myoſuroides ; Villars. Dauph. v. 2. 194. t. 6. See CAREX, n. 15.)—Spike ſolitary, ſimple, cylindrical. —Native of dry elevated ſpots on the mountains of Savoy, Dauphiny, Italy, Carinthia, Styria, and the Tyrol, flowering in July and Auguſt. We have gathered it high on Mount Cenis, in company with the able botaniſt whoſe name it bears. Linnæus had ſpecimens from Italy, which he never deſcribed. Mr. Davall found this plant on the mountain of Valforey, though Haller has it not. – The *root* is perennial, tufted, conſiſting of numerous blackiſh, zigzag fibres, running deep into crevices of rocks. *Stems* numerous, a ſpan high, or leſs, ſimple, naked, round, ſtriated, ſmooth, erect or ſlightly curved, compoſing denſe tufts, with numerous, ſheathing, brown, poliſhed radical ſcales. *Leaves* radical, erect, ſhorter than the ſtems, narrow, acute, involute, rough-edged. *Spike* terminal, ſolitary, erect, about an inch long, obtuſe, ſlender, of from ten to twenty pair of flowers, moſt lax in its lower part. *Glumes* brown, ſhining, with membranous edges, awnleſs. Schkuhr figures but two ſtigmas ; we find three, as all other writers deſcribe them. The permanent glumes, inveſting the ſeed, look like the torn tunic of a *Carex*, as Villars repreſents them. That of the male flower is much the ſmalleſt and moſt membranous.

2. K. *caricina*. Willd. n. 2. (Carex hybrida ; Schkuhr. Car. t. Rrr. f. 161. *Willd.* Schoenus monoicus ; Sm. Eng. Bot. v. 20. t. 1410.)—Spike compound, denſe, ſomewhat ovate ; ſpikelets alternate, imbricated.—Native of Mount Cenis, in rather moiſt muddy ſpots, flowering in Auguſt ; gathered by the writer of the preſent article in 1787. Mr. Dickſon obſerved it in the county of Durham in 1799. The Rev. Mr. Harriman mentions the mountain of Cronkley, and the neighbourhood of Widdy bank, in Teeſdale foreſt, as its particular ſtations. At the ſuggeſtion of the late Mr. W. Brunton, it was referred in *Eng. Bot.* to *Schoenus*, proving, on examination, no *Carex*. Its habit and ſize are much like the preceding, except that the *ſtems* grow leſs crowded or tufted, and are ſtouter, and the *leaves* ſhorter, ſomewhat broader, as well as more ſpreading. The *ſpike* is eſſentially different, being compoſed of four or five alternate, ſhort, elliptical ſpikelets, making all together an ovate figure. *Glumes* rather more pointed, keeled, and leſs membranous, than in the foregoing ſpecies. *Stigmas* three. *Seed* elliptic-oblong, triangular, pointed, horny.

3. K. *cyperina*. Willd. n. 3. (Carex hermaphrodita ; Jacq. Coll. v. 4. 174. Ic. Rar. t. 615.)—Umbel twice compound, leafy ; ſpikes cylindrical ; ſpikelets ſpreading. Male flowers without their proper calyx.—Jacquin received this from the Caraccas, where it grows in wet ſituations, and it flowered with him in the ſtove at Vienna, from May to Auguſt. The habit is that of a *Cyperus*, or a *Kyllingia*. *Root* perennial. *Stems* annual, triangular, ſmooth, about two feet high, with ſeveral long, ſheathing, linear, roughiſh *leaves*, half an inch broad at their baſe, and many ſmaller

ones at the *umbel*, which conſiſts of numerous, ſimple, or compound ſtalks, bearing various thick but lax *ſpikes*. Theſe are compoſed of numerous ſpikelets, ſpreading horizontally, each linear lanceolate, ſlender, a quarter of an inch long, and conſiſting of four or five, apparently hermaphrodite, imbricated *flowers*. It ſeems to us, however, that they are really *pairs of flowers*, of which the male wants the glume or calyx, which ſuppoſition is juſtified by the analogy of the other ſpecies. The colour of the whole plant is repreſented by Jacquin, as a nearly uniform pale green.—*Stigmas* three. *Seed* oblong, triangular, pointed, brown. S.

KOBRYN, in *Geography*, a town of Lithuania, in the palatinate of Brzeſc; 28 miles E. of Brzeſc.

KOBYN, a town of Lithuania, in the palatinate of Brzeſc; 34 miles E.S.E. of Brzeſc.

KOCHEISKAIA, a town of Ruſſia, in the government of Irkutſk, on the Ilga; 28 miles N.W. of Vercholenſk.

KOCHIA, in *Botany*, ſo named by Dr. Roth, and adopted by Mr. R. Brown, in honour, as we preſume, of a German botaniſt, John Frederick William Koch, author of a periodical work on economical plants, printed at Magdeburgh in 1797 and 1798, in octavo. It may alſo commemorate Joſeph Matthias Koch, who publiſhed on agriculture at Vienna in 1767, recommending ſalt for manure; an opinion perhaps to be adopted "*cum grano ſalis*;" but as this plant belongs to a *ſaline* tribe, he may, under ſuch limitation at leaſt, be ſaid to have merited the diſtinction as well as ſome profeſſed botaniſts.—Brown Prodr. Nov. Holl. v. 1. 409.—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Holeraceæ*, Linn. *Atriplices*, Juſſ. *Chenopodeæ*, Decandolle and Brown.

Eſſ. Ch. Calyx inferior, of one leaf, in five ſegments, having appendages at their backs when in fruit. Corolla none. Seed one, depreſſed, encloſed in the winged calyx.

Two ſpecies only are mentioned by Mr. Brown as natives of the ſouth coaſt of New Holland.

1. K. *brevifolia*. Leaves cylindrical, ſeſſile, ſmooth. Stem ſhrubby, much branched, erect and woolly. Appendages of the calyx dilated and membranous

2. K. *aphylla*. Shrubby and leafleſs. Branches divaricated and bent downwards; the young ones ſpinous. Spikes lateral. Calyx woolly; its appendages when in fruit membranous.

There ſeem to be many more ſpecies in other parts of the world, as Mr. Brown adviſes a diviſion of the genus into *Kochia*, properly ſo called, the ſpecies of which have the appendages of their calyx awl-ſhaped and ſpinous, their ſeeds deſtitute of albumen, and their embryo cloven at the baſe; and *Willemetia*, whoſe appendages are membranous and dilated, their ſeeds furniſhed ſparingly with albumen. This difference however, reſpecting the albumen, in plants ſo nearly akin, ſhews how little any character is to be truſted abſolutely. The abſence or preſence of albumen forms one of the moſt eſſential marks of diſtinction with writers on natural orders, and, on account of the difficulty of its detection, might ſeem more impoſing and authoritative to the unlearned than it really is.

KOCNI, in *Geography*, a town of Walachia, on the Ardgis; 15 miles N. of Buchareſt.

KOCYCK, a town of Poland, in the palatinate of Lublin; 24 miles N. of Lublin.

KOCZARAWAC, a town of Poland, in the palatinate of Braclaw; 48 miles S.S.W. of Braclaw.

KOCZMYN, a town of Lithuania, in the palatinate of Novogrodek; 28 miles N. of Sluck.

KOCZOWA, a town of Poland, in the palatinate of Kiev; 22 miles S.S.E. of Bialacerkiev.

KODAJA, a town of Arabia, in the province of Nedsjed; 50 miles W. of Jamama.

KODALLY, a town of Hindooſtan, in Myſore; 27 miles E. of Chinna Balabaram.

KODDA-PAIL, in *Botany*, the Indian name of the Linnæan *Piſtia Stratiotes*. See Rheede Hort. Mal. v. xi. 63. t. 32, and Plum. Nov. Gen. 30. t. 39.

KODDE, VANDER, in *Biography*. There were three brothers of that name, *viz.* John, Adrian, and Gilbert, inhabitants of Warmond, near Leyden, who are entitled to notice from their having been founders of a religious community known by the name of COLLEGIANTS, which ſee. The founders paſſed their days in the obſcurity of a rural life, but were ſaid to be men of eminent piety, well acquainted with ſacred literature, and enemies to religious controverſy. Gilbert was an elder of the Remonſtrant church at Warmond, and poſſeſſed a fluent elocution. In the year 1619, when the perſecution of the Calviniſts had driven the Remonſtrants from their churches, the three brothers propoſed that meetings ſhould be held of members of the church at Warmond, at which one or more of their number ſhould read a chapter or two out of the Bible and pray; and if any perſon had any thing to offer by way of exhortation, inſtruction, or the edification of others, he ſhould be at liberty ſo to do. Hence they ſoon inferred the inutility of the miniſterial profeſſion, as the people were ſufficiently qualified to teach and inſtruct one another. From this origin ſprung a ſect, or community, already referred to, conſiſting of perſons of all ſects which ſpread very widely over the Dutch provinces. Moſheim's Eccleſ. Hiſt.

KODEN, in *Geography*, a town of Lithuania, in the palatinate of Brzeſc; 12 miles S. of Brzeſc.

KODGIA-HISAR, a town of Aſiatic Turkey, in the province of Diarbekir; 10 miles S. of Merdin.

KODGIA-SHEHR, a town of Natolia; 12 miles N. of Kiutaja.

KODIAK, a range of iſlands, conſiſting of one large, bearing this name, and ſeveral ſmaller, in the North Pacific ocean, extending about 120 miles in length from S.W. to N.E., and about 40 miles in breadth; above 20 miles from the W. coaſt of America, and 30 S. from the entrance into Cooke's inlet. N. lat. 56° 45′ to 58° 28′. E. long. 206° 12′ to 208° 45′.

KODJA. See the next article.

KODJAKANS, or KODJAS, a numerous claſs of perſons in the Ottoman empire, particularly in the capital, which holds the middle rank between the military men and the lawyers, and which is become ſufficiently powerful, ſince the influence of the Ulemas has declined, as the divan is compoſed of them, and as ſome of them obtain fiefs, military rank, and governments. Almoſt all the miniſters, all the agents in the different adminiſtrations of the capital, the cuſtoms, and the moſques; all the principals of offices, all the ſecretaries, all the clerks, all the ſchool-maſters; in a word, all the writers from the ſimple "kiatib," who copies books, petitions, or memorials, and him who applies himſelf to writing purely and correctly the language, to the "reis-effendi," who is at the head of them, are all diſtinguiſhed by the name of Kodja, and make part of that ſort of corporation. The art of tranſcribing the national books, and eſpecially the koran, is a kind of nurſery for this claſs of perſons. The Muſſulmen are indebted to the Kodjas for a great number of works, which they hold in high eſtimation, relative to the Arabic and Perſian languages, philoſophy, morality, Mahometan hiſtory, and the geography of their provinces; and among them are generally found the moſt intelligent ſtateſmen, or thoſe who are moſt capable of ſerving as miniſters.

KODI-HISSAR, a town of Natolia; 18 miles N. of Kiangari.—Alſo, a town of Aſiatic Turkey, in Aladulia, 18 miles N.E. of Sivas.

KODINSKA, a town of Ruſſia, in the government of Tobolſk; 224 miles E. of Eniſeiſk. N. lat. 58° 30'. E. long. 99° 14'.

KODMA, a town of Perſia, in the province of Kerman; 40 miles N. of Kermanſhir.

KODMANA, a town of Walachia; 10 miles S. of Kordedearda.

KODNIA, a town of Ruſſian Poland, in Volhynia; 10 miles S. of Zytomiers.

KOEG. See Dagzbuller.

KOEI, or Koei-yang, a city of China, of the firſt claſs, and capital of the province of Koei-tcheou. It is a ſmall city, being only about three miles in circuit; its houſes are partly of earth, and partly of brick, and as the river that approaches it is not navigable, it is a place of no trade. It was once the reſidence of the ancient kings; the remains of temples and palaces announce its former magnificence; but theſe monuments of grandeur are mouldering into ruins. Within its juriſdiction there are three towns of the ſecond order, and four of the third; about it are many forts. N. lat. 26° 30'. E. long. 106° 19'.

KOEI-TCHEOU, the ſmalleſt province of China, bounded on the N. by Se-tchuen, on the E. by Hou-quang, on the S. by Quang-ſi, and on the W. by Yun-nan. The whole country is almoſt a deſert, and covered with inacceſſible mountains; ſo that it may be regarded as the Siberia of China. The inhabitants are independent and ferocious. The Mandarins and governors, who are ſent into this province, are ſometimes diſgraced noblemen, for whom the emperor wiſhes to provide; the garriſons are entruſted to their charge, in order to overawe the country; but no troops of the empire are found ſufficient to ſubdue the intractable mountaineers of this province. Many efforts have been made for this purpoſe, forts have been erected, and troops ſent to conquer them; but they retire within the faſtneſſes of their mountains, and ſeldom iſſue forth, but to deſtroy the Chineſe works, or ravage their lands. Neither ſilk ſtuffs, nor cotton cloths, are manufactured within this province; but it produces a plant, reſembling our hemp, of which they make cloth for their ſummer dreſſes. It has mines of gold, ſilver, quickſilver, and copper; and of the laſt metal, they make thoſe ſmall pieces of coin, which are in circulation throughout the empire. This province contains 10 cities of the firſt claſs, Koei-yang being the capital, and 38 of the ſecond and third. Some of theſe cities, which are conſtructed of earth and brick, and which may be ſaid to reſemble heaps of cottages, are ſituated on the banks of agreeable rivers and in fertile vallies; and though a quantity of land might be found in this province, which by proper cultivation would yield a conſiderable produce, the Chineſe are ſo awed by the mountaineers, that they dare not leave the neighbourhood of their fortreſſes.

Koei-tcheou furniſhes the beſt horſes in China; an immenſe number of cows and hogs are raiſed here, and wild poultry, of a moſt exquiſite taſte, are every where to be found. Sir George Staunton eſtimates the population of this province at 9,000,000.

Koei-tcheou, a city of China, of the firſt claſs, in the province of Se-tchuen; ſeated on the banks of the great river Kincha, or Yang-tſe-kiang, and forming the key to the province with a cuſtom houſe for receiving the duties of the merchandize which is brought thither. Its trade is great, and of courſe it is opulent. Its juriſdiction comprehends one city of the ſecond claſs, and nine of the third. The adjacent country is mountainous, but is rendered fruitful by the induſtry of its occupiers, who are unpoliſhed huſbandmen. The neighbourhood affords great quantities of muſk, and ſeveral ſprings from which ſalt is procured. Orange and lemon trees are very common. N. lat. 31° 10'. E. long. 109° 14'.

KOELCOTTY, a town of Thibet, on the Ganges; 30 miles S. of Gangotri.

KOELE, a ridge of mountains between Sweden and Norway.

KOELPINIA, in *Botany*, ſo named by profeſſor Pallas, in the third volume of his Ruſſian Travels, *p.* 755. *t.* L. l. *fig.* 2, in memory of his "highly meritorious friend," Alexander Bernard Koelpin, Profeſſor of Phyſic at Stetin, in Pomerania, author of ſeveral botanical tracts. Pallas ſubmits this genus to the deciſion of thoſe who, as he modeſtly ſays, take the lead in botany. Few are more worthy to do ſo than himſelf, and his *Koelpinia* is eſtabliſhed as a genus by Schreber and Willdenow, though they found themſelves obliged to adopt a different name, this identical genus being the *Rhagadiolus* of Cæſalpinus, Tournefort, Vaillant, Juſſieu, and Gærtner, confounded by Linnæus under *Lapſana*. The name they have retained ſeems to us expreſſive and unexceptionable, though Ambroſini ſurely gives a wrong explanation of its meaning. See Rhagadiolus.

KOELREUTERIA, a genus named by Laxman, in the Memoirs of the Peterſburg Academy, in honour of John Theophilus Kölreuter, M.D. profeſſor of Natural Hiſtory at Carlſrhue, born in the year 1733, author of ſome diſſertations relative to the plants about Tubingen, and of ſeveral experiments relative to vegetable fecundation.—Laxman. in Nov. Comm. Petrop. v. 16. 561. t. 18. Schreb. 731. Willd. Sp. Pl. v. 2. 330. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 351. L'Herit. Sert. Angl. 18. Juſſ. 451. Lamarck; Illuſtr. t. 308.—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Trihilatæ*, Linn. *Sapindi*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five, ovate, obtuſe, concave, membranaceous, unequal leaves, aſcending towards the upper ſide, gaping below. *Cor.* Petals four, equal, aſcending towards the upper ſide; the two lower ones oppoſite: claws cylindrical, ſtraight, the length of the calyx: borders lanceolate, recurved at the top, ſpreading. Nectary compoſed of four erect, deeply cloven ſcales, affixed to the claws of the petals, forming a crown to the orifice; with three glands between the ſtamens and piſtil. *Stam.* Filaments eight, awl-ſhaped, erect, affixed to the columnar receptacle; anthers oblong, obtuſe. *Piſt.* Germen ſuperior, oblong, triangular, ſtanding upon the columnar receptacle; ſtyle ſimple, three-ſided, aſcending, as long as the petals; ſtigma trifid, ſpreading, ſmall. *Peric.* Capſule oblong, of three cells, and three valves, the partitions from their centre. *Seeds* in pairs, attached to the partition, one of them generally abortive.

Eſſ. Ch. Calyx of five leaves. Corolla of four petals, irregular. Nectary of four cloven ſcales, and three glands. Capſule of three cells, with two ſeeds in each.

1. K. *paniculata*. Willd. n. 1. L'Herit. Sert. Angl. t. 19. (Sapindus chinenſis; Linn. Suppl. 228.)—A native of China, hardy with us, flowering in July and Auguſt.—*Stem* arboreous, upright, round, ſmooth, branched, ſix or ſeven feet high. *Branches* ſcattered, twiſted; the younger ones glandulous and dotted. *Buds* conical, imbricated. *Leaves* on long, club-ſhaped, channelled foot-ſtalks, unequally pinnate, with about ſix pair of ovate, laciniated, ſerrated,

rated, acute, flat leaflets. *Panicles* terminal, more than twice compound, looſe and ſpreading. *Flowers* three or more on each partial ſtalk, greeniſh and in themſelves not very conſpicuous. Some male flowers being intermixed among the reſt, have induced Schreber to refer the genus to *Polygamia.*

KOEMPFERIA. See Kæmpferia.

KOENIG, Samuel, in *Biography*, a learned philoſopher, diſtinguiſhed by his mathematical abilities, was a Swiſs by birth. He filled the chair of philoſophy and natural law in the univerſity of Franeker, whence he removed to the Hague, where he had the appointment of librarian to the ſtadtholder, and to the princeſs of Orange. He was elected a member of the Academy of Sciences at Berlin, but was afterwards expelled from that body, on account of an attack upon Maupertuis the preſident, charging him with plagiariſm. The learned in every part of Europe felt intereſted in the diſpute. Koenig publiſhed an "Appeal" written with much animation, which procured him many ſupporters. He died in 1757, leaving behind him the character of being one of the beſt mathematicians of the age. He was author of ſeveral other pieces. According to Voltaire "he was a great metaphyſician, a good geometrician, and, what is of ſtill greater moment, a very good man."

KOENIGIA, in *Botany*, ſo called by Linnæus in honour of his diſciple Dr. John Gerard Koenig, a native of Courland, born in 1728, who in 1765 diſcovered this plant in Iceland, and after having inveſtigated the vegetable productions of that dreary country, and of its circumjacent ſeas, viſited the richer climes of India, where he died at Jagrenatpour, in Bengal, in 1785. His communications have greatly enriched the collections of Europe, eſpecially thoſe of Linnæus, Retzius, and ſir Joſeph Banks. The fine Bankſian library contains his botanical manuſcripts. His letters to Linnæus are very numerous and inſtructive.—Linn. Mant. 3. Schreb. 57. Willd. Sp. Pl. v. 1. 490. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 183. Juſſ. 83. Lamarck. Illuſtr. t. 51. Gærtn. t. 128.—Claſs and order, *Triandria Trigynia.* Nat. Ord. *Holeraceæ*, Linn. *Polygoneæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, in three deep, ovate, concave, permanent ſegments. *Cor.* none. *Stam.* Filaments three, capillary, ſhorter than the calyx; anthers roundiſh. *Piſt.* Germen ſuperior, ovate; ſtyles none; ſtigmas three (often but two), cloſe together, downy, coloured. *Peric.* none. *Seed* ſolitary, ovate, as long as the calyx.

Eſſ. Ch. Calyx in three deep ſegments. Corolla none. Seed ſolitary, ovate, naked.

1. K. *iſlandica.* Linn. Mant. 35. Fl. Dan. t. 418.—Native of Iceland, from whence ſir Joſeph Banks brought ſeeds to Kew garden in 1773, and where Mr. William Jackſon Hooker obſerved it on his late eventful viſit to the ſame country, of which he has favoured the public with ſo pleaſing and unaffected a narrative. This humble plant is chiefly calculated to attract the ſcientific botaniſt, being an annual, ſcarcely two inches high, with a few alternate, obovate, or ſpatulate, entire *leaves*, and ſmall, green, faſciculate, terminal *flowers.* The whole herb is ſmooth, a little ſucculent, turning red in decay, or from expoſure to much light, like its allies the tribe of Docks and Sorrels.

KOERTEN, Joanna, in *Biography*, was born at Amſterdam in 1650. She had a fine taſte for drawing in water colours and for embroidery. She alſo modelled in wax, and made artificial ornaments and flowers; but her chief excellence conſiſted in cutting out figures in paper with ſciſſors only, and her portraits and landſcapes in this way were ſo much talked of that foreigners from all countries viſited Amſterdam to ſee them, among whom was Peter the Great of Ruſſia. She made a magnificent diſplay of her art for the confort of the emperor Leopold, conſiſting of trees, arms, eagles, &c. for which ſhe was very handſomely paid. She died in 1715.

KOETEKOIE, in *Geography*, a ſmall iſland in the Eaſt Indian ſea. S. lat. 4° 38′. E. long. 132° 8′.

KOEWAK, a town on the S. coaſt of the iſland of Ceram. S. lat. 3° 14′. E. long. 129° 18′.

KOF, a town of Japan, in the iſland of Niphon; 27 miles S.E. of Nigata.

KOFEL, a town of the county of Tyrol, on the borders of the Vicentin; near which is a celebrated paſs, with a fort erected on a high and ſteep rock, in which is a ſpring of water for the ſupply of a ſmall garriſon, which can only enter by means of pullies. The road below is ſcarcely wide enough for two carriages. On the ſide oppoſite to the fort is the precipitous bank of the Brenta; 21 miles E. of Trent.

KOFEZ, mountains of Perſia, between Mecran and Kerman.

KOGETIN, a town of Moravia, in the circle of Olmutz; 14 miles S. of Olmutz. N. lat. 49° 20′. E. long. 17° 15′.

KOGL, a town of the duchy of Stiria; 17 miles N.N.W. of Rakeſpurg.

KOGONG, a town of Africa, in the country of Sierra Leone. N. lat. 10° 45′. E. long. 12° 12′.

KOHAUT, a town of Candahar; 130 miles S.E. of Cabul. N. lat. 33° 5′. E. long. 70° 20′.

KOHHEL, a town of Arabia, in the province of Yemen; 10 miles N. of Debin.

KOHLBERG, a town of Bavaria, in the principality of Sulzbach; 11 miles N.E. of Sulzbach.

KOHLMEISE, in *Ornithology*, the *Colemouſe* of Pennant, &c. See Parus *ater.*

KOHLMULEN, in *Ichthyography*, a name given by ſome to the *aſellus flaveſcens*, or yellow cod, called by others *blank* and *gelbe.* See Gadus *Pollachius.*

KOHLRABI, in *Agriculture*, the name of a ſort of turnip cabbage, which is probably capable of being cultivated to advantage as an article of cattle food, though it is not yet much known to the farmers of this kingdom. It has the eatable part, or bulb, above the ground upon the ſtem, and there are two varieties, the green and the blue, which are both equally good and hardy in their nature.

In the raiſing of plants of this kind, the ſeed ſhould be ſown at the ſame period as for the common cabbage, and the plants, when of proper growth, be tranſplanted out in the ſame manner about the beginning of June, allowing good diſtances both between the plants and rows. In performing this work, it is adviſed to cut off about one-third of the roots of the plants, care being taken to plant them ſufficiently deep in the ground, as by this means the bulb grows to a much larger ſize without becoming tough.

Plants of this ſort ſucceed beſt on ſuch ſoils as are not too much diſpoſed to moiſture. This plant is found to withſtand the ſeverity of froſts much better than the *Ruta baga*, or Swediſh turnip. And it is further obſerved, that in the botanical garden at Brompton, ſome of the plants weighed ſeven or eight pounds; and that though many of them were notched and hacked on purpoſe for the experiment, the turnip remained perfectly ſound and uninjured, while a bed of Swediſh turnips near them was quite rotten. The ſaccharine quality of it is equally remarkable, and both its leaves and bulb are very uſeful as kitchen vegetables.

In our own trials, we found it to ſtand the ſeverity of the winter without the leaſt injury, and to be perfectly well taſted, though the bulbs did not increaſe to a large ſize. It has every appearance of being a variety of the turnip cabbage. But few experiments have, however, yet been made upon it, either in regard to its culture or application as a green cattle fodder.

KOHMU, in *Geography*, a town of Bengal; nine miles N. of Toree.

KOHONE, a town of Africa, in the kingdom of Burfali.

KOHTAUM, a town of Bengal; 18 miles W. of Doefa.

KOH-ZERDEH, mountains of Perſia, in the province of Chuſiſtan, bordering on the Irak. See HETZARDARA.

KOJA-KIZ, a town of Kharaſm, near lake Aral; 18 miles N.E. of Urkonje.

KOIDANOW, a town of Ruſſian Lithuania; 15 miles S.W. of Minſk.

KOJEND, or KOGEND, a town of Greater Bucharia, on the left bank of the Seir, on the borders of Turkeſtan. In 1220, it was taken and plundered by Jenghiz Khan, after a brave defence; 120 miles N.E. of Samarcand.

KOIRVIRAH, a town of Perſian Armenia; 18 miles S. of Erivan.

KOISJU, a town of Japan, in the iſland of Ximo; 26 miles W. of Naka.

KOIVISTA, a town of Ruſſia, in the government of Viborg; 20 miles S. of Viborg.

KOKANO, a town of Poland, in the palatinate of Braclaw; 28 miles N. of Braclaw.

KOKAR, a ſmall iſland of Sweden, in the Baltic, about 30 miles S.E. from the iſland of Aland. N. lat. 59° 58'. E. long. 20 46'.

KOKERWARA, a town of Hindooſtan, in Guzerat; 15 miles N.W. of Amedabad.

KOKETARRA, a town of Hindooſtan, in the circar of Gangpour; 16 miles N.E. of Pada.

KOKLOT, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 62° 17'. E. long. 21° 25'.

KOKOB, in *Zoology*, the name of a ſpecies of ſerpent found in the Weſt Indies, and very fatal by its bite. It is ſmaller than our viper, and of a brown colour, variegated with green and red ſpots.

KOKONOR, TARTARS OF, in *Geography*, a tribe of Tartars, who are, by nation, Eleuthes or Kalmucks, and ſubjects of the emperor of China, and who occupy an extenſive country to the W. of China, and the province of Chen-ſi, from which they are ſeparated by lofty mountains. See KALMUCKS.

KOKONOR, or *Kokonol, Lake*, is the largeſt in Tartary; it is about 20 leagues in length, and 10 in breadth, and is ſituated between 36° 40' and 37° 10' N. lat. and 100° and 101° E. long.

KOKORE, a town of Hindooſtan, in the circar of Kitchwara; 45 miles E.N.E. of Shajehanpour.

KOKORO, the eaſtern branch of the Senegal river, which riſes about N. lat. 11° 50'. W. long. 6 40', and joins the weſterly branch about N. lat. 14°.

KOKORY, a town of Moravia, in the circle of Prerau; ſix miles N.W. of Prerau.

KOKRA, a town of Hindooſtan, in the circar of Ruttunpour; 20 miles S. of Ruttunpour.

KOKURA, a ſea-port town of Japan, on the N. coaſt of the iſland of Ximo; ſurrounded with walls, and having a citadel, it is a place of extenſive trade, but the harbour is nearly choked with ſand. N. lat. 33° 50'. E. long. 130° 20'.

KOLA, a ſea-port town of Ruſſia, in the government of Archangel, ſituated near the North ſea, on the river Kola, forming a bay at its mouth, in which is a conſiderable fiſhery for whales, ſea-dogs, and other fiſh, which the inhabitants cure for ſale. N. lat. 68° 52'. E. long. 32° 26'. According to Mayer, it is 420 feet above the level of the ſea. The thermometer was once, in May 1769, at 73°. —Alſo, a town of European Turkey, in Servia; five miles S. of Semenaria.—Alſo, a town of Turkiſh Armenia; 40 miles N.E. of Kars.

KALABOORA, a town of Hindooſtan, in Oriſſa; 20 miles N.E. of Sumbulpour.

KOLAH, a town of Natolia; 36 miles N.E. of Alah-Schr.

KOLAR, a town of Africa, in the kingdom of Burfali, near the coaſt of the Atlantic. N. lat. 13° 50'. W. long. 15° 55'.

KOLASSIN, a town of Dalmatia; 24 miles S.E. of Moſtar.

KOLAY, a river of Cochinchina, which runs into the Chineſe ſea, N. lat. 13° 51'. E. long. 108° 54'.

KOLBE, or KOLBEN, PETER, in *Biography*, was born at Dorflas, a village in the principality of Baireuth, of which place his father was a judge, and afterwards a receiver of taxes. When he had attained the firſt principles of knowledge, he was ſent to Nuremberg to purſue his maturer ſtudies. Here he lived ſome time in great poverty, being unknown, and having brought with him a ſingle dollar only. In 1696, he was received into the houſe of Eimart, a great aſtronomer, under whoſe directions, and by whoſe aid, he made conſiderable progreſs in the ſciences. He entered himſelf at the univerſity of Halle in the year 1700, and in the following year he diſputed "De Natura Cometarum," after which he gave a courſe of lectures in mathematics and philoſophy. He was introduced to baron von Kroſic, privy counſellor to his Pruſſian majeſty, to whom he became ſecretary, and whom he accompanied in his travels. It being known that he had a great deſire to viſit foreign countries, a propoſal was made to him to go to the Cape of Good Hope, which he gladly embraced. Here he remained ten years, making obſervations on the country and the people, till he was afflicted with the misfortune of blindneſs, which came on without any external injury. He now returned to Europe, and by means of medical aſſiſtance he ſo far recovered his ſight as to be able to read with the aſſiſtance of glaſſes. In 1716, he inſerted in the Acta Eruditorum a treatiſe "De aquis Capitis Bonæ Spei." This work introduced him into farther notice, and he was invited to travel with two Auſtrian counts, but his paſſion for foreign countries had ſubſided, and he preferred remaining at home, and taking upon himſelf the office of rector of the ſchool of Neuſtadt. He diſcharged the duties of his ſituation with much diligence till the year 1726, when he died, in the fifty-ſecond year of his age. His buſineſs, as an inſtructor, had not prevented him from publiſhing his great work, entitled "A Deſcription of the Cape of Good Hope," in folio, with twenty-four plates. This work was tranſlated into the Dutch language in 1727; and at London, into the Engliſh, in 1731. It was afterwards abridged, and publiſhed in French in three vols. 12mo. Kolbe has been charged with receiving information without much examination, and with having publiſhed, as true, many falſe and incredible ſtories; but when the proper deductions are made that ſevere criticiſm has ſuggeſted, there ſtill remains much important information with regard to a country, which, at that time, was ſcarcely known. Gen. Biog.

KOLBENDORF, in *Geography*, a town of Bohemia, in the circle of Konigingratz; nine miles N.N.W. of Trautenau.

KOLCHY, a town of Poland, in the palatinate of Volhynia; 52 miles N. of Zytomiers.

KOLEI-HISAR, a town of Aſiatic Turkey, in the government of Sivas; 45 miles N.N.E. of Sivas.

KOLEN, a chain of mountains, extending between Norway and Swediſh Lapland, and afterwards bending, in the form of a horſe-ſhoe, on the S. of Finmark.

KOLGAPARI, a town of Ruſſia, in the government of Olonetz; 80 miles N.N.W. of Olonetz.

KOLIAKOV, a town of Ruſſia, in the government of Simbirſk, on the Sura; 80 miles W.S W. of Simbirſk.

KOLIAZIN, a town of Ruſſia, in the government of Tver, on the Volga; 68 miles E.N.E. of Tver.

KOLIKUNDA, a town of Africa, in the kingdom of Jen arrow.

KOLIMA, Kolyma, or *Kovyma*, a river of Ruſſia, which riſes in the Stanovoi-Krebet, almoſt over-againſt Ochotſk, and after receiving ſeveral other rivers, particularly the Omolon, forms a multitude of iſlands, and, by means of four broad arms, flows into the Frozen ocean, N. lat. 71° 25′. E. long. 152° 24′.

KOLIN, a town of Bohemia, in the circle of Kaurzim, on the Elbe; 30 miles E.S.E. of Prague. N. lat. 49° 58′. E. long. 15° 15′.

KOLIVAN, Kolyvan, or *Kolhyvan*, a city of Ruſſia, and capital of the government of the ſame name, ſituated on the Oby, near the mouth of the Berda; known before the inſtitution of this government under the name of "Berdſkoi oſtrog." Kolyvan is famous for the ſilver mines diſcovered in its vicinity. They lie between the rivers Oby and Irtiſch, near the mountains which ſeparate Siberia from the Chineſe empire, or rather from the territory of Kalmucks dependent on the Chineſe. They were diſcovered in the year 1725 or 1728, and appropriated to the crown by the empreſs Elizabeth in 1744. They produced annually, between 1749 and 1762, from 8000 to 16,000 pounds of ſilver; between 1763 and 1769, from 20,000 to 32,000; and ſince that period to 1778, from 40,000 to 48,000. The ſilver contains upwards of three *per cent.* of gold; the ſeparation of which is made in the imperial laboratory at Peterſburgh. Upon the whole, it appears from the accounts of the board of mines, that they have produced, from their diſcovery to the year 1786, about 3,520,000 pounds of ſilver, and 48,000 pounds of gold, which yield, at an average, a produce of 50,000 pounds of ſilver, and 1600 pounds of gold *per annum*. The mines and founderies of Kolyvan employ nearly 40,000 coloniſts, beſides the peaſants in the diſtricts of Tomſk and Kuſnetz, who, in lieu of paying the poll-tax in money, cut wood, make charcoal, and tranſport the ores to the founderies. In the year 1765, a mint was eſtabliſhed at the foundery of Suſunſk, for the coinage of the copper ſupplied from theſe mines, the greater part of which had been, till that period, of no uſe. Pieces of one, two, five, and ten copecs (the copec being nearly equal to a halfpenny) are ſtruck and diſperſed over Siberia. Of this currency, the amount of 500,000 roubles is annually coined, which is ſufficient for reimburſing the poll-tax, paying the miners, tranſporting the ore, purchaſing the lead, which muſt be brought from Nerſhinſk, and defraying the expence of ſending the gold and ſilver as far as Tobolſk. The ſilver melted in the founderies is conveyed on large ſledges twice a year; the firſt convoy ſets off in the beginning of winter, and reaches Peterſburgh a little after Chriſtmas; the ſecond in the middle of winter, and arrives there towards ſpring. Kolivan is diſtant 480 miles S.S.E. of Tobolſk. N. lat. 54° 20′. E. long. 81° 20′. Coxe's Travels in Ruſſia, vol. iii.

Kolivan, *Kolyvan*, or *Kolhyvan*, is alſo a government of Ruſſia, bounded on the N. by the government of Tobolſk, on the E. by that of Irkutſk, on the S. by China, and on the W. by Tartary; about 720 miles in length, and from 240 to 360 in breadth. This government was formerly included in that of Tobolſk; it contains five diſtricts, *viz.* Kolyvan, Semipalat, Birſk, Kuſnezk, and Kraſſnoiarſk.

Kolivan, or *Kolhyvan*, is alſo the name of a range of mountains, conſtituting the principal part of the Altay mountains, or the proper ore-mountains of Altay. (See Altai.) The Kolhyvan-vos-kreſenſkoi mountains derive their appellation from the adjacent lake Kolhyvan, which has given its name to the whole chain between the Irtiſch and Oby, as well as to the government, and from the firſt copper-mine, called Voſkreſenſkoi. Theſe mountains are bounded on the S. by the granitic ridge, which parts them from the Korbo-*likinſkoi*, which ſee. They are confined to the E. by the deep valley in which the line of the preſent fire-poſts is drawn, and by the lofty Tigeretzkoi ſnow-mountains; and bounded on the N. by the river Tſharyſh, whoſe courſe is accompanied by conſiderable high ſchiſt and chalk mountains; towards the W. they loſe themſelves in the north-weſtern Steppe. The greateſt elevation of theſe mountains is the Sinnaia-ſopka, or Blue-mountain, which is computed to aſcend 2814 Pariſian feet above the level of the ſea. At the middle and greateſt height, this range conſiſts of a moſtly coarſe granite, compoſed of Spatum compeſtre, quartz, and blackiſh mica. In the angle formed by the little Biela with the great Biela, at the foot of the Blue mountain, are found ſchiſtus and chalk-ſtone, in which latter are ſome little cavities, containing lapis calcareus ſtalactites. From the little Biela the mountains riſe again toward the ſouth, elevating themſelves to the Revennaia-ſopka, or Rhapontic ſummit, which is ſurrounded by the ore-mountains, and conſiſting of ſchiſtus corneus, mixed ſparingly with mica ſpathoſa and crumbs of mica campeſtris, in which latter are a few ſmall hollows, in which are found ſtalactites. Towards the weſt, from the Blue mountain, runs the granite-mountain range, in bulk from 15 to 30 verſts, interrupted by a multitude of vallies, proceeding 100 verſts to the Alay, and there uniting with the Alaiſkoi granite-hills. The northern foot of this granite-ridge runs under powerful ſchiſtus and chalk mountains, in and between which the two firſt Kolhyvan mines were dug. Another mighty ridge of granite runs from the Blue mountain northwards to the river Tſharyſh, under-run on the weſtern ſide by ſchiſtus and chalk. The component parts of theſe granite ridges are various. In ſome parts the feldſpar, in others the quartz, has the aſcendant. In one place the component parts are coarſe, and then ſo delicate and ſo poor in micæ, that one might be induced to take the granite proceeding from them for ſand-ſtone. This tract of mountains is uncommonly rich in ſilver, copper, and zinc ores. Tooke's Ruſſia, vol. i.

KOLKI, a town of Poland, in the palatinate of Volhynia; 22 miles N.N.E. of Lucko.

KOLKOTOVATOI, an iſland in the Caſpian ſea, near the W. coaſt. N. lat. 44° 45′.

KOLLAT, a town of European Turkey, in Bulgaria; 72 miles E.S.E. of Driſtra.

KOLLOW. See Killow.

KOLLUVI, a country of Africa, between Aſben and Caſhna, inhabited by the Tuarick.

KOLLYRITE. Under this name an argillaceous foſſil is mentioned in Karſten's Mineralogical Tables, which is found at Stephani-Schacht, near Shemnitz. Dr. Townſon, we ſuppoſe, is one of the firſt naturaliſts who obſerved it there. This mineral ſubſtance, which was firſt conſidered as pure alumine, is light, very friable, and ſnow-white; it ſoils the fingers, and adheres ſtrongly to the tongue, which laſt property has procured it the name of *kollyrite* (from *kollyrion* of Dioſcorides and Pliny.) According to Klaproth's analyſis of the Hungarian kollyrite, it conſiſts of

Alumine	45
Silica	14
Water	41
	100

This ſubſtance, which may be conſidered as a purer variety of clay, has alſo been found, by Frieſleben, at Weiſſenfels, in Thuringia, in a ſtratum of ſand-ſtone.

According to Brongniart, it has a tolerable degree of tenacity, and the water it abſorbed is ſeen to ooze out on the application of preſſure, but it retains the liquid with ſuch force, that more than a month is required to dry even a ſmall quantity of it. By deſiccation, it ſeparates into baſaltic priſms, like ſtarch, loſes half of its weight, and becomes very light.

KOLMOGOR, in *Geography*, a diſtrict of the government of Archangel, ſituated on the Dwina.

KOLNO, a town of the duchy of Warſaw; 80 miles N.E. of Warſaw.—Alſo, a town of Lithuania, in the palatinate of Brzeſc; 88 miles E. of Pinſk.

KOLO, a lake of Ruſſia, in the government of Archangel; 28 miles S. of Archangel.—Alſo, a town of the duchy of Warſaw; 24 miles N.E. of Kaliſch.

KOLOCKEN, a town of the duchy of Courland; 32 miles N.E. of Piltyn.

KOLOGRIN, a town of Ruſſia, in the government of Koſtroma, on the river Unza; 116 miles N.E. of Koſtroma. N. lat. 58° 55′. E. long. 44° 14′.

KOLOMNA Moseva, a town of Ruſſia, and diſtrict of the government of Moſcow, about five verſts from its junction with the Occa; the ſee of a biſhop; 48 miles S.E. of Moſcow. This town is reckoned to contain about 60,000 inhabitants.

KOLONEI, a town of Auſtrian Poland, in Galicia, on the Pruth; 86 miles S.S.E. of Lemberg.

KOLOR, a town of Africa, in the kingdom of Woolli; 20 miles E.N.E. of Medina.

KOLOSVAR. See Colosvar.

KOLOZ, a town of Tranſylvania; 14 miles S.S.E. of Hunyad.

KOLPAK, a town of European Turkey, in Beſſarabia; 40 miles W. of Akerman.

KOLSKOI, a town of Ruſſia, in the government of Archangel, on the E. ſide of the Dwina; 96 miles S.S.E. of Archangel.

KOLTER, one of the Faroer iſlands.

KOLTYNIANY, a town of Lithuania, in the palatinate of Wilna; 32 miles E. of Wilkomierz.—Alſo, a town of Samogitia; 28 miles N.W. of Roſienne.

KOLVEREID, a town of Norway; 95 miles N.N.E. of Drontheim.

KOLUMBATZ, a town of European Turkey, in Macedonia; 68 miles N. of Akrida.

KOLZUM, or Colsum, anciently *Clyſma*, (which ſee,) a town of Egypt, which formerly exiſted near the E. coaſt of the Red ſea, but the ſea has long ſince left the coaſt; and the town has been deſtroyed. From Volney we learn, that the name is ſtill attached to a hillock of ſand, bricks, and ſtones, on the coaſt of the Red ſea, about 300 paces to the N. of Suez: whereas D'Anville places it 16 miles S. of Suez.

KOM, or Khums, a large and populous city of Perſia, in the province of Irak, at the foot of high mountains, and near a conſiderable river, which is loſt in the great ſalt deſert. When Chardin viſited it, the houſes were computed at 15,000; and the chief manufactures were white earthen ware, ſoap, and ſword-blades, ſabres, and poniards. The walls are lofty, and the town has ſeven gates. The public ſquares are ſmall; the grand bazar croſſes the town from one gate to the other; and there are others, which are furniſhed with coffee-houſes, and ſhops of various kinds. Here are a celebrated moſque, and an aſylum for debtors, who are protected and ſupported. One of the moſques is highly eſteemed by the Perſians, on account of the ſepulchres of ſhah Sefi I. and ſhah Abbas II., and alſo that of Sidy Fatima, grand-daughter of Mahomet. Theſe tombs are frequented by pilgrims from all parts of Perſia, who reſort hither once a year to pay their devotions, and are ſupported by a fund aſſigned to this purpoſe. The city is governed by a viſier, and is the reſidence of a khan. The adjacent country is fertile in rice and fruit; 150 miles N. of Iſpahan. N. lat. 34° 20′. E. long. 51° 14′.

KOMA, a town of Lithuania, in the palatinate of Wilna; 42 miles S. of Braſlaw.—Alſo, a town of Perſia, in the province of Khoraſan; 227 miles N.N.E. of Herat.

KOMANA, in *Botany*, an arbitrary name given by Adanſon to *Hypericum monogynum* of other authors, which he eſtabliſhes as a genus, on account of its ſolitary ſtyle. Juſſieu, however, aſſerts that this ſuppoſed ſimple ſtyle is compoſed of five, cloſely united. The capſule is deſcribed as of one cell, but we have never ſeen it at all advancing towards maturity, ſo as to form an opinion on the ſubject. See Hypericum and Knifa.

Komana, in *Geography*, a town and abbey of Walachia; 18 miles S. of Buchareſt.—Alſo, a diſtrict of Africa, on the Slave coaſt.

KOMANGO, or Amango, one of the Friendly iſles; 5 miles E. of Annamooka.

KOMARA, a town of Hindooſtan, in Myſore; 65 miles E.N.E. of Harponelly.

KOMARNA, a town of Auſtrian Poland, in Galicia; 24 miles S.S.W. of Lemberg.

KOMBAH, a town of Africa, in the country of Gago; 170 miles E. of Kaffaba. N. lat. 11° 25′. E. long. 2° 30′.

KOMBO, a kingdom of Africa, near the Atlantic, S. of the Gambia.

KOMBREGUDU, or Combrego-Adou, a kingdom of Africa, ſituated on the banks of the river Falemi, about N. lat. 13° 10′. W. long. 10°.

KOMCHA, or Komsha, a decayed town of Perſia, in the province of Irak, celebrated for its gardens and dove-houſes, and degraded by the bad character of its inhabitants; 39 miles S. of Iſpahan.

KOMENTING, the name of two towns in the iſland of Borneo; one 45 miles N. and the other 15 miles S.S.W. of Negara.

KOMMANICK, in *Ornithology*, the German name for the large-creſted lark, common in many parts of Germany, but not known in England. See Alauda *criſtata*.

KOMOL, or COMOL, in *Geography*, a ſea-port town of Nubia, with a ſmall but ſafe harbour in the Red ſea. N. lat. 22° 45'. E. long. 35° 15'.

KOMRI, AL, a mountainous ridge in the interior part of Africa, called alſo the "Mountains of the Moon," terminating the country of Donga. N. lat. 7°.

KONAPOUR, a town of Hindooſtan, in the country of Sanore; 50 miles E.N.E. of Goa. N. lat. 15° 45'. E. long. 74° 32'.

KONDOZ, a town of the Greater Bucharia; 60 miles N.W. of Anderab. N. lat. 36° 50'. E. long. 67° 22'.

KONDRA, a town of Bengal; 36 miles S.W. of Doeſa.

KONDUR, a town of Hindooſtan, in Dowlatabad; 100 miles S.E. of Aurungabad. N. lat. 18° 54'. E. long. 77° 30'.

KONEVETZ, a ſmall iſland of Ruſſia, in lake Ladoga; 60 miles N.N.E. of Peterſburg.

KONEZKOI, a town of Ruſſia, in the government of Vologda, on the Vim; 56 miles N.E. of Yarenſk.

KONG. See GONJAH.

KONGA, a town of Africa, in the kingdom of Loango.

KONG-FORS, a town of Sweden, in Weſt Bothnia; 16 miles N.W. of Umea.

KONGHELL, KONGSHELE, or *Kong-elf*, a town of Sweden, in the province of Weſt Gothland, on an iſland in the Gotha; formerly the capital of Norway, and reſidence of kings, but now decayed; 10 miles N. of Gotheborg.

KONGSBACKA, a ſea-port town of Sweden, in Halland; 13 miles S. of Gotheburg. N. lat. 57° 30'. E. long. 12° 56'.

KONGSBERG, or CONISBERG, a town of Norway, celebrated for its ſilver mines. It ſtretches on both ſides the river Lowe, which, in its courſe through the town, falls in a ſeries of ſmall but pictureſque cataracts over the bare rocks. The crags which border the town are in ſome parts naked, in others clothed with wood, and intermixed occaſionally with ſlips of corn and paſture; nevertheleſs, the prominent features of the circumjacent ſcenery are ruggedneſs and horror. Kongſberg contains about 1000 houſes, including thoſe of the miners, and 6000 inhabitants. The mines are diſtant from the town two miles They were diſcovered and opened during the reign of Chriſtian IV. Thirty-ſix mines, ſays Coxe, are now working; the deepeſt is 652 feet perpendicular. The matrix of the ore is the *ſaxum* of Linnæus; the ſilver is extracted according to the uſual proceſs, either by ſmelting the ore with lead, or by pounding. Pure ſilver is occaſionally found in ſmall grains, and in ſmall pieces of different ſizes, ſeldom weighing more than four or five pounds. One maſs has been found which weighed 409 marks, and was worth 3000 rix-dollars (600*l.*); this piece is preſerved in the cabinet of curioſities at Copenhagen. Formerly theſe mines produced annually 70,000*l.*; in 1769, 79,000*l.*; at preſent, (ſays Mr. Coxe) they yield only from 50,000*l.* to 54,000*l.* The expences, it is ſaid, generally equal, and ſometimes exceed the profits. The largeſt piece of money ſtruck at Kongſberg is only eight ſkillings, or four-pence.

KONGSWINGER, a town of Norway, in the province of Chriſtiania; 42 miles N.E. of Chriſtiania. N. lat. 60° 12'. E. long. 12° 8'.

KONG-TCHANG, a city of China, of the firſt claſs, in the province of Chen-ſi, ſeated on the banks of the river Hoei, and ſurrounded by very high mountains. This city is very populous, and has great trade. A tomb is ſhewn here, which the Chineſe pretend to be that of Fo-hi. The juriſdiction of this city extends over three others of the ſecond claſs and ſeven of the third. N. lat. 34° 56'. E. long. 104° 19'.

KONI, a town of Imiretta; 30 miles S.W. of Cotatis.

KONJADA, *Gros*, and *Klein*, two towns of Pruſſia, in the palatinate of Culm; the former 12 miles N.N.W. of Straſburg; and the latter 14 miles.

KONIAWA, a town of Lithuania, in the palatinate of Troki; 36 miles N.E. of Grodno.

KONIECPOLE, a town of Poland, in the palatinate of Braclaw; 60 miles S.E. of Braclaw.

KONIGINGRATZ, or KRALOWE HRADECZ, a city of Bohemia, and capital of a circle of the ſame name, ſeated on the Elbe, built in the year 782, and the ſee of a biſhop, under the archbiſhop of Prague; 58 miles E. of Prague. N. lat. 50° 10'. E. long. 15° 39'.

KONIGSBERG, a large and beautiful city and ſea-port of Pruſſia, ſituated on the river Pregal, which has ſeven bridges; founded in 1255, rebuilt in another ſituation in 1264, and well fortified in 1526, by a rampart about ſeven Engliſh miles in circumference. The rampart incloſes the gardens, the large caſtle moat, with ſome meadows and fields. The number of houſes is about 3800, and of inhabitants about 60,000. This city properly conſiſts of three towns that are joined together; *viz.* Altſtadt, Lobenicht, and Kneiphof, and of ſeveral ſuburbs. Altſtadt, or the old town, contains 16 ſtreets, and 550 houſes, of which more than 100 are malt-houſes and brewhouſes. It is embelliſhed with ſix gates, two ſtrong-built towers, and four bridges. Lobenicht, built about the year 1300, was formerly called Neuſtadt, or the new town. Kneiphof is the moſt modern, as it was founded in 1324. This ſtands on an iſland formed by the river Pregel, the buildings of which are erected on piles of alder-trees, which by length of time are become as hard as iron. It has five large gates, and 13 ſtreets. The cathedral of this town has a famous organ, which conſiſts of 5000 pipes, and was finiſhed in 1721. The univerſity was founded, in 1544, by the margrave Albert, and has 38 profeſſors, excluſive of the tutors. The number of ſtudents in 1802 was 300. The town-houſe is a fine building, where the magiſtrates of the three towns, which were incorporated in 1724, meet every day. The ſtrong citadel, called "Frederickſburg," was built in 1657, and directly faces Kneiphof, at the conflux of the two branches of the Pregel. This fort is a regular ſquare, ſurrounded with broad ditches and the river Pregel, which is there increaſed by the canal or dyke, called "Kupferteiſch." In the citadel are a church and an arſenal. Konigſberg has always ranked high in commerce and ſhipping, and was formerly one of the Hans towns. Its trade is ſtill flouriſhing, by means of the river Pregel, which is here navigable, and from 120 to 240 feet in breadth. In 1752, 493 large ſhips, and 373 floats of timber, arrived in this port, beſides ſmaller veſſels. A colony of French Calviniſts excepted, the inhabitants of Konigſberg are chiefly Germans of the Lutheran perſuaſion. In 1758, this city was taken by the Ruſſians, and in 1807 by the French. N. lat. 54° 43'. E. long. 20° 38'.

KONIGSBERG, or *Klinkowice*, a town of Sileſia, in the principality of Troppau; 13 miles S.E. of Troppau. N. lat. 49° 40'. E. long. 18° 10'.

KONIGSBERG, a town of Brandenburg, in the New Mark; 24 miles N.N.W. of Cuſtrim. N. lat. 53° 2'. E. long. 14° 33'.—Alſo, a town of Germany, in the principality of Coburg, ſituated on the ſide of a mountain, on which is an ancient caſtle; 20 miles S.S.W. of Coburg. N. lat. 50° 4'. E. long. 10° 45'.

KONIGSBRONN, a town and convent of Wurtemberg; 20 miles N.N.E. of Ulm.

KONIGSEGG, a principality of Germany, comprehending Konigſegg-Rothenfels, and Konigſegg-Aulendorf. The former poſſeſſes the county of Rothenfels and lordſhip of Stauffers; and the latter the county of Konigſegg, and lordſhip of Aulendorf. The lordſhip of Konigſegg conſiſts only of an ancient caſtle, 8 miles N.W. of Ravenſpurg, and a few hamlets.

KONIGSEK, a town of Bohemia, in the circle of Bechin; 10 miles E.S.E. of Neuhaus.

KONIGSFELD, a town and citadel of the duchy of Berg; 26 miles S.S.E. of Cologne.—Alſo, a town of Bavaria, in the biſhopric of Bamberg, on the Auffses; 10 miles N.E. of Bamberg.

KONIGSFELDEN, a bailiwick of Switzerland, in the canton of Berne, ſituated between the town of Bruck and the river Reuſs. The monaſtery of this place, belonging to the monks of St. Francis and the nuns of St. Claire, founded in commemoration of the death of the emperor Albert, who was aſſaſſinated in 1308 by his nephew John, duke of Swabia, became very rich by grants from the houſe of Auſtria, and other nobility.

KONIGSHEIM, a town of Germany, in the county of Wertheim; 14 miles S. of Wertheim.

KONIGSHOF, a town of Bohemia, in the circle of Konigingratz; 14 miles N. of Konigingratz.

KONIGSHOFEN, a town of the duchy of Wurzburg, on the Tauber; 20 miles S.S.W. of Wurzburg.—Alſo, a town of the duchy of Wurzburg, on the Saal; 38 miles N.E. of Wurzburg. N. lat. 50° 12'. E. long. 10° 27'.

KONIGSLUTTER, a town of Weſtphalia, in the principality of Wolfenbuttel, ſituated on a ſtream, called the "Lutter;" 12 miles N.E. of Wolfenbuttel. N. lat. 52° 17'. E. long. 10° 56'.

KONIGSTEIN, a town of Germany, and capital of a county of the ſame name, with a caſtle built on a rock; 11 miles N.W. of Francfort on the Maine.—Alſo, a town of Bavaria, in the principality of Sulzbach, near Sulzbach.—Alſo, a fortreſs of Norway, in the dioceſe of Chriſtiania, built for the defence of Frederickſtadt.—Alſo, a town of Saxony, in the margraviate of Meiſſen, ſituated on the left ſide of the Elbe, with manufactures of linen and woollen. It is ſituated on a mountain, and rendered, as it was ſuppoſed, impregnable. It is acceſſible only in one place, and ſupplied with water from a very deep ſpring in the mountain; 16 miles S.E. of Dreſden.

KONIGSTUHL, *i. e. King's Chair*, a head-land on the N.E. coaſt of the iſland of Uſedom, in the Baltic. N. lat. 54° 37'. E. long. 13° 58'.

KONIGSWALD, a town of Bohemia, in the circle of Leitmeritz; 13 miles N.N.W. of Leitmeritz.

KONIGSWALDE, a town of Brandenburg, in the New Mark; 22 miles E. of Cuſtrin. N. lat. 52° 25'. E. long. 15° 26'.

KONIGSWERT, a town of Bohemia, in the circle of Pilſen; 12 miles W.N.W. of Topel.

KONIN, a town of the duchy of Warſaw; 20 miles N. of Kaliſch. N. lat. 52° 6'. E. long. 18° 15'.

KONINCK, or Koning, David de, in *Biography*, a painter of birds, animals, and ſtill life. He acquired the principles and executive powers of the art under the tuition of John Fytt; whoſe jealouſy is ſaid to have been excited by the praiſes beſtowed upon his diſciple.

On this account De Koninck left him, and travelled to Italy, from Antwerp, where he was born. He arrived in Rome in 1668, having refuſed engagements to paint upon his journey, offered him by the ducheſs of Bavaria and the court of Vienna. In Rome he was highly honoured. Baldinucci, who lived at the time, ſpeaks of him as employed by the greateſt among the nobles there; and receiving commiſſions from foreign kings and ſovereign princes.

His works and manner reſemble thoſe of Fytt, with whom, on his return to Antwerp, he was a conſtant competitor. But he is not ſo perfect, his effects are not ſo brilliant, nor is his touch ſo free. He died in 1687: his age is not known.

Koninck, or Koning, Philip de, a portrait painter, who, having ſtudied in the ſchool of Rembrandt, proceeded in his courſe with great ſucceſs, obtaining in early life a good reputation, and maintaining it in the great number of pictures which he produced. His ſtyle is, neceſſarily, almoſt an imitation of that of his maſter. It is too faſcinating for a man that had once obtained poſſeſſion of the court to quit it eaſily. His likeneſſes were eſteemed, and he had great choice and variety of attitude. He is among the number of thoſe whoſe portraits are honoured with a place in the gallery at Florence. He died in 1689, at the advanced age of 70.

KONINGH, Solomon, a portrait and hiſtoric painter of the Flemiſh ſchool. He was the diſciple of Vernando and Moojart, and roſe to a certain degee of eminence, but not among the firſt claſs.

KONIT, or Conit. Profeſſors Retzius and Schumacher deſcribe under this name a calcareo-ſiliceous rock of a whitiſh-grey, or white colour, found in Norway, Iceland, &c. It has only been ſeen in detached pieces, moſt of which bear the marks of being rolled. It is faintly glimmering; in ſome pieces its luſtre approaches to the vitreous, and even the unctuous luſtre. Its fracture is uneven, flat conchoidal, ſometimes obſoletely foliated, ſometimes even and ſplintery, not unlike that of ſome varieties of horn-ſtone. The fragments are indeterminately angular. The varieties having an unctuous luſtre, and obſoletely foliated fracture, are tranſlucent at the edges. Its hardneſs is far ſuperior to that of common compact limeſtone, and it even ſtrikes fire with the ſteel. It is not eaſily frangible. Specific gravity 2.8. When reduced to powder, and thrown on burning charcoal, it emits a greeniſh light, but it is not phoſphoreſcent from friction. It efferveſces with diluted nitric acid, and is partly diſſolved in it: the remainder is ſiliceous earth.

The proportion of the calcareous and ſiliceous earth, of which the konit conſiſts, is not yet aſcertained.

Upon the whole, we know too little of this mineral ſubſtance to aſſign it its proper place in the ſyſtem. Haüy refers it, with a query, to his quarz-agathe calcifere, which is the ſilicicalce of Sauſſure. See Haüy and Brongn. vol. i. p. 320.

The ſpecimens of conite deſcribed by Schumacher were from Iceland; the one which we had an opportunity of examining came from Kenrudvern, near Dramen, in Norway.

Among the many new names which a modern writer on rocks is deſirous of palming upon the world, we have alſo that of *konite*, which, without mentioning that it has been previouſly given to a different rock, he applies to the variety of compact lime-ſtone, called *freeſtone*.

KONITZ, in *Geography*, a town of Germany, in the county of Schwartzburg-Rudolſtadt; where are mines of ſilver and copper; 6 miles E.S.E. of Rudolſtadt.—Alſo, a bailiwick of Switzerland, in the canton of Berne.—Alſo, a town of Moravia, in the circle of Olmutz ; 15 miles W. of Olmutz.—Alſo, a town of Pruſſia, in Pomerelia ; 8 miles E. of Schlockaw.

KONKODOO, a country of Africa, bounded on the N. by Bambouk, on the E. by Gadou, on the S. by Worada and Jallonkadoo, and on the W. by Satadoo ; about 60 miles from N. to S., and 40 from E. to W. N. lat. 12° 10′ to 13° 10′. W. long. 9° to 10°.

KONN, a town on the N. coaſt of the iſle of Timor. S. lat. 8° 18′. E. long. 126° 16′.

KONNARUS, a name given by Agathocles in Athenæus to a plant of Arabia, which the deſcription ſhews to be the ſame with the *ſaduc* of the later Arabians, the fruit of which is called *nabac* or *nabech*. See Connarus.

This tree is the lotus of Dioſcorides, and the acanthus of Virgil, whoſe berries he mentions. The fruit of this tree is like a cherry, but ſmaller, and is ground to powder by the Africans when dried. It is very well known to all who are acquainted with the writings of the old phyſicians, that the berries of the lotus or nabac were ground down, by the Egyptians and other nations where they grew, to a fine powder for medicinal uſes. They were aſtringents, and uſed both externally in poultices and fomentations, and internally in decoctions and other forms where aſtringents were required.

KONNO, in *Geography*, a town of Japan, in the iſland of Niphon ; 70 miles N.W. of Meaco.

KONOE, one of the Faroer iſlands ; 2 miles N. of Bardoe.

KONOS, a town of Aſiatic Turkey, in Natolia ; 20 miles N.E. of Degnizlu.

KONOTOP, a town of Ruſſia, and diſtrict of the government of Novogorod Sieverſkoi, ſeated on a rivulet falling into the Seim. N. lat. 51° 5′. E. long. 33° 34′.

KONSAN, a town of Africa, in the country of Sierra Leone. N. lat. 10° 44′. W. long. 12° 15′.

KONSBERG. See Kongsberg.

KONSTANTINGRAD, a town of Ruſſia, in the government of Ekaterinoſlaf, on the borders of Turkey. N. lat. 49 15′. E. long. 34° 52′.

KONTOP, a town of Sileſia, in the principality of Glogau ; 15 miles E. of Grunzberg.

KOOCH, a town of Hindooſtan, in the country of Agra ; 60 miles E. of Gwalior. N. lat. 26°. E. long. 79 35′.

KOOHANGAN, a ſmall iſland in the Sooloo Archipelago. N. lat. 6 3′. E. long. 121° 18′.

KOOJAR, a town of Africa, in the country of Woolli ; 54 miles E. of Medina.

KOOLASSIAH, a ſmall iſland in the Sooloo Archipelago. N. lat. 6° 22′. E. long. 120° 38′.

KOOLBARY, a town of Hindooſtan, in Golconda ; 35 miles S. of Combamet.

KOOLIKORRO, a town of Africa, in the kingdom of Bambarra, on the Niger ; which is a great ſalt-market ; 130 miles S.W. of Sego.

KOOLUCONDA, a town of Hindooſtan, in Myſore ; 13 miles N.E of Nagamungalum.

KOOMAR, a town of Hindooſtan, in Bahar ; 13 miles E.N.E of Bahar.

KOOMBOO, a town of Africa, in the kingdom of Tenda. N. lat. 12° 42′. W. long. 12°.

KOOND, a town of Hindooſtan, in Bahar ; 17 miles N. of Saſeram.

KOONDA, a circar of Bengal, bounded on the N.E. by Bahar, on the E. by Ramgur, on the S. by Toree, and on the W. by Palamow ; about 25 miles long, and 16 broad : the capital is Koonda ; 92 miles S. of Patna. N. lat. 24° 11′. E. long. 84° 48′.

KOONI, a town of Japan, in the iſland of Niphon ; 30 miles N. of Tomu.

KOONIAKARY, a town of Africa, in the country of Woolli ; 48 miles E.N.E. of Medina.—Alſo, a town of Africa, in Kaſſon. N. lat. 14° 36. W. long. 8° 58′.

KOONJOOR, a circar of Hindooſtan, in Oriſſa, between Gangpour and Mohurbunge, the capital of which, of the ſame name, is 86 miles N.N.W. of Cattack.

KOONKA, a town of Bengal ; 25 miles W.S.W. of Ramgur.

KOONTI, in *Hindoo Mythological Hiſtory*, is the mother of three of the five Pandus, whoſe wars are related in the *Mahabarat* ; which ſee. See alſo Pandu.

KOORBAH, in *Geography*, a town of Hindooſtan, in the circar of Ruttunpour ; 20 miles E. of Ruttunpour.

KOORGUNGE, a town of Bengal ; 22 miles E. of Boglipour.

KOORKARANY, a town of Africa, in Bondou ; 50 miles W. of Fatteconda.

KOORNHERT, Theodore, in *Biography*, deſcended from a reſpectable family at Amſterdam, was born in the year 1522. He was brought up to the profeſſion of an engraver, which he ſoon abandoned, to travel into Spain and Portugal, but on his return home, an imprudent marriage forced him to take up the graver at Harlem, to ſupport himſelf and wife. His leiſure hours he employed in reading and improving his mind in various ways, in the hope that knowledge might fit him for a better employment than that in which he was labouring. We accordingly find him admitted a notary in 1561, and in the following year he was appointed ſecretary to the city of Harlem, and in 1564 he was made ſecretary to the burgo-maſters of that city. In this character he was frequently ſent to the prince of Orange, governor of Holland, with whom, and with other perſons of conſequence, he conſulted reſpecting the means of maintaining the liberty of his country. Through him, the famous petition of the Confederates was preſented to the ducheſs of Parma in 1566. He was alſo the author of the firſt manifeſto which the prince of Orange publiſhed in his camp, intitled "An Advertiſement to the Inhabitants of the Low Countries for the Law, the King, and for the Flock." The part which he took in politics excited againſt him the reſentment of the government of Bruſſels, by whoſe directions he was ſent to the Hague, where he ſuffered a long and cruel impriſonment. He at length obtained a hearing, and, ſucceſsfully vindicating himſelf, he was ſet at liberty ; but he found it neceſſary to withdraw from the power of his enemies, and went to the county of Cleves, where he again maintained himſelf by his profeſſion as an engraver. When, in the year 1572, the States of Holland had taken the reſolution to aſſert their liberty againſt the tyranny of the Spaniards, Kooornhert returned to his own country, and was appointed ſecretary to the ſtates of the province : finding, however, the people prejudiced againſt him, for avowedly vindicating the principles of toleration in reſpect to the Roman Catholics, he reſigned his poſt, and withdrew to Embden. It does not appear that he was a Catholic himſelf, but he formed the project of uniting all perſons of all ſects, by way of *interim*, till God ſhould be pleaſed to raiſe reformers, in all reſpects like the apoſtles. His plan being, that only the text of God's words ſhould be read to the people without comment or explication, and without preſcribing any commandment, or prohibition, but at moſt by way of advice. In 1578, he returned to Holland, where he engaged in a controverſy with two miniſters of Delft at Leyden, concerning the characteriſtics of the true church. He ſoon proved too powerful for his antagoniſts, who charged him with the deſign of making a ſchiſm among the people, and who obtained an order that he ſhould not be permitted to publiſh any thing in print concerning the diſpute. He was alſo forbidden to trouble the miniſters of Delft with letters, or otherwiſe, upon pain of the utmoſt ſeverity. Being thus effectually ſilenced, the miniſters in different towns of Holland directed their attacks againſt him from the pulpit, repreſenting him, by name, as a heretic, an impious fellow, and a free-thinker. He petitioned to be heard in his own defence, but was refuſed, and ordered to comport himſelf peaceably and dutifully, in which caſe he ſhould be ſecure from danger. This he regarded as the introduction of a new inquiſition, or force upon conſciences in Holland. Koonhert was ever, and at all times, the conſiſtent friend to liberty of conſcience, and the firm opponent to whatever could abridge the right of free diſcuſſion; for his zeal and intrepidity in this cauſe, he was continually haraſſed by bigots and the government of the country: he had, however, a mind that could not be ſubdued, and he made uſe of his pen, in various tracts, to vindicate the principles which he eſpouſed. Among his other literary antagoniſts was the celebrated Lipſius, who, in a treatiſe on civil government, maintained that only one kind of religion ſhould be tolerated in one ſtate, and that perſons who held different opinions, and who endeavoured to bring others over to their party, ought to be puniſhed. "Mercy," ſays the profeſſor, "has no place here, cauſtics and amputations muſt be made uſe of, it being better that one limb ſhould periſh than the whole body." In anſwer to theſe perſecuting tenets, Koornhert publiſhed his treatiſe, intitled "The Proceſs, or Trial of Heretic-killing, and Force upon Conſcience," which he dedicated to the magiſtrates of Leyden. Theſe, however, to gratify Lipſius, gave notice officially, that they did not accept the dedication, and that the author had, by it, done them neither ſervice nor honour. Koonhert died at Gouda in 1590, in the 68th year of his age. Grotius expreſſed a high eſteem for his character, and an ardent hope that his judicious labours would be uſeful to his country and the world. He is claſſed by Pontanus among the learned men of the city of Amſterdam, and as one warmly attached to the intereſts of piety and truth. Hadrian Janius, in his deſcription of Holland, calls him a man of divine underſtanding: he adds, that Fortune was his enemy, and he thinks that he ſuffered himſelf to be made uſe of by God "as a voluntary demoliſher of the murthering priſon of conſciences." An edition of all his works was publiſhed in 1630, in three volumes folio. Bayle. Gen. Biog.

KOOROO, in *Geography*, a town of Africa, in the country of Foota. N. lat. 10° 8. W. long. 10° 20′.

KOORTA, a town of Bengal; 35 miles W. of Nagore.

KOORUMBAH, a town of Hindooſtan, in Dowlatabad; 40 miles E. of Poorunder.

KOORWEY, a town of Hindooſtan, in the route from Agra to Oojein, connected with another town called "Boraſo," on the banks of the Betwa. Theſe towns are of conſiderable ſize, and at the former is a large ſtone-fort. They are inhabited by Patans, who ſettled here about 100 years ago, in the time of Aurungzebe. The revenue of the preſent Nawâb is ſaid to be between one and two lacs of rupees, which is ſequeſtered for the payment of a debt to the Mahrattas.

KOOS, a town of Japan, in the iſland of Niphon; 45 miles S.E. of Jetſen.—Alſo, a town in the iſland of Ximo: 26 miles E.S.E. of Ude.

KOOSAMBO, a town on the N. coaſt of the iſland of Bali. S. lat. 8° 24′. E. long. 114° 46′.

KOOSHAUB, a town of Hindooſtan, in the ſubah of Lahore, on the Behut; 95 miles W. of Lahore. N. lat. 31° 45′. E. long. 71° 5′.

KOOSHINJEE, or Pusheng, a town of Candahar; 80 miles S.E. of Candahar. N. lat. 32° 14′. E. long. 66° 58′.

KOOTACONDA, a town of Africa, in Woolli; 16 mlies W.S.W. of Medina.

KOOTAKOO, a town of Africa, in Fooladoo. N. lat. 13° 30′. W. long. 7° 40′.

KOOTY, a town of Hindooſtan, in Bahar; 84 miles S.S.W. of Patna. N. lat. 24° 23′. E. long. 84° 43′.

KOPACZOW, a town of Poland, in the palatinate of Braclaw; 72 miles N.W. of Braclaw.

KOPAN, a town of Hungary; 18 miles W.S.W. of Symontornya.

KOPANITZ, a town of Sclavonia; 21 miles S.S.W. of Eſzek.

KOPASH, a town of Dageſtan; 45 miles N.W. of Derbend.

KOPIGOWKA, a town of Poland, in the palatinate of Braclaw, on the Bog: 16 miles S.W. of Braclaw.

KOPIL, a town of Lithuania, in the palatinate of Novogrodek; 45 miles S.E of Novogrodek.

KOPIN, a town of Poland, in Podolia; 28 miles N. of Kaminiec.

KOPOLET, a ſea-port of the principality of Guriel, on the Black ſea. N. lat. 41° 35′. E. long. 41° 22′.

KOPORE, a town of Ruſſia, in the gulf of Finland; 32 miles W. of Peterſburg.

KOPYL, a town of Lithuania, in Novogrodek; 16 miles N.W. of Sluck.

KOPYSS, a town of Ruſſia, and diſtrict of the government of Mohilef, ſituated on the Dnieper.

KORA, a town of Ruſſia, in the government of Irkutſk, on the Ilga; 36 miles N.W. of Vereholenſk.—Alſo, a town of Africa, in the kingdom of Jemarrow.

KORACHORYNCHUS Indicus, in *Ichthyology*, the name of a ſea-fiſh of the Eaſt Indies, called by the Dutch the *raevenbeck*. It has its name from its noſe reſembling the beak of a raven or crow, and is about ſeven inches long; its back and tail are red, and its belly yellow; it has alſo, on each ſide, two pale yellow longitudinal lines, running from the gills to the tail. It is a wholeſome and well-taſted fiſh. Ray.

KORALLEN-ERTZ, *i. e. Coral-Ore*, a name given by the miners of Idria, in Friaul, to a variety of bituminous ſhale, with tuberculated ſhining ſurface, and containing much hepatic and ſome other mercurial ores. See Mercury.

KORAMO, or Curamo, in *Geography*, a town of Africa, in the kingdom of Benin.

KORAN. See Alcoran.

KORASAN, or Chorasan, a province of Perſia, terminating it in the N E. is bounded on the N. by Charaſm and the country of the Uſbeck Tartars, on the N.E. by the Gihon or Oxus, on the E. by Bucharia and Candahar, on the S. by Segeſtan and the lake of Zeré, or Zurra, the Aria palus of antiquity, and on the W. by the province of Mazanderan and the Caſpian ſea; about 450 miles in length and 420 in breadth. This country formerly comprehended Margiana in the north and Ariana in the ſouth. It was conquered by Timur Bec in the year 1396, and granted by him to his ſon Mirza Charoe, together with Mazanderan and Segeſtan. The principal towns are Herat, Kenef, Talekan, Merwah, Zaweh, &c.

KORBETH, a town of Perſia, in Irak; 126 miles S. of Hamadan.

KORBI-LA-HOU, a town of Africa, on the Ivory Coaſt.

KORBOLE, a town of Sweden, in Helſingland; 53 miles W.N.W. of Hudwickſwall.

KORBOLIKINSKOI Mountain, a mountain of Ruſſia, part of the range of *Kolivan* (which ſee), which has its name from the brook Korbolikha, which runs through it. It is encloſed from the S., E., and W., by granite mountains; but on the N.E. is bounded by the great Biela, together with ſchiſt and chalk mountains. It conſiſts, except in ſome few points, which are covered with ſea-bottom materials, for the moſt part of clay, ſchiſt, marl-wacke, lapis corneus, and quartz, here and there underlaid by granite and porphyry. Although the height of theſe mountains, between the origin of the Korbolikha and the little Biela, is conſiderable, yet the mountain on the great Biela, ſuch as the Revennaia-Sopka, and the Karaulnaia-Sopka, remarkably diſtinguiſh themſelves on account of their ſingle ſummits. The mineral of this mountain conſiſts of a ſchiſtoſe marl-wacke and horn-ſchiſt, in which here and there hornblende and crumbs of feldſpar are to be met with. The chain of mountains, in conjunction with the north-weſtern and ſouth-eaſtern rivers of the Revannaia-Sopka, the Blue mountain, and the Kolhyvan granite mountain, and in the ſouth-eaſt, after they have encompaſſed the kliutſheſſkoi majak, terminate at the foot of high granitic ſnow mountains. The Revennaia-Sopka is the higheſt point of theſe mountains, being eſtimated at 2213 Pariſian feet higher than the Slangenberg; it is ſaid not to conſiſt of granite, but of firm horn-ſchiſtus. In this Korbolikinſkoi tract of mountains, the richeſt of all the Altay mine-works are carried on. See Kolivan and Altai.

KORCHELLEN, a town of the duchy of Warſaw; 52 miles N. of Warſaw.

KORCHINO, a town of Ruſſia, in the government of Nizegorod; 80 miles S.S.W. of Niznei Novgorod.

KORCK, a town of Norway, in the dioceſe of Drontheim; nine miles S.W. of Romſdal.

KORCZANY, a town of Samogitia; 24 miles W.N.W. of Miedniki.

KORCZICK, a town of Poland, in Volhynia; 15 miles N.E. of Oſtrog.

KORDEDEARDA, a town of European Turkey, in Walachia; 80 miles N.W. of Buchareſt. N. lat. 45° 15′. E. long. 24° 24′.

KORDOFAN, a country of Africa, between Dar-Fûr and Sennaar, ſubject to the ſultan of Dar-Fûr, by whom it was conquered in 1795. Mr. Brown informs us in his "Travels in Africa, Egypt, and Syria," that an inveterate animoſity ſubſiſts between the natives of Dar-Fûr and thoſe of Kordofan; inſomuch that wars have been almoſt continual between the two countries, as far as the memories of individuals extend. One of the cauſes of this hoſtility appears to be their relative poſition; the latter lying in the road between Dar-Fûr and Sennaar, which is conſidered as the moſt practicable, though not the direct communication between the former and Mecca. Nor can caravans paſs from Suakem to Fûr, unleſs by the permiſſion of the governors of Kordofan. The jealouſy of trade is, therefore, in part the origin of their unvaried and implacable animoſity. A king, of the name of "Abli-Calik," is the idol of the people of Kordofan, where he reigned ſome years ago, and was renowned for probity and juſtice. The kings of Kordofan had been deputed by the mecque of Sennaar, till after the death of the ſon of Abli-Calik, when it was uſurped by Fûr, in conſequence of the weakneſs and diſſentions of the government at Sennaar. The people of Kordoſan are reported to be not only indifferent to the amours of their daughters and ſiſters, but even attached to their ſeducers. The father or brother will even draw the ſword againſt him who offends the "Reſik," or companion of his daughter or ſiſter. Kordofan extends from N. lat. 12° to 14° 40′, and from E. long. 29° 25′ to 32° 30′.

KORDYN, a town of Poland, in the palatinate of Kiev; 44 miles W.S.W. of Kiev.

KOREPSKOI, a cape on the N. coaſt of Ruſſia, in the North ſea; 124 miles N.W. of Archangel.

KORIAKI, an oſtrog of Kamtſchatka, on the Awatſka; 27 miles W. of Awatſka.

KORIAKS, the denomination of a people who inhabit the northern parts of the Penſhinſkoi gulf, and of the peninſula of Kamtſchatka, near and among the Kamtſchadales, Tunguſes, Lamutes, and Tſchuktſhes. They are ſuppoſed to derive their name from the word *Kora*, which in their language ſignifies a rein-deer. The great likeneſs they bear to many iſlanders of the Eaſtern ocean, and to the neareſt Americans beyond the ſtrait, afford reaſon for ſuppoſing that they, and alſo the Tſchuktſhes, are the primitive poſſeſſors of theſe coaſts; who either came over from the continent of America, or were ſeparated from it by the probable infractions of the ſea, and the conſequent diviſion of the two quarters of the world. With reſpect to number they are about equal to the Kamtſchadales, who, according to the enumeration of 1760, amounted to about 3000 males, though it is not unreaſonable to conclude, that their number is in reality three or four times larger. According to Leſſeps the Koriaks are ſuppoſed not to exceed 2000 families. Theſe people are divided into two claſſes, *viz.* the wandering and the fixed Koriaks. The latter inhabit the northern part of the iſthmus of Kamtſchatka, and the whole coaſt of the eaſtern ocean, from thence to the Anadyr. The country of the former ſtretches along the N.E. of the ſea of Ochotſk, to the river Penſkina, and weſtward towards the river Kovyma. The fixed Koriaks have a ſtrong reſemblance to the Kamtſchadales; and, like them, depend altogether on fiſhing for ſubſiſtence. Their dreſs and habitations are of the ſame kind. They are tributary to the Ruſſians, and under the diſtrict of the Ingiga. The wandering Koriaks occupy themſelves entirely in breeding and paſturing deer, of which they are ſaid to poſſeſs immenſe numbers; ſo that it is not unuſual for a ſingle chief to have a herd of 4 or 5000. They deſpiſe fiſh, and live altogether on deer. They have no balagans, and their only habitations are like the Kamtſchadale jourts, with this difference, that they are covered with raw deer-ſkins in winter, and tanned ones in ſummer. Their ſledges are drawn by deer, and never by dogs; which, like the latter, are always ſpayed, in order to be trained to this buſineſs. The draft deer paſture in common with the others; and when they are wanted, the herdſman makes uſe of a certain cry, which they inſtantly obey, by coming out of the herd. Captain King was informed by the prieſt of Paratounca, that the two nations of the Koriaks and the Tſchutſki ſpeak different dialects of the ſame language; and that it does not bear the leaſt reſemblance to the Kamtſchadale. According to the account of Leſſeps, the manners of the fixed Koriaks are a compoſition of duplicity, miſtruſt, and avarice; and they are ſaid to have all the vices of the northern nations of Aſia, without the virtues. Robbers by nature, they are ſuſpicious, cruel, and incapable either of pity or benevolence. Perfidious and ſavage in their diſpoſition, they are in a ſtate of perpetual hoſtility with their neighbours; and hence every individual is led to cheriſh a ferocious ſpirit. Hence alſo they acquire an inflexible courage, and glory in a contempt of life. Superſtition alſo impoſes upon them a law which obliges them to conquer or to die. The vicinity of the Ruſſian ſettlements has hitherto produced no change in the mode of life of the reſident Koriaks. Their commercial intercourſe with the Ruſſians merely ſeem to render them more avaricious and more addicted to plunder; and they reſiſt every attempt of civilization. The wandering Koriaks were for a long time more intractable. Their regular occupation is hunting and fiſhing, and when the ſeaſon does not allow of their purſuing it, they ſleep and ſmoke, and indulge themſelves in drunkenneſs. Their paſſion for ſtrong liquors has led them to invent a drink, equally powerful with brandy, which is ſcarce and dear, and which they extract from a red muſhroom, known in Ruſſia as a ſtrong poiſon, under the name of "moukhamorr." With a preparation of this they entertain their gueſts for one, two, or three days, till their ſtock is exhauſted. The features of a majority of the Koriaks are not Aſiatic; but they might be conſidered as Europeans, if it were not for their low ſtature, ill ſhape, and the colour of their ſkin. Others of them have the ſame characteriſtic outlines with thoſe of the Kamtſchadales. Among the women particularly, there are very few who have not ſunk eyes, flat noſes, and prominent cheeks: the men are almoſt wholly deſtitute of beards, and have ſhort hair. The women carry their children in a ſort of arched baſket, in which the infant is placed in a ſitting poſture, and ſheltered from the weather. When a Koriak dies, his relations aſſemble, erect a funeral pile, and place a portion of the wealth of the deceaſed, and a ſtock of proviſions, conſiſting of rein-deer, fiſh, brandy, and whatever elſe they conceive will be wanted by him for his journey, and prevent his ſtarving in the other world. The body is exhibited in his beſt attire, and lying in a kind of coffin; and after receiving the adieu of his attendants, who have torches in their hands, they haſten to reduce it to aſhes. They wear no mourning, as they feel only the regret of a temporary abſence, and not of an eternal ſeparation; and the funeral pomp generally terminates in the intemperate uſe of liquor and tobacco. Death is regarded by them as a paſſage to another life, in which other joys are reſerved for them. They acknowledge a ſupreme being, the creator of all things, whoſe reſidence is the ſun; but they neither fear nor worſhip him. Goodneſs, they ſay, is his eſſence; and it is impoſſible, as all good proceeds from him, that he ſhould do any injury. The principle of evil they conſider as a malignant ſpirit, who divides with the ſovereign good being the empire of nature. To this evil ſpirit they pay reſpect, and perform their devotion, in order to pacify his wrath, and to avert the calamities which he inflicts. Accordingly they offer him, as expiatory ſacrifices, various animals that have begun to exiſt: rein-deer, dogs, the firſt fruits of their hunting and fiſhing, and the moſt valuable of their poſſeſſions. Supplications and thankſgiving conſtitute their devotional exerciſes. His votaries have no temple nor ſanctuary. This imaginary god is worſhipped in all places; and they conceive that he hears their prayers in the ſolitude of the deſert, as well as in ſociety; and that he is rendered propitious by their indulging to drunkenneſs in their jourts: for, ſtrange as it may ſeem, drunkenneſs is among theſe people a religious practice, and the baſis of all their ſolemnities. See KAMTSHATKA and TSCHUTSKI.

KORKAN, or JORJAN, a flat diſtrict on the eaſt ſide of the Caſpian ſea, ſubject to great heat, frequent inundations, and an unwholeſome air; but the ſoil is fertile, and produces dates, wine, cotton, ſilk, and corn.

KORKINA, a town of Ruſſia, in the government of Tobolſk; 20 miles S.W. of Iſchim.

KORKUB, a town of Perſia, in Chuſiſtan; 30 miles W.S.W. of Jondiſabur.

KORMAND, a town of Hungary, on the Raab; 52 miles S. of Vienna.

KORMESHTY, mountains of Ireland, in the county of Mayo; 17 miles N.W. of Caſtlebar.

KORMUDSEH, a town of Perſia, in the Farſiſtan; 100 miles S.W. of Schiras. N. lat. 28 37′.

KORNBURG, a town of Stiria, on the Raab; 24 miles S.E. of Gratz.

KORNDYCK, a ſmall iſland of Holland, in the Meuſe, with a town of the ſame name; about 7 miles W.N.W. of Willemſtadt.

KORN-NEUBURG, a town of Auſtria, on the north ſide of the Danube, oppoſite to Cloſter-Neuburg; 8 miles N. of Vienna. N. lat. 48° 19′. E. long. 16 40′.

KORNOCK, an iſland near the weſt coaſt of Weſt Greenland. N. lat. 61° 38′. W. long. 47 40′.

KOROL, a town of Hindooſtan, in Guzerat; 20 miles E. of Baroach.

KOROLOVETZ, one of the eleven diſtricts of the government of Novogorod Severſkoi in Ruſſia, ſituated on a rivulet falling into the Deſna; 40 miles S.E. of Novogorod Severſkoi.

KOROMANTEES, a general appellation given in the Britiſh Weſt Indies to moſt of the negroes purchaſed on the Gold Coaſt, from *Koromantyn*, one of the earlieſt of our factories on this part of the African coaſt; which is now become an inſignificant village, or factory, in poſſeſſion of the Dutch. It is ſituated in the kingdom of Fantyn, two miles from the fort of Anamaboe. The Koromantyn or Gold Coaſt negroes are diſtinguiſhed from all others by firmneſs both of body and mind, a ferociouſneſs of diſpoſition, and, at the ſame time, activity, courage, and a kind of ſtubbornneſs, which prompts them to enterpriſes of difficulty and danger, and enables them to meet death, in its moſt dreadful forms, with fortitude or indifference. Many of them had been ſlaves in Africa, and others had been engaged in perpetual hoſtility with one another; and they were, therefore, prepared for endeavouring, even by means the moſt deſperate, to regain the freedom of which they had been deprived. Accordingly they have been diſpoſed to excite or to encourage rebellion. This was the caſe in Jamaica in the year 1760. The firmneſs, and intrepidity, and contempt of death, which are diſtinguiſhable in adults, brought from the Gold Coaſt, are viſible even in boys at the age of ten years. Edw. W. Indies, vol. ii.

KOROP, a town of Ruſſia, and diſtrict of the government of Novogorod Severſkoi, ſeated on the left ſhore of the Deſna.

KOROROFAH, a country of Africa, ſituated eaſt of Wangara.

KOROTCHA, a town of Ruſſia, and diſtrict of the government of Kurſk, ſeated on a rivulet of the ſame name, that falls into the Donetz; 44 miles E.S.E. of Kurſk.

KOROTOIAN, a town of Ruſſia, and diſtrict of the government of Voronetz, ſituated on the Don; 20 miles S. of Voronetz.

KOROVA, a ſmall iſland in the ſea of Ochotſk; 240 miles E. of Ochotſk. N. lat. 59 20′. E. long. 150° 40′.

KORPIKYLA, a town of Sweden, in Weſt Bothnia; 14 miles N.N.W. of Tornea.

KORPILAX, a town of Sweden, in Tavaſtland; 68 miles N.N.E. of Tavaſthus.

KORPO, an iſland of Sweden, in the Baltic, near the ſouth-weſt coaſt of Finland, of an oval form, about 20 miles in circuit; having on the north-weſt coaſt a town of the ſame name, and ſeveral villages. N. lat. 60° 9'. E. long. 21° 25'.

KORPONA, a town of Hungary; 28 miles N.N.E. of Gran.

KORS, a town of Perſia, in the province of Adirbeitzan; 80 miles S.S.E. of Erivan.

KORSA, a town of Hindooſtan, in the ſubah of Delhi; 26 miles W. of Delhi.

KORSAKI, or CORSAC, in *Zoology*. See FOX.

KORSEC, in *Geography*, a town of Poland, in Volhynia; 32 miles E. of Lucko.

KORSENIEC, a town of Lithuania; 60 miles E. of Wilna.

KORSEWALAN, a ſmall iſland in the Eaſt Indian ſea. S. lat. 7° 39'. E. long. 128° 40'.

KORSNAS, a town of Sweden, in Eaſt Bothnia; 25 miles S.S.E. of Waſa.

KORSOER, a fortified town of Denmark, lying at the mouth of a ſmall bay, forming a well-protected harbour, on the Great Belt. It has a few good houſes, which belong to merchants, &c. Some trade is carried on from hence up the Baltic, and in the vicinity. The fortifications are in ruins, and the town is chiefly inhabited by fiſhermen and ſea-faring people. The breadth of the Great Belt between Korſoer and Nyeborg is about 22 miles.

KORSUN, a town of Poland, in the palatinate of Kiev; 44 miles S.S.E. of Bialacerkiev.

KORSZANY, a town of Samogitia; 25 miles N.W. of Midniki.

KORTCHERA, or KORTCHEF, a town of Ruſſia, and diſtrict of the government of Tver, on the Volga.

KORTHOLT, CHRISTIAN, in *Biography*, a native of Holſtein, was born at Burg, in the iſle of Femeren, in the year 1633. Having acquired the rudiments of learning, he was, at the age of ſixteen, ſent to Sleſwick, where he purſued his ſtudies two years; and from this place he went to the college of Stettin, made great proficiency in learning, and obtained high applauſe by the able manner in which he maintained two theſes. He continued his literary ſtudies at Roſtock, to which place he removed in 1652; and afterwards he delivered lectures, in his own apartments, on logic, metaphyſics, and Hebrew. In 1656 he took his degree of doctor in philoſophy, after which he went to ſtudy at the univerſity of Jena, where he diſtinguiſhed himſelf by his academical acts, and by his private lectures on philoſophy, the oriental languages, and divinity. In 1661 he went to the court of Schwerin, at the invitation of the duke of Mecklenburg, in whoſe preſence, as well as in the preſence of a great number of the nobility, he diſputed two days on theological topics with two learned Roman Catholics, one an Auſtrian, and the other a Pole: and on a ſimilar invitation he diſputed, in the following year, with a Roman Catholic of Paris. On theſe occaſions he acquired univerſal applauſe from the auditors. In 1662 he was nominated to the chair of the Greek profeſſor at Roſtock, and took his degree of doctor of divinity. From thence he removed to Kiel, became ſecond profeſſor of divinity, and afterwards vice-chancellor and firſt divinity profeſſor. In 1680 the duke of Holſtein beſtowed upon him the profeſſorſhip of eccleſiaſtical antiquities, and, in 1689, declared him vice-chancellor for life. Five times he had the honour of being nominated vice-rector at Kiel; and it is univerſally allowed that he performed the duties of his various poſts with great ability and perſeverance. He died in the year 1694, at the age of ſixty-one, much reſpected and honoured by his friends and the univerſity of Kiel. To the republic of letters he had been an ornament by a number of curious, learned, and uſeful works; the titles of which are given in Moreri, and alſo in Bayle, to which the reader is referred for further information.

KORTISJARVE, in *Geography*, a town of Sweden, in the province of Waſa; 43 miles E.N.E. of Waſa.

KORTRIGHT, a poſt-town of America, in Delaware county, New York, in which are 1513 inhabitants.

KORTSCHIN, a town of Poland, in the palatinate of Sandomirz; 40 miles S.W. of Sandomirz.

KORTY, a town of Africa, in Sennaar, on the borders of the Nile, where the caravans quit the river, and turn to the Deſert, in order to avoid the pirates of the Nile; 60 miles E. of Dongola.

KORYSOWA, a town of Poland, in the palatinate of the Kiev; 32 miles S.W. of Kiev.

KORZECZOW, a town of Poland, in the palatinate of Sandomirz; 24 miles S. of Sandomirz.

KORZELLAN, a town of the duchy of Warſaw; 70 miles N.W. of Warſaw.

KORZYMECK, a town of Poland, in the palatinate of Lublin; 38 miles N.N.E. of Lublin.

KOS, in the *Jewiſh Antiquities*, a meaſure which held the quantity of four cubic inches, and ſomething over. This was the cup of bleſſing, out of which they drank when they gave thanks after ſolemn meals, as on the day of the paſſover.

KOSA, in *Geography*, a town of Ruſſia, in the government of Perm; 48 miles W. of Solikamſk.

KOSARIA, in *Botany*, Forſk. Ægyptiaco-Arab. 164. Ic. t. 20. A lacteſcent fœtid very ſingular plant, found by Forſkall in the coffee plantations at Hadie. Juſſieu, on the authority of Niebuhr, refers it to *Dorſtenia*, and it is *D. radiata* of Willdenow, Sp. Pl. v. i. 683. *Koſar* is its Arabic name. The *ſtem* is thick and fleſhy, like that of ſome African *Euphorbiæ*, bearing on the upper part ſeveral oblong, jagged, ſtalked *leaves*. The *flowers* have a radiated common receptacle, and grow on ſtalks, from tubercles at the ſides of the ſtem. The plant bruiſed is applied as a cure for eruptive diſorders.

KOSCEA, in *Geography*, a town of Walachia; 16 miles N. of Kimnick.

KOSCIABAD, a town of Perſia, in the province of Kerman; 60 miles S.W. of Sirjian.

KOSCLOW, a town of Auſtrian Poland, in Galicia; 60 miles E. of Lemberg.

KOSEL, a town of the county of Tyrol, on the Brenta; 21 miles E. of Trent.

KOSHA, in *Zoology*. See *Siberian* DOG.

KOSHAB, in *Geography*, a town of Curdiſtan; 20 miles S. of Van.

KOSHANIA, a town of Great Bucharia; 30 miles W. of Samarcand.

KOSHANIKUT, a town of Perſia, in the province of Segeſtan; 110 miles N.E. of Boſt.

KOSKANUADEGO, a river of Pennſylvania, which runs into the Allegany, N. lat. 41° 53'. W. long. 79° 20'.

KOSKIN, a town of Norwegian Lapland; 108 miles S.W. of Poſanger.

KOSKIS, a town of Sweden, in Tavaſtland; 22 miles E. of Tavaſthus.—Alſo, a town of Sweden, in the government of Abo; 20 miles E N.E. of Abo.

KOSL, a town of Arabia, in the province of Yemen; 18 miles W.N.W. of Chamir.

KOSLOF, a town of Ruſſia, and diſtrict of the government of Tanbof, on the rivulet Uſnoi Voronetz; 48 miles N.W. of Tanbof.

KOSOLUI, a town of European Turkey, in Beſſarabia; 28 miles N.N.W. of Bender.

KOSREUKEN, a town of Natolia; 16 miles N.W. of Kiutaja.

KOSSAR, a town of Poland, in Volhynia; 28 miles W.N.W. of Lucko.

KOSSATZ, a town of Bohemia, in the circle of Konigingratz; 12 miles W. of Konigingratz.

KOSSOW, a town of Lithuania, in the palatinate of Novogrodek; 56 miles S.S.W. of Novogrodek.

KOST, a town of Great Bucharia; 70 miles S.S.E. of Balk.

KOSTEL, a town of Moravia, in the circle of Brunn, anciently the ſee of a biſhop; 25 miles S. of Brunn. N. lat. 48° 50′. E. long. 16° 47′.

KOSTELOTZ, a town of Bohemia, in the circle of Konigingratz; 16 miles S.E. of Konigingratz.—Alſo, a town of Bohemia, in the circle of Kaurzim, on the Elbe; 12 miles N.N.E. of Prague. N. lat. 50° 12′. E. long. 14° 45′.—Alſo, a town of Moravia, in the circle of Olmutz; 7 miles S.W. of Olmutz.

KOSTENBLUT, a town of Sileſia, in the principality of Breſlau; 18 miles W.S.W. of Breſlau. N. lat. 50° 59′. E. long. 16° 40′.

KOSTESH, a town of European Turkey, in Moldavia; 16 miles N. of Birlat.

KOSTIAN, or KOSTAN, a town of the duchy of Warſaw; 20 miles S.E. of Poſen.

KOSTOLETZ, a town of European Turkey, in Servia; 18 miles E. of Semendria.

KOSTOLNA, a town and caſtle of Hungary; 24 miles N.W. of Topoltzan.

KOSTROMA, a government, town, and river of Ruſſia; the government, formerly included in that of Moſcow, is about 210 miles from E. to W., and 150 from N. to S. The capital, Koſtroma, with its diſtrict, is ſituated near the Volga, and ſurrounded with a rampart. N. lat. 57° 30′. E. long. 41° 14′. The river runs into the Volga at the capital

KOSUMA, a town of Japan, in the iſland of Niphon; 60 miles W.S.W. of Meaco.

KOSZARA, a town of Boſnia; 12 miles N. of Banjaluka.

KOSZO, a town of Lithuania, in the palatinate of Novogrodek; 60 miles S.S.W. of Novogrodek.

KOSZULA, a town of European Turkey, in Moldavia; 36 miles N.W. of Jaſſy.

KOTAH. See KOTTA.

KOTAIGROD, a town of Poland, in Podolia; 12 miles S.E. of Kaminiec.

KOTAN. See HOTOM.

KOTANA, a town of Hindooſtan, in the circar of Sirhind; 40 miles E.N.E. of Sirhind.

KOTANKODERIPO. a town on the E. coaſt of Ceylon; 10 miles S.E. of Batacola.

KOTAR, a province of Dalmatia, about 30 miles long, and 20 broad; called alſo the county of Zara, from its capital Zara.

KOTCHA, a town of Ruſſia, in the government of Perm; 60 miles W. of Solihanſk.

KOTCHEEL, a town of Hindooſtan; 10 miles S. of Agimere.

KOTCHELOVSKAIA, a town of Ruſſia, in the country of the Coſſacks, at the conflux of the Donetz and the Don; 52 miles E. of Azoph.

KOTCHENGSKA, a town of Ruſſia, in the government of Irkutſk, on the Ilim; 60 miles W.S.W. of Orlenga.

KOTCHUG, a town of Ruſſia, in the government of Irkutſk, on the Lena; 16 miles E. of Vercholenſk.

KOTELNA, a town of Poland, in the palatinate of Kiev; 60 miles W.S.W. of Kiev.

KOTELNITCH, a town of Ruſſia, and diſtrict of the government of Viatka, on the Viatka; 36 miles S.W. of Viatka.

KOTIAKOF, a town of Ruſſia, and diſtrict of the government of Simbirſk, on the right ſide of the river Sura.

KOTIGNOW, a town of Poland, in Podolia; 34 miles N. of Kaminiec.

KOTINGHY, a town of Hindooſtan, in the circar of Ruttunpour; 36 miles N.E. of Raypour.

KOTLAN, a town and capital of a diſtrict of the ſame name, in Great Bucharia; 200 miles S.E. of Samarcand. N. lat. 38° 10′. E. long. 68° 36′.

KOTMANA, a town of Walachia, near the ſource of a river of the ſame name, which runs into the Danube; 45 miles N.W. of Buchareſt.

KOTNA, a town of Great Bucharia, on the Gihon; 40 miles S. of Bokhara.

KOTNAR, a town of Moldavia; 24 miles W.S.W. of Jaſſy.

KOTO, or LAMPI, a ſmall and barren diſtrict of Africa, on the Slave Coaſt, in the Whidah country, extending about 18 miles along the Atlantic: the land is flat and the ſoil ſandy. Slaves have been the chief article of trade with the Europeans. The chief town is called Koto, or Verku.

KOTONA, a town of Hindooſtan, in Mewat; 25 miles N.N.W. of Cotputly.

KOTOO, one of the ſmall Friendly iſlands, ſurrounded by coral reefs, and ſcarcely acceſſible by boats; not more than 1½ mile, or two miles long, but not ſo broad. The N.W. end of it is low, like the iſlands of Hapaee; but it riſes ſuddenly in the middle, and terminates in reddiſh clayey cliffs at the S.E. end, about 30 feet high. In that quarter the ſoil is of the ſame ſort as in the cliffs; but in the other parts, it is a looſe black mould. It produces the ſame fruits and roots which are found in the other iſlands: it is tolerably cultivated, but thinly inhabited. The water is dirty and brackiſh. The burying places are neater than thoſe of Hapaee; 16 miles N. of Anamooka. S. lat. 19° 58′. E. long. 185° 11′.

KOTRA, a town of Lithuania, in the palatinate of Troki; 15 miles E.S.E. of Grodno.

KOTROU, a town of Africa, on the Ivory Coaſt.

KOTSKA, a town of Ruſſia, in the government of Irkutſk, on the Tunguſka; 140 miles N.N.W. of Ilimſk.

KOTLA, or KOTAH, a circar of Hindooſtan, in Malwa; bounded on the N. by Rantampour, on the E. by Yohud and Chandaree, on the S. by Kitchwara, and on the W. by Meywas, or Ondipour. It is croſſed in the centre by the river Jeſul.—Alſo, a town, which is the capital of the circar, ſeated on the Jeſul. This town is of conſiderable extent, of an irregular oblong form, incloſed with a ſtone wall and round baſtions. It contains many good ſtone houſes, and ſeveral handſome public edifices. The palace of the rajah is an elegant ſtructure. The ſtreets are paved with ſtone. It has, on the W., the river Chumbul, and on the N.E. a lake, ſmooth and clear as cryſtal, which, on two ſides, is banked with ſtone, and has, in the middle, a building called "Jug-mundul," which is conſecrated to religious purpoſes. Near the N.E. angle of the town, and only ſeparated from the lake by the road, is the "Chetrea," or mauſoleum of one of the knights. In front of this handſome building are placed ſeveral ſtatues of horſes and elephants, hewn out of ſtone. To the ſouth of the city, about three furlongs beyond the wall, is a place conſecrated to the celebration of Rum's victory at Lanka. Behind this, in a recumbent poſture, is an enormous ſtatue of earth, which repreſents the dæmon "Rawoon." On the day of celebration the principal people aſſemble; and the fire of the guns is directed againſt the earthen wall, which make a breach in it, and deface or demoliſh the image of Rawoon. The revenue of Kotah is 30 lacks of rupees; out of which is paid, though not regularly, a tribute of two lacks yearly to Sindiah, and as much to Holcar. N. lat. 25° 15′. E. long. 76° 20′. Aſiat. Reſ. vol. vi.

KOTTIMBEL, a ſmall iſland in the Red ſea. N. lat. 17° 57′. E. long. 41° 25′.

KOTTIS, a town of Auſtria; 10 miles S.E. of Zwetl.

KOTTOCOMB, a town of Africa, in Bornou; 75 miles S. of Bornou.

KOTTOKOLEE, a town of Africa, and capital of a country of the ſame name, in Negroland. N. lat. 13°. E. long. 5° 40′.

KOTUL, a town of Hindooſtan, in Bundelcund; 20 miles S. of Pannah.

KOTY, a town of Bundelcund; 18 miles S. of Callinger.

KOTZENAU, a town of Sileſia, in the principality of Lignitz; 16 miles N.W. of Lignitz.

KOU, a town of Turkiſh Armenia; 30 miles S.E. of Akalziké.

KOUAKAND, a town of Turkeſtan, on the Sirr; 60 miles S. of Taſhkund.

KOUANG-SI, or Quang-si, a city of China, of the firſt claſs, in the province of Yun-nan. N. lat. 24° 40′. E. long. 103° 28′.

KOUANG-SIN, or Koang-sin, a city of China, of the firſt claſs, in the province of Kiang-ſi. This city is ſurrounded by mountains, many of which are lofty, and abound ſome of them with foreſts, and others with fine cryſtal; the country, however, is fertile and well inhabited; many of the mountains are cultivated, and are no leſs productive than the moſt fertile plains. They make a very good paper in this city, and the beſt candles in the empire. N. lat. 28° 27′. E. long. 117° 44′.

KOUANIN, in the *Chineſe Language*, the name of a tutelary deity of women. The Chineſe make great numbers of the figures of this deity in white porcelain, and ſend them to all parts of the world, as well as keep them in their own houſes. The figure repreſents a woman with a child in her arms. The women, who have no children, pay a ſort of adoration to theſe images, and ſuppoſe the deity they repreſent to be of power to make them fruitful. It has been ſuppoſed, by many Europeans, that theſe images were meant to repreſent the Virgin Mary, with our Saviour in her arms; but this is an idle opinion; the Chineſe having been fond of this figure in all times that we have an account of. The ſtatue always repreſents a handſome woman, very modeſtly attired.

KOVAR, in *Geography*, a town of Hungary; 16 miles N.W. of Biſtritz.

KOVARABAD, a town of Great Bucharia, in the kingdom of Balk; 90 miles W. of Balk.

KOUCHO, a town of Africa, in Upper Guinea, on the river Scherbro; 36 miles from the ſea.

KOUDJEH, a town of Aſiatic Turkey, in Natolia; 48 miles W. of Kiutaja.

KOUDRA, a town of Hindooſtan, in Bahar; 27 miles S of Burwah.

KOUDUR, a town of Hindooſtan, in Dowlatabad; 7 miles N.N.W. of Beder.

KOUE-HOA, a city of China, of the firſt claſs, in the province of Yun-nan. N. lat 23 26′. E. long. 103° 56′.

KOUEIT, Græn, *Cathem*, or *Kadhema*, a ſea-port town of Arabia, in the province of Lachſa, ſituated in a bay of the Perſian gulf, and governed by a ſcheich, who is vaſſal to the ſcheich of Lachſa, but occaſionally aſpires to independence. Whenever the ſcheich of Lachſa advances with his army, the citizens of Koueit retreat with their effects into the little iſland of Feludsje. The inhabitants are chiefly occupied in fiſhing, and particularly for pearls; in which buſineſs they are ſaid to employ more than 800 boats. N. lat. 27° 40′. E. long. 48° 10′.

KOUEI-TE, a city of China, of the firſt claſs, in the province of Ho-nan, ſituated in an extenſive and fertile plain, between two large rivers; but in order to render it opulent, it wants an increaſe of inhabitants and trade. The air is pure, and the fruits, eſpecially oranges and pomegranates, are excellent. The inhabitants are diſtinguiſhed by their mildneſs and hoſpitality. The juriſdiction of this city compriſes ſeven towns. N. lat. 34° 30′. E. long. 115° 29′.

KOU-HISAR, a town of Aſiatic Turkey, in Caramania; 12 miles N.W. of Akſerai.

KOVINSKOI, *Niznei*, *Sred*, and *Verchnei*, towns of Ruſſia: the firſt, on an iſland in the river Kolima, N. lat. 69° 40′. E. long. 156° 24′:—the ſecond, in the government of Irkutſk, on the Kolima, N. lat. 65° 5′. E. long. 153° 14′:—the laſt, in the ſame government, on the ſame river, N. lat. 66° 15′. E. long. 149° 14′.

KOUKOU, or Kougou, a town of Aſia, in the kingdom of Gaaga; the reſidence of a powerful king in the twelfth century.

KOULIK, in *Ornithology*. See Ramphastos *Piperivorus*.

KOULI-KHAN, Thamas, or Nadir Schah, in *Biography*, was born in the province of Khoraſan: his father was chief of a branch of the Afghans, which rank deſcended to Nadir when he was a minor, but his uncle uſurped the government. On this he entered into the ſervice of the Beglerbeg, governor of Muſcada, in Khoraſan, who gave him the command of an army ſent againſt the Tartars. Nadir, on this occaſion, gave ſignal proofs of his proweſs and military ſkill; he gained a complete victory with an inferior force, and took the Tartar general priſoner. For this able conduct, the Beglerbeg appeared extremely grateful, and, at firſt, treated Nadir with great diſtinction, but at length he became jealous of his aſpiring ſpirit, and refuſed to promote him in the army as he had promiſed, and when Nadir complained of his breach of faith, he cauſed him to be baſtinadoed. Driven to deſperation, he joined a banditti of robbers, and committed great ravages. The Afghans having made themſelves maſters of Iſpahan, and the Turks and Muſcovites ravaging other parts of Perſia, Schah Thamas applied to Nadir for aſſiſtance. He, without heſitation, entered into the ſervice of the ſchah; but one of his firſt actions was to murder his uncle who had uſurped his title. For his great ſervices againſt the Turks, he was ennobled with the title of khan, and honoured with other diſtinctions; nevertheleſs, he depoſed Thamas, and placed a ſon of that prince on the throne by the name of Abbas III. to whom he became regent. Under a prince, ſix months old only, Kouli-khan meditated to be the real ſovereign of Perſia. He diſpoſed of every thing according to his own pleaſure: he defeated the Turks, and obliged them to ſue for peace. Within a few months the prince died, and Kouli-khan was elected to the vacant throne, and on his acceſſion aſſumed the name of Nadir Shah. His reign was marked with a high degree of glory, but his government was to the laſt degree deſpotic. In the year 1739, he conquered the Mogul empire, making himſelf maſter of Delhi, where he acquired immenſe riches. He there aſſumed the title of emperor of the Indies, but diſgraced himſelf by ordering a maſſacre of the inhabitants of Delhi, in revenge for an inſult offered to ſome of the troops. The project was diſcovered, and the proſcribed party aſſembled with a view of taking revenge. They were ſurrounded by a powerful army, which was devoted to the ſchah. It was neceſſary to force a confidential guard, and they were neither acquainted with the ſituation of the emperor's tent, nor knew how to diſtinguiſh it from the reſt. Deſpair, however, enabled them to ſurmount every obſtacle. Five of them ruſhed into the pavilion, and the emperor was inſtantly known by the glitter of the ornaments with which he was covered. In defending himſelf he ſlew two of the conſpirators, when a third gave him a mortal wound. He exclaimed "ſpare me, and I will pardon all." "No," replied the fourth, "thou haſt never ſhewn mercy to any, and we will ſhew none to thee." They then diſpatched him, and ſevered his head from his body. This event took place in 1747. Univer. Hiſt.

KOUM, in *Geography*, a town of Thibet; 15 miles N. of Darmadijira.

KOUNDGI-AGHIZ, a town of Aſiatic Turkey, in the government of Sivas, on the coaſt of the Black ſea; 15 miles N.W. of Samſoun.

KOUNMEON, a town of Birmah; 48 miles N. of Ava. N. lat. 22° 33'. E long. 97° 56'.

KOUPHOLITE, in *Mineralogy*. See Prehnite.

KOURAH, in *Geography*, a town of Natolia; 44 miles W. of Kiutaja.

KOURATTY, a town of Hindooſtan, in Dowlatabad; 15 miles W. of Carmulla.

KOURESTAN, a town of Perſia, in Lariſtan; 36 miles S. of Tarem.

KOURMA, or Kurma, a ſmall town of Dar-Fûr, W. by S. of Cobbé, at the diſtance of 12 or 13 miles.

KOVROF, a town of Ruſſia, and diſtrict of the government of Volodimir, on the river Kliaſma; 24 miles E. of Volodimir.

KOUROU, a river of Guiana, which runs into the Atlantic, N. lat. 5° 5'. W. long. 53° 36'.

KOUS. See Cous and Apollinis *Urbs*.

KOUSSIE, a river of Africa, which runs into the Atlantic, S. lat. 30° 12'. E. long. 17° 50'. This river is the northern boundary of the colony of the Cape of Good Hope.

KOUSSIS. See Kaffers.

KOUTA, a town of Hindooſtan, in Viſiapour; 10 miles N. of Merritch.

KOUXEURY, in *Ichthyology*, a fiſh found in the lakes of South America, whoſe palate is employed by the Indians for poliſhing their carvings in wood. It is unknown to which genus this fiſh belongs.

KOWAJ, in *Geography*, a town of Aſia, in the province of Adirbeitzan; 120 miles W. of Tauris.

KOWAL, or Cowal, a town of Poland, in the palatinate of Brzeſc; 16 miles E. of Brzeſc.

KOWAR, a town of Africa, in the kingdom of Burſali, on the river Gambia, which formerly had a large traffic in ſlaves.

KOWARSKO, a town of Lithuania, in the palatinate of Wilna; 10 miles N. of Wilkomierz.

KOWEL, a town of Poland, in Volhynia; 28 miles N.W. of Lucko.

KOWERO, a town of Sweden, in the government of Kuopio; 80 miles E.S E. of Kuopio.

KOWNO, or Kowie, a town of Lithuania, in the palatinate of Troki, at the conflux of the rivers Wilna and Niemen, containing eleven churches, one of which is Lutheran; 40 miles N.W. of Troki. N. lat. 54° 54'. E. long. 23° 45'.

KOWRA, a town of Birmah; eight miles N. of Raynangong.

KOWRAH, a town of Hindooſtan, in Guzerat; 10 miles S. of Gogo.

KOWROWA, a village in Karakakooa bay, rendered infamous by the murder of captain Cook. See Cook, and Karakakooa.

KOYAHT, a ſmall American iſle, at the S. end of Waſhington's iſle, at the entrance of a ſtrait ſeparating a ſmall iſle from the largeſt.

KOYDANOW, a town of Lithuania, in the palatinate of Minſk; 16 miles S.W. of Minſk.

KOZAK, John Sophronius, in *Biography*, a phyſician of ſome celebrity, was a native of Bohemia, and practiſed his profeſſion at Bremen during a ſeries of forty-five years, and died there on the 30th of January 1685, at the age of 82. He was an admirer of Robert Fludd, the roſycrucian, and adopted many of his fanciful notions in his writings. He left the following works: "Diſcurſus Phyſici quatuor, de rerum naturalium principiis, de generationum et tranſplantationum modis, morborum cauſis et ſpeciebus, methodo curationum," Bremen, 1631.—"Anatomia vitalis Microcoſmi," ibid. 1636.—"Tractatus ſpagyrici de Phlebotomis et de Fontanellis," ibid. 1655.—"Tractatus Medicus de Sale, ejuſdemque in corpore humano reſolutionibus ſalutaribus et noxiis," Francfort, 1663.—"Tractatus de Hæmorrhagià," Ulm, 1666. Eloy. Dict. Hiſt.

KOZANGRODEK, in *Geography*, a town of Lithuania, in the palatinate of Brzeſc; 42 miles E. of Pinſk.

KOZAR, a town of Perſia, in the province of Adirbeitzan; 75 miles W. of Tabris.

KOZDAR, a town of Aſia, in the kingdom of Candahar, on the borders of Perſia; 180 miles S.S.E. of Candahar. N. lat. 30° 30'. E. long. 67° 15'.

KOZELSK, a town of Ruſſia, and diſtrict of the government of Kaluga, ſeated on the left ſide of the ſmall river Shiſdra, which falls into the Occa; 36 miles S.S.W. of Kaluga.

KOZELUCH, John Anthony, in *Biography*, muſic director in the Metropolitan church at Prague, was born at Wellwarn, in Bohemia, 1738. He ſtudied and lived privately many years at Prague, long before he obtained any profeſſional honours or preferment. His firſt advancement was to the place of chapel-maſter of Chriſt-church, and the next, in 1784, was that of organiſt of the dan kirk or cathedral. He afterwards diſtinguiſhed himſelf as a compoſer both for the church and theatre. Among his productions for the latter are his Italian operas of Demofoonte, and Aleſſandro nell' Indie, by which he very much increaſed his reputation. It is a pity, ſays Gerber (Muſical Lexicon) that more of his works have not been publiſhed!

Kozeluch, Leopold, a celebrated harpſichord-maſter and compoſer for that inſtrument at Vienna, was born at Wellwarn in 1753. He had learned the principles of muſic regularly at 18 years old, and the art of ſinging. At 19, he was brought to Prague, where he ſtudied at the ſame time compoſition and the harpſichord. But before he was 18, he produced ſpecimens of his genius and talents. In

1771,

1771, he publiſhed his firſt eſſay at compoſition, in a ballet for the Prague playhouſe. This was followed by 24 others and two pantomimes. After this he was invited to Vienna, where he eſtabliſhed himſelf, and whence his fame and works were circulated all over Europe, with thoſe of Vanhal, Hadyn, and Mozart. His ſtyle is more eaſy than that of Emanuel Bach, Haydn, or Mozart; it is natural, graceful, and flowing, without imitating any great model, as almoſt all his contemporaries have done. His modulation is natural and pleaſing, and what critics of the old ſchool would allow to be warrantable. His rhythm is well phraſed, his accents well placed, and harmony pure. He publiſhed 20 or 30 different ſets of harpſichord and piano-forte ſonatas, ſome with and ſome without accompaniments, which were not only in high favour with the ladies of Vienna, but with female dilettanti all over Europe. The adagios and violin accompaniments to all his pieces have been univerſally admired. If any one ſet of his ſonatas was more in favour at Vienna than another, it was his 12th ſet. He was the firſt in Vienna who publiſhed duets for two performers on one-keyed inſtruments, and ſeveral of them are excellent. He publiſhed likewiſe a duet for two harpſichords, or piano-fortes, with many concertos for the harpſichord *à grand orcheſtra*.

Nor has he confined himſelf to inſtrumental muſic; he has ſet a French comic opera, Le Muret; Didone abbandonata, a ſerious opera in Italian; Moſes in Egypt, a grand oratorio, in Italian, 1787, the beſt for the widows and children of decayed muſicians, that had been compoſed for that ſociety. The ſame year he was engaged, by a ſociety of 150 ſubſcribers, to compoſe for the Italian opera: and for the national theatre, or German playhouſe, he compoſed airs, cantatas, and ballets without end. In 1781, on the death of the empreſs queen, he compoſed the muſic to a very pathetic dirge. Joſeph and his Brethren, a cantata, with a harpſichord accompaniment only. Pfeifel's cantata for Mad. Paradis, his ſcholar in 1784, with innumerable leſſons and concertos expreſsly for that blind but admirable performer; 15 ſongs to German words, and cantatas in Italian, with accompaniments for two French horns, two violins, hautbois, tenor, and baſe; three ſymphonies, various ſets of trios, and quartets; two concertos for clarinets, and two for the violoncello.

KOZIN, in *Geography*, a town of Poland, in Volhynia; 24 miles S. of Lucko.

KOZLAN, a town of Bohemia, in the circle of Rakonitz; 12 miles S.W of Rakonitz.

KOZLOV. See Koslof.

KOZMODEMIANSK, or Kusmodemiansk, a town of Ruſſia, and diſtrict of the government of Kazan or Caſan, on the Volga; 100 miles N.W. of Kazan.

KOZU, a town of Poland, in the palatinate of Volhynia; 56 miles E. of Lucko.

KRABBEN, a ſmall iſland in the Atlantic, near the coaſt of Guiana N. lat. 0 10′. W. long. 57° 50′.

KRAFT, George Wolfgand, in *Biography*, a celebrated mathematician, was born at Dutlingen, where his father was paſtor. He received a good education, but applied himſelf chiefly to geometry and natural philoſophy, in which he made great progreſs under the celebrated Bulfinger, whoſe friendſhip and patronage he enjoyed. In 1728, he took his degree of maſter of arts, and almoſt immediately ſet out for Peterſburgh, and was appointed teacher, in that city, of mathematics in the New college, founded by the Imperial Academy of Sciences. At the end of five years, he was appointed a profeſſor of natural philoſophy. He was, in conſequence of his great reputation, recalled to his native country, which obliged him to ſolicit permiſſion to reſign his profeſſorſhip. This was accompanied with the moſt diſtinguiſhed teſtimonies of high eſteem; the academy elected him an honorary member, and ſettled upon him a handſome penſion. He quitted Peterſburgh in 1744, and arrived at Tubingen, where he entered on his office as profeſſor of mathematics and natural philoſophy, which he retained till his death in 1754. He was author of many very valuable works, among which are "Inſtitutiones Geometriæ ſublimioris;" "Prælectiones Academicæ publicæ in Phyſicam Theoreticam;" "De vera experimentorum Phyſicorum conſtitutione;" "De Hydroſtatices Principiis generalibus."

KRAGG Stone, a rock found near Belfaſt, belonging to the fletztrapp formation, but which, together with thoſe rocks called wacke and mullen, is kept diſtinct from baſalt by Mr. Kirwan, who gives the following deſcription of the kragg ſtone. Colour greyiſh-red or reddiſh-grey, exceeding porous: the pores often filled with various cryſtallizations. Luſtre and tranſparency none. Fracture uneven and earthy; fragments 2; hardneſs from 5 to 7. Spec. grav. 2.314. Feels rough and harſh; gives a yellowiſh-grey ſtreak. At 138 it melted into a reddiſh-brown porcelain maſs. It is often mixed with globules of magnetic iron-ſtone, which adds conſiderably to its ſpecific weight.

Wacke, mullen, and kragg (Mr. Kirwan adds) have been by moſt writers confounded with what he conſiders as trap; but their colour, ſpecific gravity, and fuſibility, ſhew that they muſt be diſtinguiſhed.

KRAGLIKIU, in *Geography*, a town of Moldavia; 95 miles N N.W. of Jaſſy.

KRAGOJEVA, a town of Servia; 45 miles N.E. of Novibaſar.

KRAGOWATZ, a town of Servia; 30 miles N.N.W. of Belgrade.

KRAKA, a town of Walachia, on a conſiderable lake, that communicates with the Danube; 30 miles S.S.E. of Buchareſt. N. lat. 44° 5′. E. long. 26°.

KRAKAN, a ſmall iſland on the W. ſide of the gulf of Bothhnia. N. lat. 63° 30′. E. long. 19° 33′.

KRAKATOA, a ſmall iſland in the ſtraits of Sunda. S. lat. 6 6′. E. long. 105° 21′.

KRAKAW, or Krako, a town of the duchy of Mecklenburg, on a lake; 10 miles N. of Guſtrow.

KRAKEN, in *Zoology*, a marine animal of moſt ſtupendous magnitude, ſaid to have been ſeen in the northern ſeas, and particularly near the coaſts of Norway and Sweden. The exiſtence of ſuch an enormous creature is atteſted by biſhop Pontoppidan, who, in his "Natural Hiſtory of Norway," affords an entertaining, if not a very ſatisfactory and accurate, account of this ſurpriſing creature. From his details we learn the kraken lies in the deeper parts of the ſea, in eighty or one hundred fathoms water, and at ſome leagues from land. This mighty, and as it ſeems unwieldy maſs of animated ſubſtance, very rarely riſes near the ſurface; when it does, the calmeſt ſea becomes troubled to a vaſt diſtance around it, the heaving billows point out the more immediate ſpace in which it will emerge, and when it has riſen, thoſe parts viſible above the ſurface of the water aſſume the aſpect of ſo many iſlands, variable in dimenſions as well as ſhape, at every motion of the kraken. The form of this enormous being is compared to that of a crab; the back or upper part, (ſo far as can be probably eſtimated,) is ſaid to be a mile and a half in circumference, (or, as ſome affirm, even more.) Its limbs, and of theſe it is furniſhed with ſeveral, are truly gigantic, appearing, when elevated above the water, as thick and long as the maſts of veſſels of a moderate ſize, and are beſides endowed with ſo much ſtrength, that with one of theſe it can ſeize on boats and the ſmaller kinds of veſſels, and draw them under water. The deſcent of this monſter from the ſurface of the ſea to the bottom, is ſaid alſo to be not leſs terrible than its riſing, ſince it occaſions a ſwell and whirlpool ſo violent and irreſiſtible, that ſhips of the largeſt burthen, drawn within its vortex, inevitably ſink into the abyſs of the waters, and ſink to riſe no more.

Theſe, and various other circumſtances equally calculated to excite aſtoniſhment, are related of the kraken by the learned prelate before mentioned, the particulars of which have been differently received, many having placed an implicit confidence in his relations, and others as ſtrenuouſly determining to reject them as tales unworthy of belief. In juſtice to Pontoppidan, we ſhould obſerve, however, that though we are principally indebted for our knowledge of the kraken to this writer, it muſt be underſtood that the exiſtence of ſuch an animal as the kraken is not teſtified on his authority alone; nor is it in his volumes only that details ſo marvellous have appeared; his accounts in general are in a greater or leſs degree corroborated by ſeveral northern writers, and with ſuch internal evidence of truth, that we cannot reject their reports as wholly fabulous, or conceive the kraken to be the mere creature of fiction. Still we muſt receive their obſervations deliberately; we may, and certainly do, on their veracity, admit the probable exiſtence of a marine animal; ſuch as the kraken is deſcribed, of a ſize very far ſurpaſſing that of the whale, and conſequently, of any animal at preſent known, but here we pauſe; we have yet to be informed how far the truth has really been exaggerated as to the actual magnitude, and powers of this tremendous creature. As to the nature of this being, that particular appears to be pretty clearly defined; we have little doubt, if any confidence can be placed in the confeſſedly imperfect deſcriptions left us by different authors, that it is a creature by no means analogous either to the whale tribe, or any kinds of fiſhes; it is aſſuredly, on the contrary, one of the molluſca order or family of worms peculiar to the ſea. Denys Montfort, a writer who ſeems to have conſidered its nature with attention, believes it to be a ſort of ſepia, an idea not improbable, or perhaps rather, ſhould fortune ever favour the naturaliſt ſo far as to decide the point in queſtion, it may prove to be one of the meduſæ tribe; this we ſuggeſt, though we ſhould ſtill rather be inclined to imagine it an animal of a diſtinct genus not at preſent aſcertained, as being moſt likely partaking in ſome degree of the characters both of the genera SEPIA, and MEDUSA, and yet not ſtrictly appertaining to either. See SEPIA and MEDUSA.

KRAKO, in *Geography*, a town of Sweden, in the province of Upland; 17 miles N. of Upſal.

KRAKON, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 61° 33′. E. long. 17° 9′.

KRALAM, a town of Boſnia, near the river Miſna; 34 miles S. of Serajo.

KRALITZ, a town of Moravia, in the circle of Olmutz; 8 miles S. of Olmutz.

KRALOVAVELIKA, a town of Sclavonia; 30 miles W.N.W. of Poſzega.

KRALOWIDWUR, or KONIGINHOF, a town of Bohemia, in the circle of Konigingratz, on the Elbe; 13 miles N. of Konigingratz.

KRALOWITZ, a town of Bohemia, in the circle of Rakonitz; 13 miles S.W. of Rakonitz.—Alſo, a town of Bohemia, in the circle of Czaſlau; 16 miles S.W. of Czaſlau.

KRAMER, in *Biography*. See the next article.

KRAMERIA, in *Botany*, received its name from Linnæus, in commemoration of two German botaniſts, John George Henry Kramer, the father, and William Henry, the ſon, both of whom flouriſhed towards the middle of the laſt century. The former, a phyſician to the army, publiſhed at Dreſden, in 1728, an anomalous arrangement of plants, partly by the ſyſtem of Rivinus, and partly by that of Tournefort, dividing them according to the months in which they flower. This ſame book, amended and enlarged, was reprinted at Vienna in 1744, interſperſed with various remarks upon the technical terms of botany, anecdotes of what happened to the author in various journeys, and, according to Haller, many fabulous abſurdities. He was alſo author of other botanical tracts.—The latter (William Henry) publiſhed at Vienna, in 1756, a catalogue of the animals and plants of Auſtria.—Linn. in Loefl. It. 195. Gen. 63. Schreb. 86. Willd. Sp. Pl. v. 1. 693. Mart. Mill. Dict. v. 3. Juſſ. 425. (Ixine; Loefl. MSS.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. uncertain, poſſibly *Lomentaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. reformed. *Cal.* Perianth inferior, of four or five oblong, acute, unequal, ſpreading leaves, internally coloured, deciduous. *Cor.* irregular, much ſhorter than the calyx, of five petals; the three uppermoſt with long claws, reflexed, and a ſmall ovate limb, which is ſometimes wanting in the middle one; two lowermoſt ovate, concave, ſeſſile, at each ſide of the germen, ſcarcely ſpreading, much ſhorter than the others. *Stam.* Filaments four, at the upper ſide of the germen, awl-ſhaped, parallel, aſcending, two of them rather ſhorter than the reſt; anthers terminal, ſmall, ovate, erect, opening by two terminal pores. *Piſt.* Germen ſuperior, ſeſſile, ovate; ſtyle awl-ſhaped, aſcending, nearly equal to the ſtamens; ſtigma ſimple, acute. *Peric.* Legume? globoſe, of one cell, not burſting, armed on all ſides with barbed projecting briſtles. *Seed* ſolitary, ovate, hard, ſmooth.

Eſſ. Ch. Calyx of four or five leaves. Petals five; the three uppermoſt with long claws; two lowermoſt ſeſſile, ovate. Fruit globoſe, prickly, of one cell. Seed ſolitary.

Obſ. It does not appear that Linnæus ever ſaw this genus; all that he ſays of it being taken, not very exactly, from Loefling; nor is there a ſpecimen in his herbarium. Neither does Mutis ſeem to have known any thing of it, when he ſent Linnæus a deſcription of the *Acæna*, Mant. 2. 145, under the denomination of "*Krameriæ affinis*;" for theſe two genera have nothing in common, except a ſlight coincidence in their artificial characters, not founded in nature. This *Acæna* indeed was never ſeen by Linnæus, being adopted entirely from his friend's account. It is, with great judgment, referred by Juſſieu to his own natural order of *Roſaceæ*, after *Anciſtrum*, with which *Krameria* has no relationſhip whatever.—The deſcription and figure of a ſecond ſpecies of *Krameria*, in Cavanilles, have enabled us to form ſome idea of its natural affinities, hitherto left in the dark, as well as to venture on a reformation of its generic characters; though all this is done from the above authorities alone, without inſpection of any ſpecimens. The genus in queſtion will not conveniently go into any of Juſſieu's preſent ſections of the *Leguminoſæ*, but a compariſon of its anthers with thoſe of *Caſſia*, its hard ovate ſeed, and its anomalous corolla, will, we preſume, confirm thoſe more obvious indications which have led us to the above concluſion, notwithſtanding the ſtrange and peculiar ſeed-veſſel.

Only two ſpecies have hitherto been deſcribed by authors, both natives of South America.

1. K. *Ixina*. Linn. Sp. Pl. 177.—Leaves all ſimple. Calyx four-cleft.—Gathered by Loefling near the town of Comana, on the coaſt of the Caracaos, latitude about 10° S. The

inhabitants call it *Cardillo Breve*, or rather, as we preſume, *Cardillo Breva*, Teaſel Fig, from the ſhape of the fruit and its barbed briſtles. Whether there be any thing viſcid in its habit, which might induce its diſcoverer to adopt the Greek name *Ixine*, does not appear from his deſcription here ſubjoined. "*Roots* fibrous. *Stems* ſhrubby, procumbent in their lower part, and ſpreading every way, but ſoon aſcending and wand-like their branches ſcattered and erect. *Leaves* alternate, lanceolate; the upper ones linear, acute, nearly ſeſſile. *Flowers* alternate, in a terminal (leafy) cluſter, their ſtalks axillary, furniſhed about the middle with two ſmall acute linear bracteas. *Calyx* of a roſy purple. Upper *petals* pale at the tips, lower ones rugoſe, dark purple. The plant itſelf is of a browniſh hoary hue."

2. K. *cytiſoides*. Cavan. Ic. v. 4. 61. t. 390.—Leaves ternate; the floral ones ſimple. Calyx five-cleft.—Found by Lewis Née, near the town of Cimapán in New Spain, eſpecially on the hill commonly called *del carpintero*, bearing flowers and fruit in September.—The *ſtem* is ſhrubby, three feet high, with a grey bark; its branches numerous, alternate, downy when young. *Leaves* alternate, on longiſh, downy, compreſſed foot-ſtalks, ternate; leaflets elliptical, ſeſſile, entire, downy. *Flowers* forming a ſimple cluſter at the end of each branch, with a ſimple elliptic-lanceolate leaf at the baſe of each of their ſtalks, and a pair of ſmaller ones above the middle, the ſtalks all ſingle-flowered, rather longer than the leaves, and downy. *Calyx* externally downy, internally of a violet red. *Stamens* equal, red, inſerted into the receptacle, all at the upper ſide of the germen, and within the upper petals, which latter therefore cannot, as Cavanilles ſuggeſts, be abortive filaments. The lower *petals* are dark violet; the central one of the three upper is elongated, taper-pointed, and recurved, not dilated at the ſummit like the others. *Germen* hairy. *Fruit* globular, the ſize of a currant, downy, muricated on all ſides with longiſh projecting briſtles, barbed at their points only with three or four ſharp reflexed teeth. S.

KRAMERSKY, in *Geography*, a town of Pruſſia, in the province of Ermeland; 15 miles S. of Heilſberg.

KRANICHFELD, a town of Saxony, in the principality of Altenburg; 12 miles S.E. of Erfurt. N. lat. 50° 43'. E. long. 11° 4'.

KRANOWITZ, a town of Sileſia, in the principality of Troppau; 11 miles N.E. of Troppau. N. lat. 49° 55'. E. long. 18°.

KRANTZ, Albert, in *Biography*, a native of Hamburgh, of whoſe early life we have no information, became profeſſor of canon law and theology in the univerſity of Roſtock, and afterwards rector of it about the year 1482. He took his degree of doctor of divinity in 1490, and then removing to Hamburgh was elected dean of the cathedral there. He obtained great reputation for his abilities and prudence, and was conſulted on various occaſions. Of ſuch conſequence was his opinion reckoned, that in the year 1500, the king of Denmark and the duke of Holſtein made him their umpire in a diſpute with the people of Dithmarſh. He died in 1517, leaving behind him a character for integrity and induſtry in his reſearches. His works are, "Chronica Regnorum Aquiloniorum Daniæ, Sueciæ, Norvegiæ:" "Vandalia, ſive Hiſtoria de Vandalorum origine:" "Metropolis, ſive Hiſtoria Eccleſiaſtica de Saxonia." Moreri.

KRAPERNA, in *Geography*, a town of Ruſſia, and diſtrict of the government of Tula.

KRAPINA, a town of Croatia; 8 miles W. of Agram.

KRAPPITZ, or Krzapkowitz, a town of Sileſia, in the principality of Oppeln, near the Ober; 12 miles S. of Oppeln. N. lat. 50° 25'. E. long. 17° 52'.

KRAS, a town of Poland, in the palatinate of Lublin; 26 miles S. of Lublin.

KRASILOW, a town of Poland, in Volhynia; 18 miles W. of Conſtantinow.

KRASCHENINNIKOVIA, in *Botany*, a genus formed by Güldenſtædt, Nov. Comm. Petrop. v. 16. 551, of the *Axyris Ceratoides* of Linnæus, and which is retained in Schreber's Genera 633 under the name of *Diotis*. Of the propriety of its eſtabliſhment we have ſome doubts, having never examined the living plant, nor traced the progreſs from the flower to the fruit. It poſſibly, however, bears the ſame analogy to *Axyris* that *Atriplex* does to *Chenopodium*.

KRASNE, in *Geography*, a town of Poland, in the palatinate of Braclaw; 24 miles N.W of Braclaw.

KRASNEPOL, a town of Poland, in Podolia; 32 miles N.E. of Kaminiecz.

KRASNOBORSK, a town of Ruſſia, and diſtrict of the government of Vologda, in the province of Veliki-Uſting, on the left ſide of the Dwina; 60 miles N.N.W. of Uſting.

KRASNOBROD, a town of Poland, in the palatinate of Belcz; 28 miles W. of Belcz.

KRASNOI, a town of Ruſſia, and diſtrict of the government of Smolenſko, on a rivulet which falls into the Dnieper; 28 miles S.W. of Smolenſko.

KRASNOIAR, a town of Ruſſia, in the government of Upha; 16 miles N.N.W. of Upha.

KRASNOIARK, a town of Ruſſia, and diſtrict of the government of Kolyvan, on the Yeniſei, where it receives the Katcha: it was built in 1618, ſurrounded with paliſades, ſmall towers, and ſome batteries. The inhabitants, who occupy about 350 houſes, principally trade in cattle, horſes, and furs; 100 miles S. of Eniſeiſk. N. lat. 56°. E. long. 96° 14'.

KRASNOIARSKAIA, a town of Ruſſia, in the government of Irkutſk, near the conflux of the Oka and Angara; 64 miles W.S.W. of Ilimſk.

KRASNOI-KHOLM, a town of Ruſſia, and diſtrict of the government of Tver, on the river Schoea, which falls into the Mologa; 60 miles N. of Tver.

KRASNOKUTSK, a town of Ruſſia, and diſtrict of the government of Kharkof, or Charcov, on the Merlo; 40 miles W.S.W. of *Kharkov*; which ſee.

KRASNOSLAW, a town of Poland, in the palatinate of Chelm; 26 miles S.S.W of Chelm.

KRASNOSLOBODSK, a town of Ruſſia, and diſtrict of the government of Penza, on the Mokvka, or Moſkva; 84 miles N.W. of Penza.

KRASNOUFIMSK, a town of Ruſſia, and diſtrict of the government of Perm, on the Upha; 96 miles S.E. of Perm.

KRASOIJAR, a town of Ruſſia, in the government of Caucaſus, at the mouth of the Volga; 16 miles N. of Aſtrachan.

KRASUKKA, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 65° 22'. E. long. 24° 46'.

KRASUPOL, a town of Poland, in Braclaw; ſix mile E. of Braclaw.

KRASZNA, a town of Hungary, on a river of the ſame name, which runs into the Samos; 16 miles S. of Zatmar.

KRAUPEN, or Krupka, a town of Bohemia, in the circle of Leitmeritz; 14 miles W.N.W. of Leitmeritz. N. lat. 50° 41'. E. long. 13° 54'.

KRAUS, Martin, in *Biography*, an eminent ſcholar in polite literature, the ſon of a Lutheran clergyman, was born in 1526, at Grebern, in the biſhopric of Bamberg. He received his claſſical education at Ulm, where he acquitted himſelf with ſo much credit, that the magiſtrates of the city allowed him a penſion to aſſiſt him in his future ſtudies. He went to Straſburg, and added to his former acquiſitions theology and the Hebrew language. He afterwards undertook the direction of the public ſchool at Memmingen, which he rendered celebrated by adopting the methods purſued at Straſburg. In 1559, he was appointed profeſſor of moral philoſophy and the Greek language at the univerſity of Tubingen, where he reſided till the time of his death, which happened in 1607. He publiſhed a great number of works, grammatical and critical, with orations, Greek and Latin, but his moſt valuable publication is entitled "Turco-Greciæ libri octo," containing an excellent collection of pieces relative to modern Greece, with the language and literature of which he was well acquainted. He was author likewiſe of Annales Suevici, ab initio rerum ad annum, 1594." A very ſhort time before his deceaſe, and foreſeeing that the time of his departure was at hand, he gave an entertainment to the academical body, and preſented to them, as a memorial of his eſteem, a valuable gold goblet. Moreri.

KRAUTHEIM, in *Geography*, a town of Germany, on the Jaxt; 34 miles N. of Heilbronn.

KRAW, *Iſthmus of*, the narrow part of Lower Siam, between the Indian ſea and the gulf of Siam, about 70 miles wide. N. lat. 9° to 12°. E. long. 98° 20′ to 99° 30′.

KRAYSK, a town of Lithuania, in the palatinate of Wilna; 84 miles E. of Wilna.

KREESE. See Crisse.

KREIBITSCH, in *Geography*, a town of Bohemia, in the circle of Leitmeritz; 24 miles N.N.E. of Leitmeritz.

KREMENTCHUK, a town of Ruſſia, and diſtrict of the government of Catharinenſlaf or Ekaterinoſlav, on the Dnieper; 38 miles W.N.W. of Ekaterinoſlav. N. lat. 49°. E. long. 33° 10′.

KREMINIEK, a town of Poland, in Volhynia; 36 miles S. of Lucko.

KREMPE, a ſmall town of Holſtein, formerly ſituated on the banks of the Elbe and ſtrongly fortified, but now only remarkable for the height of its ſteeple, which ſerves as a mark for ſeamen, ſituated between Itzehoe and Gluckſtadt; 3 miles N. of the latter.

KREMSIER or Kromerziz, a town of Moravia, in the circle of Prerau, on the Morawa, belonging to the biſhop of Olmutz; 17 miles S. of Olmutz. N. lat. 49° 17′. E. long. 17° 20′.

KREMSMINSTER, a town of Auſtria; 12 miles W. of Steyr.

KRENENSKAIA, a town of Ruſſia, in the country of the Coſſacks, near the Don; 216 miles N.E. of Azoph.

KRESABAD, a town of Hindooſtan, in Bundelcund; 28 miles S.S.W. of Pannah.

KRESTA, a ſmall iſland near the S. coaſt of Nova Zembla, in the ſtraits of Waigats. N. lat. 70° 32′. E. long. 59° 20′.

Kresta, *St.*, a gulf or bay of Ruſſia, in the north part of the Anadirſkaia gulf. N. lat. 65° 20′ to 65° 40′. E. long 180° 34′ to 181° 24′.

KRESTIAK, an iſland in the Frozen ſea, at the mouth of the Lena, of a triangular form, having its mean diameter about 12 miles. N. lat. 77° 42′. E. long. 16° 14′.

KREUPEL, a ſmall iſland near the W. coaſt of Borneo. N. lat. 3° 47′. E. long. 112° 25′.

KREUSBACH, a town of Auſtria; 9 miles S.S.E. of St. Polten.

KREUTZBURG, a town of Ruſſia, in the government of Polotſk, on the Dura; 60 miles E.S.E. of Riga.

KREWITZ, a town of the duchy of Mecklenburg; 10 miles E. of Schwerin. N. lat. 53° 40′. E. long. 11° 45′.

KREWO, a town of Lithuania, in the palatinate of Wilna; 42 miles S.E. of Wilna.

KRICHEVSKAIA, a town of Ruſſia, in the government of Archangel, on the Dwina; 16 miles S. of Kolmogori.

KRIEBEL Krankheit, the German appellation of the diſeaſe ſaid to ariſe from eating the ſeeds of the *raphanus*, and thence called *Raphania* by Linnæus and others. See that article: alſo Ergot and Ignis *ſacer*.

KRIEGSTETTEN, in *Geography*, a bailiwick of Switzerland, in the canton of Berne.

KRIENS and Horb, a bailiwick of Switzerland, in the canton of Lucerne.

KRIGIA, in *Botany*, named by Schreber, apparently in honour of Dr. David Krieg, a German phyſician, mentioned in the preface to the third volume of Ray's *Hiſtoria Plantarum*, who is there ſaid to have accompanied Mr. William Vernon, fellow of St. Peter's college, Cambridge, in a botanical excurſion through the province of Maryland. In this journey they diſcovered and collected ſome hundreds of new and rare plants, many of which are deſcribed in the work of Ray, above cited. Schreb. 532. Willd. Sp. Pl. v. 3. 1618.—Claſs and order, *Syngeneſia Polygamia Æqualis*. Nat. Ord. *Compoſitæ Semifloſculoſæ*, Linn. *Cichoraceæ*, Juſſ.

Gen. Ch. *Common calyx* ſimple, cylindrical, of about ten, lanceolate, erect, acute, equal leaves, ſhorter than the corolla. *Cor.* compound, ſomewhat imbricated, uniform, each flower hermaphrodite; proper, of one petal, tongue-ſhaped, linear, truncated, five-toothed. *Stam.* Filaments five, capillary, very ſhort; anthers cylindrical, tubular. *Piſt.* Germen nearly ovate; ſtyle thread-ſhaped, the length of the ſtamens; ſtigmas two, reflexed. *Peric.* none; common permanent calyx ovate, at length reflexed. *Seeds* ſolitary, five-ſided, ſtriated, with a membranaceous crown of five, roundiſh, erect leaves; down capillary, conſiſting of five long rough briſtles, alternating with the crown. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Calyx ſimple, of many leaves. Seed-down of five membranaceous leaves, with five alternate briſtles.

1. *K. virginica.* Willd. (Hyoſeris virginica; Linn. Sp. Pl. 1138. Michaux Boreal-Amer. v. 2. 88. Lamarck in Journ. d'Hiſt. Nat. v. 1. 222. t. 12.)—A native of Virginia and Pennſylvania, found even from Canada to Florida.—The habit of this plant is very ſimilar to that of a ſtarved Dandelion. *Radical leaves* at firſt ovate, then lanceolate, and at length lyrate, acute, ſmooth. *Stalks* naked, ſingle-flowered, thrice as long as the leaves. *Calyx* perfectly ſimple, not imbricated, of ten lanceolate leaves. *Flowers* deep yellow. *Seeds* ſquare, crowned with five ſhort, rounded, membranous ſcales, and as many alternate, long, rough, ſtraight briſtles.

KRIJINAGUR, in *Geography*, a town of Hindooſtan, in Mewat; 18 miles N.N.E. of Alvar.—Alſo, a town in Agimere; 15 miles E.N.E. of Roopnagur.

KRIKA, a diſtrict of Africa, in the kingdom of Calbari.

KRIM. See Crim, Crimea, and Taurida.

KRINK, a town of Iſtria; 13 miles S.S.E. of Capo d'Iſtria.

KRIS, the denomination of Indians that inhabit the banks of lake Chriſtineaux, who can raiſe 1000 warriors.

KRISHNA, in *Hindoo Mythology*, one of the avataras, or incarnations of the god Viſhnu, in which he is ſaid by the ſectaries, who excluſively worſhip him under this name, to have magnified himſelf in a degree of power and glory far exceeding any other of his forms. They maintain, indeed, that under the other avataras, he aſſumed only an *anſa*, or *portion* of his divinity, while Kriſhna was Viſhnu himſelf in mortal mould. A numerous ſect, called Gokalaſta, from Gokala, one of Kriſhna's names, worſhip him excluſively, or conjointly with his conſort Radha: this ſect are immeaſurably laviſh in their praiſes, and vehement in their adoration of this deity, while other ſects of Hindoos call Kriſhna an impious wretch, a mercileſs tyrant, an incarnate demon, now expiating his crimes in hell. As information is received from theſe different deſcriptions of zealots, ſo conſequently will it differ in the account of the character and actions of this motley perſonage, of whom as much is recorded as of any of the Hindoo deities. His life and actions have occupied the attention of many voluminous writers; and if taken literally he led a life of exceſſive libertiniſm, but his followers maintain ſuch appearances to have been the reſult of *maya*, or deluſion, for that in reality his life was chaſte and holy. The Gita Govinda, a beautiful poem by Jayadeva, is a ſeries of myſtical rhapſody in praiſe of Kriſhna, and a relation of his loves with his conſort Radha, and although warm, and indeed looſe, in a degree not admitting of literal tranſlation into our language, is ſaid to be purely myſtical, and to mean the "reciprocal attraction between the divine goodneſs, and the human ſoul." This poem has been finely tranſlated by ſir W. Jones, and appears in his works, and in the third volume of the Aſiatic Reſearches. The ſame ſubject is myſtically handled in the tenth book of the Sri Bhagavata, a life of Kriſhna, not hitherto tranſlated, ſo much venerated among certain ſects, as to be eſteemed as the eighteenth Purana. (See JAYADEVA, MYSTICAL POETRY, SRI-BHAGAVATA, and PURANA.) Moſt of the extravagant tales related of Kriſhna, may be reſolved into a continued ſolar allegory, for he is a perſonification of the ſun, and correſponds with the Apollo of the Greeks. (See KALIYA.) His mortal parents were Vaſu-deva and Devaky. He was foſtered by an honeſt herdſman named Ananda, or the happy, and his amiable wife Yaſuda; and paſſed his youth in dancing, ſporting, and piping among a multitude of young Gapas, or cow-herds, and Gopias, or milk-maids, from whom he ſelected *nine* as favourites. As a ſpecimen of the tales of the Bhagavata, it may ſuffice to relate, that on one occaſion the Gapia, his playfellows, (that is, the Muſes) complained to Taſuda, that he had pilfered and ate their curds; and being reproved by his foſter mother, he deſired her to examine his mouth, in which, to her juſt amazement, ſhe beheld the whole univerſe in all its plenitude of magnificence. Another of his miracles is given under *Kaſya*, which ſee.

Innumerable are the extravaganzas related of Kriſhna, whom ſome French writers have impiouſly compared with Jeſus Chriſt. On this ſubject the following paſſage occurs, in Moor's Hindoo Pantheon, whence chiefly this article is taken. Deſcribing a plate of Kriſhna deſtroying Kaliya, "It has," he ſays, "been ſurmiſed by reſpectable writers, that the ſubject here repreſented has reference to an awful event figuratively related in our ſcriptures, and Kriſhna is not only painted, as ſeen in the plates, bruiſing the head of the ſerpent, but the latter is made to retort by biting his heel. Among my images and pictures of this deity (and they are very numerous, for he is enthuſiaſtically and extenſively adored, and his hiſtory affords great ſcope for the imagination) I have not one original, nor did I ever ſee one, in which the ſnake is biting Kriſhna's foot; and I have been hence led to ſuſpect, that the plates engraved in Europe of that action are not ſolely of Hindoo invention or origin. I may eaſily err in this inſtance; but I am farther ſtrengthened in the ſuſpicion, from never having heard the fact alluded to, in the many converſations that I have held with Brahmans and others on the hiſtory of this avatara.

"Sonnerat was, I believe, the firſt who exhibited Kriſhna cruſhing a ſnake: how, otherwiſe would he or any one kill it ſo eaſily and obviouſly, as by ſtamping on its head? Nor can the reptile in any mode retort but by biting the foot of its aſſailant. Zeal ſometimes may have in its reſults the ſame effects as infidelity; and one cannot help lamenting that a ſuperſtructure requiring ſo little ſupport, ſhould be encumbered by awkward buttreſſes, ſo ill applied, that they would, if it were poſſible, diminiſh the ſtability of the building that they were intended to uphold. Of this deſcription were the zealous reſearches of ſome miſſionaries, who in Brahma and Saraſwati eaſily found Abraham and Sarah; and the Chriſtian Trinity is as readily diſcovered in the monſtrous Trimurti of the Hindoos." (See SARASWATI and TRIMURTI.) Of this deſcription alſo, I am diſpoſed to think, are the attempts at bending ſo many of the events of Kriſhna's life to tally with thoſe real or typical of Jeſus Chriſt's. That Kriſhna, according to his hiſtorians, paſſed a life of a moſt extraordinary and incomprehenſible nature, may be admitted; and that his name, and the general outline of his ſtory, exiſted long anterior to the birth of our Saviour, is very certain, and probably to the time of Homer. His miracles are amazing, but ridiculous; a term that may, perhaps, be applied to a majority of the legends detailed with ſuch prolixity in the modern poem, the Sri Bhagavata. He is repreſented as the meekeſt, tendereſt, and moſt benevolent of beings; ſtill, however, he fomented the terrible war deſcribed in the Mahabarat: he waſhed the feet of the Brahmans: he exhibited an appearance of exceſſive libertiniſm: but it was, they ſay, all *maya*, or *deluſion*, for he was pure and chaſte in reality; he uplifted mountains, raiſed the dead, (ſee KASYA,) deſcended into hell, and performed ſuch motley exploits, as induced ſir William Jones (Aſ. Reſ. i. 274.) to think that "the ſpurious goſpels, which abounded in the firſt ages of Chriſtianity, were carried to India, and the wildeſt parts of them repeated to the Hindoos, who engrafted on them the old fable of Keſava, the Apollo of Greece."

Kriſhna has eight regular wives aſſigned him, whoſe names are 1. Rukmeni or Radha, an incarnation of Lakſhmi; 2. Yamuminti; 3. Kalenderi, a water nymph, daughter of Surya, or the Sun; 4. Satyavama; 5. Lakſhmeni; 6. Mitravinda; 7. Satya; 8. Vrundi. Of theſe ſomething is ſaid under their names reſpectively. He beſides attached to him 16,000 women that he found virgins in the ample ſeraglio of a five-headed tyrant, who, for his manifold crimes, Kriſhna ſlew. The legendary tales deſcriptive of theſe events are of great length and variety. Each of theſe 16,008 women bore him ten ſons, and each ſuppoſed herſelf the excluſive favourite of her lord. Kama, the god of love, is ſaid to have been the offſpring of his firſt wife Rukmeni; and in this birth he was named Pradyamna. (See KAMA.) On the death of Kriſhna, Rukmeni became a ſati (ſee SATI), and, with ſeveral other of his wives, burned herſelf, with a view to an immediate reunion with her lord in Vaikontha. See VAIKONTHA.

Kriſhna's names, like other deified perſonages, are numerous. He being Viſhnu, they enjoy ſeveral in common, Murari, Heri, Madhava, and Baghavan, among them; Govinda, Gopala, Gokala, are derived from his occupation of herdſman; Gopinatha, or the Gopia's god; Murlidur, the tuneful; Keſſu, Keſava, or Keſavi, are ſaid to refer to the fineneſs of his hair; Vanimali to his pendant garland; Yadava, Varſhneya, and Vaſudeva, to his tribe and family.

He is uſually painted of a *dark blue* colour; his name Kriſhna denotes this; and with four arms; elegantly dreſſed with a profuſion of jewels, and often playing on a pipe. Many plates of him are given in the Hindoo Pantheon, from original images and pictures, and many legends are there related, connected with their ſubjects. In the Gita Govinda he is thus deſcribed. "His azure breaſt glittered with pearls of unblemiſhed luſtre, like the full bed of the cerulean Yamuna, interſperſed with curls of white foam. From his graceful waiſt flowed a pale yellow robe, which reſembled the golden duſt of the water lily ſcattered over its blue petals. His paſſion was inflamed by the glances of Radha's eyes, which played like a pair of water birds with azure plumage, that ſport near a full blown lotus, on a pool in the ſeaſon of dew. Bright ear-rings, like two ſuns, diſplayed, in full expanſion, the flowers of his cheeks and lips, which gliſtened with the liquid radiance of ſmiles. His locks, interwoven with bloſſoms, were like a cloud variegated with moon-beams; and on his forehead ſhone a circle of odorous oils, extracted from the ſandal of Malaya, like the moon juſt appearing on the duſky horizon; while his whole body ſeemed in a flame, from the blaze of unnumbered gems."

In that very curious work tranſlated by Mr. Wilkins, entitled Bhagavat-Gita, Arjun, the ſon of Pandu, addreſſes Kriſhna as "the ſupreme Brahm: the moſt holy; the moſt high god; the divine being before all other gods; without birth; the mighty lord; god of gods; the univerſal lord." In different parts of the Gita he ſays of himſelf, "I am, of things tranſient, the beginning, the middle, and the end: the whole world was ſpread abroad by me in my inviſible form. At the end of the period kalpa (ſee KALPA) all things return into my primordial ſource; and, at the beginning of another kalpa, I create them all again. I am the creator of all mankind, uncreated, and without decay. There is not any thing greater than I, and all things hang on me, as precious gems on a ſtring. I am the underſtanding of the wiſe, the glory of the proud, the ſtrength of the ſtrong. I am the eternal ſeed of all nature; I am the father and mother of this world, the grandſire and the preſerver; I am death and immortality; I am entity and nonentity; I am never failing time; I am all-graſping death, and I am the reſurrection."—"I am the emblem of the immortal, and of the incorruptible; of the eternal, of juſtice, and of endleſs bliſs."—"Neither the ſun nor the moon, nor the fire, enlighteneth that place, whence there is no return, and which is the ſupreme manſion of my abode."

Sanjay, one of the interlocutors of the Gita, deſcribes Kriſhna, as he revealed his "million forms divine," to Arjun, "covered with every marvellous thing—the eternal god, whoſe countenance is turned on every ſide. The glory and amazing ſplendour of this mighty being may be likened to the ſun, riſing at once into the heavens with a thouſand times more than uſual brightneſs. The ſon of Pandu then beheld within the body of the god of gods, ſtanding together, the whole univerſe divided forth into its vaſt variety." Arjun, terrified at this wondrous exhibition, exclaims—"Thou art the ſupreme being! I ſee thee without beginning, without middle, and without end; of valour infinite, of arms innumerable; the ſun and moon thy eyes; thy mouth a flaming fire; and the whole world ſhining with thy reflected glory. Having beholden thy dreadful teeth, and gazed on thy countenance, emblem of time's laſt fire, I know not which way to turn; I find no peace. Have mercy then, O god of gods! thou manſion of the univerſe! and ſhow me thy celeſtial form, with the diadem on thy head, and thy hands armed with the club and *chakra*. Aſſume then, O god of a thouſand arms! image of the univerſe! thy four-armed form."—Kriſhna is here, as uſual by his ſectaries, identified with Viſhnu, and as "emblem of time's laſt fire," and other paſſages of the above extracts, is apparently alluded to in the character noticed under KALPA, as the ruling Kalſva-rupi, or Chronus.

It is believed by ſome of the moſt reſpectable reſearchers into Hindoo theology, that the worſhip of Kriſhna, Rama, and other deified perſonages, is modern compared with the inſtitutions of the vedas (ſee VEDA), in which no mention is made of ſuch deities. As noticed under the article JAGANATHA, one of the names of Kriſhna, he is principally worſhipped at that extenſively revered temple. Under JAMBAVANTI is related a legend of this frolicſome deity, who eſpouſed a bear of that name. (See alſo KANSA.) Many plates, and legendary particulars and ſpeculations, are given of Kriſhna and his extravagant hiſtory, in the work whence this article is taken, to which we refer the reader deſirous of farther information thereon.

The name of Kriſhna is variouſly written in European languages: Criſhna, Criſtna, Kruſtna, Kiſhna, Kiſtnah, Quixena, Kiſhen, &c. and is differently pronounced in different provinces of India.

KRISS. See CREESE.

KRITANTA, a name of Yama, the Hindoo Pluto. Kritamala is the name of a river connected with the hiſtory of this perſonage under ſome of his forms, and may have a common origin. See YAMA.

KRITIKA, in *Aſtronomy*, the Hindoo name of the Pleiades, reſpecting which their poetical mythologiſts have related many pleaſing tales, every thing connected with Hindoo ſcience being veiled in allegories. This conſtellation perſonified is, as one of the manſions of the moon, or Soma (ſee SOMA), fabled to be a beautiful nymph receiving the inconſtant deity in his nocturnal wanderings. (See NAKSHATRA.) The ſix Kritikas are feigned alſo to have been the wet-nurſes of *Kartikya*, as mentioned under that article. Other legends make them the wives of the Riſhis, who, among other characters, are made to ſhine the ſeven bright ſtars in Urſa major; but being unequal in number, farther fables became neceſſary to reconcile the difference, and an aſtronomical legend is related in the Hindoo Pantheon, affording a ſpecimen of the manner in which the Brahmans have buried, in mythological fictions, hiſtorical or ſcientific facts, and of the coincidence of thoſe fictions with the tales of weſtern fabuliſts. "It is related that Agni, or Pavaka, the ardent deity of fire (ſee PAVAKA), was charitably and gallantly diſpoſed to communicate a portion of his warmth to theſe ladies, wives of the frozen Riſhis; and ſituated as they were in the arctic circle, their complacency to ſuch a comfortable ſuitor is not ſurpriſing. But it is ſaid that he had not, in fact, complete ſucceſs, for that his wife (ſee SWAHA), dreading the reſentment of the holy Riſhis, aſſumed ſucceſſively the ſhape and countenance of each of their deſirable wives, and thus perſonifying them, ſatisfied her huſband's ardour. Arundhati, however, the wife of Vaſiſhta (ſee VASISHTA) having always been exemplary as to holineſs and ſanctity, was not ſuſpected on this unlucky occaſion; but the other ſix Riſhis, in conſequence of ſcandalous reports, not only diſmiſſed their ſparkling ſpouſes, but, like great bears, drove them out of the arctic circle, and they now ſhine the Pleiades.

It would appear that they had qualified themſelves for wet-nurſes, and accordingly nurſed young *Kartikya*, as noticed under that article, or were entruſted with his education, and were placed by him in the zodiac." In this wild tale we ſee an alluſion to the diſappearance of the ſeventh ſtar of the Pleiades. Arundhati, the wife of Vaſiſhta, is retained by him. The ſtar called by his name is in lat. 61° N. and ſhe is the ſmaller ſtar near him. They are proverbial for conſtancy; and aſtrologers carefully watch their motion, as their influences are variouſly modified: whatever newly married couple ſee them in an auſpicious conjunction or poſition, are ſurely to live happily together for a hundred years. Puerile as theſe ſtories appear, they are matched by others that we have been taught to liſten to with more attention perhaps than they deſerve. "The Pleiades, acording to mythologiſts in the weſt, were entruſted likewiſe with the education of Bacchus (who, acording to Macrobius, was the ſame with Mars, or Kartikya), and on that account he tranſlated them into heaven. According to thoſe writers they ſuffered a real bodily pollution; and the ſeventh, ſays Hyginus (Poet. Aſtro. p. 471.) left her ſiſters and fled to the regions of the heavens: and this is the Arundhati of the Hindoos. Hin. Pan. p. 88.

KRIVENA, in *Geography*, a town of European Turkey, in Bulgaria, on the Danube; 33 miles E. of Nicopoli.

KROBE, or SULCAVA, a town of the duchy of Warſaw; 32 miles S. of Poſen.

KROEPELEIN, a town of the duchy of Mecklenburg; 12 miles W. of Roſtock.

KROKEK, a town of Sweden, in Eaſt Gothland; 11 miles N.E. of Nordkioping.

KROKINOW, a town of Samogitia; 22 miles E. of Roſienne.

KROKY, a town of Samogitia; 18 miles S.E. of Roſienne.

KROLENDORF, a town of Auſtria; 16 miles E. of Steyr.

KROMAYER, JOHN, in *Biography*, a learned German divine, who acquired a very high reputation as a preacher, and was appointed chaplain to the court of the ducheſs dowager of Saxony. The duke Weimar afterwards nominated him ſuperintendant-general of the churches in that diſtrict, and the ſenate of that city choſe him as paſtor of their church. He died at the age of ſixty-ſeven. He was author of "Harmonia Evangeliſtarum;" "Hiſtoriæ Eccleſiaſticæ Compendium;" "Specimen Fontium, Scripturæ ſacræ apertorum;" "A Paraphraſe on the Prophecy and Lamentations of Jeremiah," &c. &c.

KROMAYER, JEROME, nephew of the preceding, was brought up chiefly at Leipſic, where he took his degree of M.A. in 1632. From that time he became lecturer on logic, rhetoric, natural philoſophy, and aſtronomy. In 1643, he was appointed profeſſor of hiſtory and oratory in the leſſer college of princes, at Miſnia. Four times he was called to the office of dean of the univerſity; twice he preſided as pro-chancellor, at the creation of maſters, once he was choſen rector; and in the leſſer college he was honoured three times with the poſt of provoſt. He filled ſeveral other high poſts in the univerſity with great advantage to the place, and died at the age of fifty, in the year 1670. He was author of "Commentaries on divers Parts of the Holy Scriptures;" of an "Eccleſiaſtical Hiſtory," and other works.

KROMI, in *Geography*, a town of Ruſſia, in the government of Orel; 16 miles S. of Orel.

KROMME, a river of Africa, forming a bay at its mouth in the Indian ſea, S. lat. 34° 6′.

KRONENBURG. See CRONENBURG.

KRONHAMN, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 62° 25′. E. long. 17° 26′.

KRONOBY, a town of Sweden, in the government of Ulea; ſeven miles S. of Gamla Karleby.

KRONORN, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 63° 27′. E. long. 19° 8′.

KRONOTSKOI Noss, a cape in the northern part of Kamtſchatka, about which the land is very high. N. lat. 54° 42′. E. long. 162° 17′.

KROPPA, a town of Sweden, is the province of Warmeland; 30 miles N.E. of Carlſtadt.

KROPPENSTADT, a town of Weſtphalia, in the principality of Halberſtadt; nine miles E.N.E. of Halberſtadt.

KROPSUNKARI, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 65° 10′. E. long. 25° 6′.

KROREN, a lake of Norway; 33 miles N.W. of Chriſtiania.

KROSKA, a town of Servia, on the right bank of the Danube; 10 miles S.S.E. of Belgrade.

KROSNO, a town of Auſtrian Poland, in Galicia; 25 miles N.W. of Sanock.

KROTTAU, a town of Bohemia, in the circle of Boleſlau; 46 miles E. of Dreſden.

KROUNA, a town of Bohemia, in the circle of Chrudim; 12 miles S.S.E. of Chrudim.

KROUSTA, in the *Ancient Muſic*, is a term purely Greek, implying the third ſpecies of muſical inſtruments, which the Latins term *pulſatilia*, and the Engliſh, *inſtruments of percuſſion*; their tones being produced by beating with the hand, as drums, tabours, timbrels, &c. or with ſmall ſticks or iron rods, as the pealtry, cymbal, and dulcimer, or by being ſtruck with hammers, as bells, gongs, pianofortes, &c.

Repreſentations and deſcriptions of all theſe inſtruments may be ſeen in Luſcinius, Merſennus, Kircher, Bonanni, Laborde, and in almoſt all hiſtories of muſic.

KROZE, in *Geography*, a town of Samogitia; 20 miles N.W. of Roſienne.

KRUCKEN, a town of Pruſſia, in Natangen; 15 miles S.E. of Brandenburg.

KRUDOSEL, a town of Perſia, in the province of Ghilan; 12 miles S.E. of Reſhd.

KRUDZEWO, a town of Lithuania, in the palatinate of Wilna; 16 miles S.E. of Wilna.

KRUG, LOUIS, in *Biography*. See GERMAN *School of Engraving*

KRUGLIKIN, in *Geography*, a town of European Turkey, in Moldavia; 12 miles S. of Choczim.

KRUMPACH, a town of Auſtria; 20 miles S. of Ebenfurth.

KRUPA, a town of Poland, in Volhynia; 60 miles E. of Lucko.

KRUPKA, a town of Lithuania, in the palatinate of Minſk; 60 miles N.E. of Minſk.

KRUPULIK, a town of European Turkey, in Macedonia; 84 miles N.N.W. of Saloniki.

KRUSCHIN, a town of Pruſſia, in the palatinate of Culm; 24 miles E. of Culm.

KRUSZWICA, or KRUTSWICZA, a town of Poland, in the palatinate of Brzeſc; 28 miles W. of Brzeſc. This place deſerves to be recorded, as it was the birth-place of

Piaſt, who, occupying the ſtation of a private citizen, was elected king of Poland in 842.

KRUTAIA, a town of Ruſſia, in the government of Tobolſk, on the Irtiſch; 36 miles N. of Omſk.

KRUTEN, a town of Courland; 32 miles S.S.W. of Goldingen.

KRUTOGORSKOI, an oſtrog of Ruſſia, in Kamtſchatka. N. lat. 54° 50′. E. long. 155° 54′.

KRUWOTOW, a town of Auſtrian Poland, in Galicia; 22 miles S.E. of Halicz.

KRYLOW, a town of Galicia; 10 miles N. of Belz.

KRYOLITE, or CRYOLITE; *Alumine fluatée alcaline,* Haüy. The colour of this mineral is ſnow-white, ſometimes browniſh-yellow, by the admixture of a ſmall portion of iron ochre.

It occurs maſſive, generally in angular fragments with faint ſtriæ, indicating a rhomboidal nearly cubical nucleus; ſecondary forms have not yet been obſerved.

Its luſtre is vitreous, often inclining to pearly.

Fracture imperfectly foliated, ſmooth in one direction, and uneven in another.

It is tranſlucent even in fragments of conſiderable ſize; ſmall pieces approach to tranſparent, and when immerſed in water for ſome time become completely ſo.

It is ſoft, ſo as to be ſcratched by fluor, particularly in the principal direction of the laminæ.

It is eaſily frangible.

The ſpecific gravity of kryolite is 2.928; that of a ſmall fragment immerſed in water for twelve hours was 2.941, Schumach. Haüy ſtates it to be 2.949; Karſten 2.957; and Andrada 2.969.

Before the blow-pipe it ſoon melts, (though certainly not with ſufficient eaſe or rapidity to warrant the incorrect appellation of kryolite, ſuppoſed to be derived from that circumſtance;) and is afterwards converted into a white opaque pearly ſlag, of a ſlightly alkaline taſte. With borax an opaque pearl is formed, which, ſome time after cooling, ſhews a degree of deliqueſcence. It is not operated on by the muriatic and nitric acids, but is diſſolved by concentrated ſulphuric acid under developement of greyiſh-white vapours that corrode glaſs.

Profeſſor Abildgaard, who was the firſt who analyzed this mineral, which had before been miſtaken for a ſubſtance related to barytes, found it to be compoſed of alumine and fluoric acid. Vauquelin, who examined it after him, obtained the ſame reſults, and both chemiſts accounted for the ſmall proportion of alumine which they found, by the poſſibility that part of the earth might have been carried off by the ſulphuric acid. Klaproth was enabled to aſſign the true cauſe of the apparent diſproportion by the diſcovery of a conſiderable proportion of ſoda, till then but little known as an ingredient of ſtony ſubſtances. His analyſis, and the ſubſequent one by Vauquelin, have given the following reſults.

	Klaptr. Beitr.	Vauquelin A. de Ch.
Alumine	24	21
Soda	36	32
Fluoric acid and water	40	47
	100	100

The only place where kryolite has been hitherto found is Greenland; but nothing is known reſpecting its geognoſtic ſituation. Werner, we are told, has adopted this mineral as a ſpecies of a genus of his, called the *Hallite* genus, which is to comprehend ſuch ſubſtances as bear great reſemblance to foſſil ſalts, without poſſeſſing all the requiſite characters to entitle them to be enumerated as ſuch.

KRZEMIEN, in *Geography*, a town of the duchy of Warſaw; 34 miles S.W. of Bielſk.

KRZEMINIEC, a town of Poland, in Volhynia; 40 miles S.S.E. of Lucko.

KRZEPICE, a town of Poland, in the palatinate of Cracow; 52 miles N.W. of Cracow.

KTEIPHE, a town of Syria, anciently called *Adariſi*; the laſt town in the pachalic of Damaſcus, encompaſſed with walls, as a defence againſt the Arabs; 22 miles N.E. of Damaſcus.

KUAN, a town of Perſia, in Farſiſtan; 16 miles S.S.W. of Schiras.

KUAR. See KAWAR.

KUASHKIR, a town of Imiretta; 21 miles S.S.W. of Cotatis.

KUAVER, a town of Perſia, in Ghilan; 90 miles N.W. of Reſhd.

KUBA, a town of Perſia, in Schirvan; 30 miles S. of Derbend.

KUBAN. See CUBAN.

KUBBET-CHIAR, a town of Arabia, in Yemen; 44 miles N. of Chamir.

KUBBOOLEAH, a town of Hindooſtan, in the ſubah of Moultan; 45 miles E. of Moultan.

KUBENSKOI, a town of Ruſſia, in the government of Vologda, on a lake of the ſame name, about 40 miles long and eight broad; 16 miles N.W. of Vologda.

KUBLICZ, a town of Lithuania; 15 miles S.E. of Braclaw.

KUBUCHANSKOI, a town of Ruſſia, in the government of Irkutſk, on the Amul; 86 miles S.E. of Doroninſk.

KUCHAVIE, a town of Poland, in the palatinate of Kiev; 60 miles N.N.W. of Kiev.

KUCHTA, a town of Pruſſia, in the province of Olonetz; 52 miles N. of Povonetz.

KUCKENDORF, a town of Pruſſia, in Ermeland; 24 miles S.W. of Heilſberg.

KUDA, a town of Mingrelia, on the coaſt of the Black ſea; 10 miles S.S.E. of Ilori.

KUDACOIL, a town of Bengal; 26 miles S.E. of Doeſa.

KUDAMIA, a town of Egypt, on the E. branch of the Nile; 20 miles N. of Cairo.

KUDASEISKO, a town of Ruſſia, in the government of Tobolſk. N. lat. 65° 15′. E. long. 81° 14′.

KUDDA, a town of Hindooſtan, in Viſiapour; 20 miles N. of Poonah.

KUDDANO, a town of Africa, in Bergoo; 65 miles N.W. of Wara.

KUDEEL, a town of Hindooſtan, in Bahar; 20 miles W. of Ramgur.

KUDEZEVA, a town of Ruſſia, in the government of Kolyvan; 28 miles S.E. of Kuznetſk.

KUDINSKA, a town of Ruſſia, in the government of Irkutſk; 32 miles N. of Irkutſk.

KVETLI, a town of Turkiſh Armenia; 27 miles W.S.W. of Akalziké.

KUFFSTEIN, or KOPSTEIN, a town of the county of Tyrol, near the borders of Bavaria, on the Inn; built at the foot of a ſtupendous rock, on which is a caſtle, that ſerves for a fortreſs; 32 miles E.N.E. of Inſpruck. N. lat. 47° 32′. E. long. 12° 14′.

KUGNA, a river of Beſſarabia, the waters of which begin to expand into a lake at Tobak, 30 miles from its union with the Danube.

KUHDEAL, a town of Bengal; 34 miles W. of Ramgur

KUHESTEK, a ſea-port of Perſia, at the entrance of the Perſian gulf; 36 miles W. of Ormus.

KUHISAR, a town of Caramania; 15 miles N.W. of Akſerai.

KUHMOIS, a town of Sweden, in the province of Tavaſtland; 39 miles N.N.E. of Tavaſthus.

KUHMONIEMI, a town of Sweden, in the government of Ulea; 50 miles E.S.E. of Cajana.

KUHN, JOACHIM, in *Biography*, a learned critic, ſon of a rich merchant at Gripſwalde, in Pomerania, was born in 1647. He ſtudied at the univerſity of Jena, and after viſiting ſeveral parts of Germany, was appointed, in 1669, principal of the college at Oetingen in Suabia. In 1676, he was choſen profeſſor of Greek and Hebrew at Straſburg. He died in 1697, and after his death appeared his "Quæſtiones Philoſophiæ ex ſacris Veteris et Nov. Teſt. aliiſque ſcriptoribus." He is well known in the learned world by his editions of Ælian, Pauſanias, and Diogenes Laertius.

KUHNAU, JOHANN, the ſon of a fiſherman of Gryſingen, a town near Altenberg, on the borders of Bohemia, four miles diſtant from Dreſden, was a learned and ſkilful muſician of the higher claſs, among thoſe who have formed and eſtabliſhed the German ſchool of muſic, particularly in the eccleſiaſtical ſtyle, and in organ playing.

In the year 1684, he was organiſt of the church of St. Thomas at Leipſic; and while in that ſtation, he wrote a diſſertation "De juribus circa muſicos eccleſiaſticos," and afterwards defended it againſt the cenſures of his adverſaries.

In 1689, he publiſhed leſſons for the harpſichord in two volumes, and in 1696 ſeven ſonatas, entitled Clavici Fruchte, fruits of the keys or of keyed inſtruments; and in 1700, ſix ſonatas, entitled Bibluche Hiſtori, a bible narrative. Here Luſtig of Groningen, in a Dutch treatiſe entitled "Inleiding tot de Muſikkunde," takes notice of this work, and ſays that it is a lively repreſentation, in muſical notes, of David manfully combating Goliah. In the ſame year (1700) Kuhnau, to ſilence the clamours of ſome ignorant men of his profeſſion, who, envying his merit and reputation, had libelled him, he wrote a ſmall tract, which he entitled "The Muſical Quack, or Mountebank." In the ſame year (1700) Kuhnau was appointed *director muſices* of the univerſity of Leipſic, in which ſtation he died in 1722, in the 63d year of his age; and was ſucceeded in that honourable poſt by John Sebaſtian Bach. Kuhnau was celebrated immediately after his death in a Latin diſcourſe by a count palatine and magiſtrate of Merſeberg for his ſkill, not only in muſic, but theology, law, eloquence, poetry, foreign languages, algebra, and mathematics.

Mattheſon, in his life of Handel, as the higheſt praiſe he could beſtow on his performance, ſays, that he was even more powerful on the organ than the famous Kuhnau of Leipſic, who was then (in Handel's younger days) regarded as a prodigy.

KUHNFELD, in *Geography*, a town of Bavaria; 17 miles S.S.W. of Bamberg.

KUHNIA, in *Botany*, ſo named by Linnæus, after his pupil Adam Kühn, a native of Pennſylvania, who travelled to Upſal for the ſole purpoſe of improving himſelf in natural hiſtory, and brought this plant with him for the examination of Linnæus; in whom it excited conſiderable attention, as having diſtinct anthers, though in every other reſpect appearing to belong to the claſs *Syngeneſia*. Arduino, who had obtained the ſame from Siberia, had referred it to *Eupatorium*, noting the peculiar ſtructure of its anthers, which he deſcribes as "divided into two or three bodies," or ſets. He further adverts to the feathery ſeed-down, as differing from *Eupatorium*; and Linnæus remarks that the leaves, being alternate, afford another diſtinction, as to habit. On theſe grounds *Kuhnia* was eſtabliſhed as a genus in *Pentandria Monogynia*. So it remained till Gærtner, in his 2d vol. p. 411, having acquired another ſpecies, which he miſtook for the original, and finding its anthers firmly united into a tube, took upon him to ſay that the Linnæan character of *Kuhnia* was "altogether fictitious," and that the genus, differing from *Eupatorium* in having an evidently feathery ſeed-down, ſhould be referred to the *Critonia* of Browne; ſee Browne's Jamaica, 490 and 314. Now this *Critonia* is *Eupatorium Dalea* of Linnæus, a true *Eupatorium*, with oppoſite leaves and a briſtly ſeed-down, rough indeed, but by no means feathery, as is abundantly evident in Browne's own ſpecimen now before our eyes. But the author laſt mentioned deſcribes it "*pappo ramoſo*," which it ſeems Gærtner adopted upon truſt. We are well aware that the diſtinction between feathery and rough ſeed-down, is only a difference in degree; but by this many good genera are diſcriminated, and upon it, as a technical character, *Kuhnia* muſt chiefly depend; for more recent examinations have found other examples of diſtinct anthers in compound flowers, witneſs ſeveral ſpecies of *Tuſſilago*, and one of *Siegeſbeckia*; and as the genus in queſtion has, according to the above authors, one ſpecies with united, and another with more or leſs diſtinct anthers, it is beſt placed with its natural allies in the *Syngeneſia*, to which claſs we ſhall follow Willdenow in removing it.—Linn. Gen. 95. Schreb. 129. Willd. Sp. Pl. v. 3. 1772. Mart. Mill. Dict. v. 3. Juſſ. 177. Lamarck. Dict. v. 3. 370. Illuſtr. t. 126. (Critonia; Gærtn. t. 174; but not Browne. Jam. 490.)—Claſs and order, *Syngeneſia Polygamia æqualis*. Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* oblong, imbricated; ſcales linear-oblong, erect, unarmed, unequal; the outermoſt ſharpeſt and ſomewhat ovate; innermoſt bluntiſh, ſlightly membranous at the end. *Cor.* compound, uniform, diſcoid; florets from 10 to 15, all equal, perfect, fertile, of one petal, funnel-ſhaped, with a regular, five-cleft, erect border. *Stam.* Filaments five, capillary, very ſhort; anthers oblong, either all united into one tube, or into two or three ſets, or entirely diſtinct, each opening at the top, with a projecting lip. *Piſt.* Germen oblong, furrowed; ſtyle thread-ſhaped, longer than the corolla, cloven down to the top of the anthers; ſtigmas two, ſlightly club-ſhaped, bluntiſh, ſpreading. *Peric.* none, except the permanent calyx. *Seeds* ſolitary, oblong, angular, rough; down ſeſſile, long, feathery. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Down feathery, ſeſſile. Calyx imbricated, oblong. Style prominent, cloven half way down, divaricated.

Obſ. If the above characters be finally judged ſufficient to eſtabliſh *Kuhnia*, the word *feathery* muſt be ſtruck out of the character of the ſeed-down in *Eupatorium*; ſee that article.

1. K. *eupatorioides*. Linn. Sp. Pl. 1662. Linn. fil. Dec. 21. t. 11. (Eupatorium alterniſolium; Ard. Spec. Alt. 40. t. 20.)—Leaves lanceolate, toothed, ſtalked. Anthers ſeparate.—Native of Pennſylvania, from whence ſeeds were brought to the Upſal garden in 1762, and the plants they produced, kept in the green-houſe, flowered the ſame year in November. *Root* fibrous, perennial. *Stems* ſeveral, herbaceous, a foot and half high, erect, round, leafy, mi-

nutely downy, bearing a few ſhort axillary branches. *Leaves* alternate, on ſhort channelled bordered footſtalks, lanceolate inclining to ovate, near two inches long, pointed, ſtrongly and variouſly toothed, decurrent at the baſe, ſomewhat triply nerved, green, roughiſh, or minutely downy, on both ſides, with pale rib and veins. *Flowers* corymboſe, terminating the ſtem and branches, white, with a ſtriated roughiſh calyx.—We find no reaſon to doubt Arduino's Siberian plant, in the Linnæan herbarium, being the ſame ſpecies with that from the Upſal garden.

2. K. *Critonia*. Willd. n. 2. (Critonia Kuhnia; Gærtn. v. 2. 411. t. 174; the ſynonyms wrong.)—Leaves linear, nearly entire, ſeſſile. Anthers united.—Native of Pennſylvania and Virginia, according to Willdenow, who had it alive. *Root* perennial. *Stem* round, ſmooth. *Leaves* an inch and half long, attenuated at each end, ſeſſile, alternate, almoſt perfectly entire, ſmooth. *Corymbs* of few flowers, divaricated, at the top of the ſtem and branches. *Willd.*

Neither of theſe plants is known in the gradens of England. S.

KUHU, in *Mythology*, is the Indian goddeſs of the day. It is moſt likely one of the many names of Parvati; but reſpecting her very little has yet been made known.

KUIA, in *Geography*, a town of Ruſſia, on the coaſt of the White ſea, in the government of Archangel; 20 miles N. of Archangel.

KUIATZKAIA, a town of Ruſſia, in the government of Irkutſk, on the Dzonmuren, built in 1728 for carrying on commerce between the Ruſſians and Chineſe; it conſiſts of two parts, one inhabited by the people of each country; 44 miles N. of Irkutſk. N. lat. 52° 50′. E. long. 105° 14′.

KUINUC, a town of Natolia; 20 miles N. of Eſkiſhehr.

KUIVAINEMI, a town of Sweden, in the government of Ulea; 20 miles E S.E. of Tornea.

KUIVASMAKI, a town of Sweden, in the government of Waſa; 106 miles S.E. of Waſa.

KUKA, a town of Sweden, in the government of Abo; 32 miles S.E. of Biorneborg.

KUKALAR, a town of Sweden, in the government of Abo; 38 miles E. of Abo.

KUKERPEH, a town of Natolia; 32 miles W. of Boli.

KUKI, a town of Japan, in the iſland of Niphon; 70 miles N. of Meaco.

KUKKAISTENMAA, a ſmall iſland on the E ſide of the gulf of Bothnia. N. lat. 60 53′. E. long. 21° 1′.

KUKU, an extenſive country of Africa, bordering on the deſert of Libya, and partaking of its nature. It lies to the N.E. of Tagua and Bornou, and on the N.E. joins to Al Wahat. Its capital of the ſame name is ſituated at 20 journies to the N. of Kauga, and about 250 miles N.E. of Bornou. N. lat. 21° 45′. E. long. 24° 45′. A river runs from N. to S. by Kuku, and is received into a lake at a great diſtance from it; perhaps the lake of Kauga; and the river itſelf may form a part of that, which is ſaid to run near Angini, a city eight days' journey from Matthan, and ſix from Tagua, and towards Nubia and the Niger; conſequently to the S.E. of Matthan, and apparently not far to the northward of Kauga.

KUKUS, a town of Bohemia, in the circle of Koniggingratz, famous for its baths; 11 miles N. of Koniginggratz.

KUL, or KOOL, a Turkiſh term, probably ſignifying a *ſlave* or *ſervant*.

Meninſky tells us, the name is given to all the ſoldiers in the Ottoman empire, particularly to thoſe of the grand ſeignior's guard, and the infantry. The captains of the infantry, and thoſe who command the guards, are called *kûl zabytlers*, and the ſoldiers of the guard *kapu kûlleri*, *i. e. ſlaves of the court*. Others inform us, that all who hold any places depending on the crown, or receive wages from it, in a word, all who are, in any meaſure, the grand ſeignior's ſervants, take the title of *kûl*, or *kool*, *i. e. ſlave*, as more creditable than that of ſubject; even the grand vizir and the baſhaws value themſelves upon it. A kûl, or ſlave, of the grand ſeignior, has authority to abuſe any who are only his ſervants; but a ſubject, who ſhould affront a kûl, or ſlave, would be ſeverely puniſhed. The kûl's are entirely devoted to the will of the grand ſeignior, and look on it as a kind of martyrdom, that merits heaven, when they die either by his order, or in the execution of his commands.

KULALI, in *Geography*, an iſland of Ruſſia, in the Caſpian ſea. N. lat. 45 .

KULB, a town of Auſtria; 10 miles S.S.W. of St. Polten.

KULBAEVA, a town of Ruſſia, in the government of Upha; 48 miles E. of Menzelinſk

KULDATZKOI, a town of Ruſſia, in the government of Irkutſk, on the borders of China; 80 miles S.W. of Seleginſk.

KULEBAKINA, a town of Ruſſia, in the government of Irkutſk, on the Lena; 20 miles S. of Kirenſk.

KULEBRUN, a town of Pruſſia, in the province of Oberland; 12 miles S. of Elbing.

KULEBUGAGE, a town of Aſiatic Turkey, in Caramania; 40 miles N. of Tarſus.

KULICHOW, a town of Auſtrian Poland, in Galicia; 10 miles N.N.E. of Lemberg.

KULING, a town of Grand Bucharia, in the kingdom of Balk; 30 miles N.E. of Balk.

KULLA, DAR, a ſmall country of Africa, ſituated to the S.W. of Dar-Fûr. The natives of Kulla are partly negroes, and partly of a red or copper colour. Their language is naſal, but very ſimple and eaſy. It is ſaid they worſhip idols. They are very cleanly, to which the abundance of water in their country contributes, and they are remarkable for honeſty and even punctilious in their tranſactions with the Jelabs. They have ferry boats on the river, which are impelled partly by poles, partly by a double oar, like our canoes. Slaves are obtained in Dar-Kulla, either by violence, or by the following method. The ſmalleſt treſpaſs on the property of another is puniſhed, in this country, by enſlaving the children or young relations of the treſpaſſer. The leaſt offence in this way is followed, after previous proof, by the forfeiture of a ſon, daughter, nephew, or niece of the offender to the perſon aggrieved. Accidents of this kind are continually happening, and produce a great number of ſlaves. A commiſſion to purchaſe any thing in a diſtant market, not exactly fulfilled, is attended with a like forfeiture. But above all, if a perſon of note die, the family have no idea of death as a neceſſary event, but ſay that it is effected by witchcraft. To diſcover the perpetrator, the poorer natives, far and near, are obliged to undergo expurgation by drinking a liquor, which is called in Dar-Fûr "kilingi," or ſomething that reſembles it; and the perſon on whom the ſuppoſed ſigns of guilt appear, may either be put to death, or ſold as a ſlave. The people of Kulla are ſtrangers to venereal complaints, but are ſubject to the ſmall-pox. In that part of the country that is viſited by the Jelabs, there is a king; the reſt is occupied by ſmall tribes, each of which is ruled by the chief who happens to have moſt influence at the time. The "Kumba," or pimento tree, is found there in ſuch plenty, that a rotal or pound of ſalt will purchaſe four or five mid, each mid about a peck. The trees are ſo large, from the quantity of water and deep clay, that canoes are hollowed out of them of ſufficient capacity to contain 10 perſons. The Jelabs of Bergoo and Fûr ſometimes journey to this country in order to procure ſlaves. The chief article they carry hither is ſalt, 12 pounds of which are eſtimated as the price of a male ſlave, about 12 or 14 years of age. A female brings three pounds more, whimſically computed by the natives, as a pound for the girl's eyes, another for her noſe, and a third for her ears. If copper be the medium, two rotals are eſteemed equal to four of ſalt. "Hoddûr," a large ſort of Venetian glaſs beads, and tin, are in great eſtimation. Of the latter they make rings, and other ornaments. Brown's Travels in Africa, p. 30, 8vo.

Kulla, a town of Sweden, in the province of Upland; 17 miles N.E. of Stockholm.—Alſo, a town of Sweden, in Abo; 10 miles E.S.E. of Biorneborg.—Alſo, a town of Hindooſtan, in Guzerat; 60 miles S.W. of Gogo.

KULLAPOLLAM, a town of Hindooſtan, in the circar of Guntoor; 32 miles N.N.E. of Mootapilly.

KULLAUT, a town of the kingdom of Candahar; 55 miles E. of Candahar.

KULLEN, a town of Sweden, in the province of Skone; 15 miles N. of Helſingborg.

KULLERWAH, a town of Hindooſtan, in Gurry Mundella; 35 miles E. of Mundella.

KULLO, a country of Africa, E. of Konkodoo.

KULLOWGUY, a town of Africa, in the country of Kullo. N. lat. 12° 24'. W. long. 8 28'.

KULM. See Culm.

Kulm, a town of Grand Bucharia, in the country of Balk; 30 miles N.E. of Balk.—Alſo, a town of Bohemia, in the circle of Leitmeritz; 9 miles S.W. of Kamnitz.—Alſo, a mountain of Dalmatia; 15 miles N. of Raguſa.

KULMALAX, a town of Sweden, in Tavaſtland; 31 miles N. of Tavaſthus.

KULMEETA, a town of Algiers, on the left ſide of the Shellif, near its mouth; 6 miles N. of Muſtygannim.

KULSAGE, or Sugar-*Town*, a little Cherokee town in the vale of Keowe.

KULSI, a river of Ruſſia, which takes its riſe in the government of Archangel, and falls into the White ſea, in the diſtrict of the town of Meſenſk.

KU-LONG-TCHAT, a town of the north coaſt of the iſland of Formoſa. N. lat. 25° 16'. E. long. 121° 34'.

KULSUTANSKOI, a town of Ruſſia, in the government of Irkutſk; 100 miles S.W. of Nertchinſk.

KUMADER, a town of Japan, in the iſland of Niphon; 10 miles N.E. of Moriſa.

KUMALA, a town of Sweden, in the province of Tavaſtland; 65 miles N.N.E. of Jamſio.

KUMANO, a town of Japan, in the iſland of Niphon; 6 miles N.E. of Ixo.

KUMANT, a town of Japan, in the iſland of Niphon; 70 miles N.N.W. of Meaco.

KUMBO, a kingdom of Africa, near the mouth of the Gambia.

KUME Jacub, a town of Egypt; 16 miles S. of Girgé.

KUMEGAN, a town of Pruſſia, in the province of Samland; 16 miles N.W. of Konigſberg.

KUMARA, in *Hindoo Mythology*, a name of Kartikya, which ſee.

KUMBA, and Nikumba, names of fiends, in Hindoo mythological legends, ſaid by ſome accounts to have been deſtroyed by Kriſhna; according to others, by Rama.

KUMI, in *Geography*, an iſland in the Eaſt Indian ſea, the moſt weſterly in a cluſter of ſix or ſeven others, from which it is ſeparated by channels from eight to ten leagues wide, between Formoſa and Japan, ſeen by M. la Perouſe, who did not land upon it. Theſe iſlanders are neither Japaneſe nor Chineſe, but ſeem to be a mixture of both people. They were covered with a ſhirt and a pair of cotton drawers. Their hair, tucked up on the crown of the head, was rolled round a bodkin, which appeared to the voyagers to be gold. Each of them had a dagger, the handle of which was alſo gold. Their canoes were made of hollowed trees, and they were awkward in the management of them. Veſſels that had been long at ſea might procure wood, water, and proviſions in this iſland, and alſo trade here in a ſmall degree. But as it is ſcarcely three or four leagues in circumference, its population does not probably exceed four or five hundred. N. lat. 24° 33'. E. long. 123° 16'. Perouſe's Voyage, vol. ii.

KUMINGE, a town of Sweden, in the government of Ulea; 11 miles N.E. of Ulea.

KUMISS, or Koumiſs, a kind of liquor made in Tartary, uſed by the natives as their common beverage, and often ſerving them inſtead of all other food. It is ſaid to be ſo ſalutary and nouriſhing, that the Baſchkirs, though emaciated in winter, return to the uſe of it in ſummer, and become ſtrong and fat. The Ruſſians have borrowed it from the Tartars, and uſe it medicinally. It is made with fermented mare's milk, according to the following receipt, communicated by Dr. Grieve in the Edinburgh Philoſophical Tranſactions, vol. i. p. 181. as he obtained it from a Ruſſian nobleman, who viſited that part of Tartary where it is made, for the ſake of the medical uſe of it:—"Take of freſh mare's milk, of one day, any quantity; add to it a ſixth part of water, and pour the mixture into a wooden veſſel; uſe then, as a ferment, an eighth part of the ſoureſt cow's milk that can be got: but at any future preparation, a ſmall portion of old koumiſs will better anſwer the purpoſe of ſouring; cover the veſſel with a thick cloth, and ſet it in a place of moderate warmth; leave it at reſt twenty-four hours, at the end of which time the milk will have become ſour, and a thick ſubſtance will be gathered on the top: then with a ſtick, made at the lower end in the manner of a churn-ſtaff, beat it till the thick ſubſtance above-mentioned be blended intimately with the ſubjacent fluid. In this ſituation, leave it again at reſt for twenty-four hours more; after which pour it into a higher and narrower veſſel, reſembling a churn, where the agitation muſt be repeated as before, till the liquor appear to be perfectly homogeneous; and in this ſtate it is called koumiſs, of which the taſte ought to be a pleaſant mixture of ſweet and ſour. Agitation muſt be employed every time before it be uſed."—To this detail of the proceſs the nobleman ſubjoined, that, in order to obtain milk in ſufficient quantity, the Tartars have a cuſtom of ſeparating the foal from the mare during the day, and allowing it to ſuck during the night: and when the milk is to be taken from the mare, which is generally about five times a-day, they always produce the foal, on the ſuppoſition that ſhe yields her milk more copiouſly when it is preſent.

To the above method of making koumiſs, our author has added ſome particulars taken from other communications, with which he was favoured by Tartars themſelves. According to the account of a Tartar who lived to the ſouth-eaſt of Orenbourg, the proportion of milk and ſouring ought to be the ſame as above; only, to prevent changing the veſſel, the milk may be put at once into a pretty high and narrow veſſel; and in order to accelerate the fermentation, ſome warm milk may be added to it, and, if neceſſary, more ſouring.—From a Tartar whom the doctor met with at the fair of Macarieff upon the Volga, and from whom he purchaſed one of the leathern bags which are uſed by the Kalmucks for the preparation and carriage of their koumiſs, he learned that the proceſs may be much ſhortened by heating the milk before the ſouring be added to it, and as ſoon as the parts begin to ſeparate, and a thick ſubſtance to riſe to the top, by agitating it every hour or oftener. In this way he made ſome in the doctor's preſence, in the ſpace of twelve hours. Our author learned alſo, that it was common among ſome Tartars to prepare it in one day during ſummer, and that with only two or three agitations; but that in winter, when, from a deficiency of mares' milk, they are obliged to add a great proportion of that of cows, more agitation and more time are neceſſary. And though it is commonly uſed within a few days after the preparation, yet when well ſecured in cloſe veſſels, and kept in a cold place, that it may be preſerved for three months, or even more, without any injury to its qualities. He was told farther, that the acid fermentation might be produced by ſour milk as above, by a ſour paſte of rye flour, by the rennet of a lamb's ſtomach, or, what is more common, by a portion of old koumiſs; and that in ſome places they ſaved much time, by adding the new milk to a quantity of that already fermented; on being mixed with which, it very ſoon undergoes the vinous change.

It was according to the proceſs firſt mentioned, however, that all the koumiſs which the doctor employed in medicine was prepared. It has been found ſerviceable in hectics and in nervous complaints; and our author relates ſome very ſtriking caſes which the uſe of it had completely cured. All thoſe who drank it, our author informs us, agreed in ſaying, that, during its uſe, they had little appetite for food; that they drank it in very large quantities, not only without diſguſt, but with pleaſure; that it rendered their veins turgid, without producing languor; that, on the contrary, they ſoon acquired from it an uncommon degree of ſprightlineſs and vivacity; that even in caſes of ſome exceſs, it was not followed by indigeſtion, headach, or any of the ſymptoms which uſually attend the abuſe of other fermented liquors.

The utility, however, of this preparation as a medicine, ſuppoſing it completely aſcertained, would among us, as our author obſerves, be greatly circumſcribed by the ſcarcity of mares' milk in this country. "Hence," ſays he, inquiries will naturally be made, whether other ſpecies of milk admit of a ſimilar vinous fermentation, and what portion of ſpirit they contain. As theſe have never been the object, however, of my attention, I will here give the ſubſtance of what I have been able to learn from others reſpecting that which is the moſt common, the milk of cows.

"Dr. Pallas ſays, that cow's milk is alſo ſuſceptible of the vinous fermentation, and that the Tartars prepare a wine from it in winter, when mares' milk fails them; that the wine prepared from cow's milk they call *airen;* but that they always prefer koumiſs when it can be got, as it is more agreeable, and contains a greater quantity of ſpirit; that koumiſs, on diſtillation, yields of a weak ſpirit one third; but that airen yields only two ninth parts of its whole quantity, which ſpirit they call *arika.*

"This account is confirmed by Oſeretſkowſky, a Ruſſian, who accompanied Lepechin and other academicians, in their travels through Siberia and Tartary. He publiſhed lately a diſſertation on the ardent ſpirit to be obtained from cow's milk.

"From his experiments it appears, that cow's milk may be fermented with, or even without, ſouring, provided ſufficient time and agitation be employed; that no ſpirit could be produced from any one of its conſtituent parts taken ſeparately, nor from any two of them, unleſs inaſmuch as they are mixed with ſome part of the third; that the milk with all its parts in their natural proportion was the moſt productive of it; that the cloſer it was kept, or, which is the ſame thing, the more difficultly the fixed air is allowed to eſcape during the fermentation, (care being taken, however, that we do not endanger the burſting of the veſſel,) the more ſpirit is obtained. He alſo informs us, that it had a ſourer ſmell before than after agitation; that the quantity of ſpirit was increaſed, by allowing the fermented liquor to repoſe for ſome time before diſtillation; that from ſix pints of milk, fermented in a cloſe veſſel, and thus ſet to repoſe, he obtained three ounces of ardent ſpirit, of which one was conſumed in burning; but that from the ſame quantity of the ſame milk fermented in an open veſſel, he could ſcarcely obtain an ounce."

KUMLA, in *Geography*, a town of Sweden, in the province of Nericia; 7 miles S. of Orebro.—Alſo, a town of Sweden, in Eaſt Gothland; 10 miles S.S.W. of Nordkioping.—Alſo, a town of Sweden, in Sudermanland; 25 miles W. of Stockholm.

KUMLINE, a ſmall iſland in the Baltic, between the continent of Finland and the iſland of Aland, with a town upon it. N. lat. 60° 17'. E. long. 20° 37'.

KUMO, a town of Sweden, in the government of Abo, on a river of the ſame name; 23 miles S.E. of Bjorneborg.

KUMRI, a chain of lofty mountains in Africa, in which are the ſources of the Nile and Bahr Kulla, lying, according to Browne, in N. lat. 7°, and probably running acroſs the continent.

KUMUK, a province bordering on the Caſpian ſea, part of the territory included between the rivers Terek and Kur, and lying between the Terek and Koiſu, comprehends a fertile plain watered by theſe rivers, as well as the Akſai and Kaſma, and the next adjoining mountains to the weſt. It is under the government of ſeveral Kumuk Begs, of whom the two moſt powerful reſide in the cities Akſai and Endors, (called by the Ruſſians Andrewka,) at the foot of the mountains; and is inhabited by the Kumuk and Nogai Tartars, and by Armenian and Georgian merchants, who dwell in the cities. In winter the Leſgians deſcend likewiſe with their herds from the mountains into the plain; for the liberty of doing which they pay a tribute. The Nogai Tartars keep numerous herds, and dwell in moveable felt-huts, near the walls and banks of the rivers and canals. The length of this province is about 11, and the breadth 8, German miles. The Kumuks are vaſſals to Ruſſia.

KUNA, a town of Lithuania; 15 miles S.E. of Braclaw.

KUNASSYR, one of the Kurile iſlands, 150 verſts long, and 50 broad, and entirely ſurrounded by mountains with lofty ſummits; but in the middle of the iſland are low plains. Firs, larches, birch, &c. grow here. At the ſouthern extremity, a flat ſandy beach extends from the lofty mountains, where the ſea brings up a ſpecies of pearl-bearing muſcle in vaſt abundance; ſome of the ſize of a deſert-plate. The iſland has lakes and broad ſtreams that abound with fiſh. It is inhabited by Kurils, who are rated at 41 perſons.

KUNCKEL, John, in *Biography*, a celebrated chemiſt, was born at Huſum, in the duchy of Sleſwick, in the year 1630. He was originally intended for the practice of pharmacy;

macy; but having applied himſelf with equal diligence to the ſtudy of chemiſtry and metallurgy, he obtained great reputation for his ſkill in theſe departments, and was appointed chemiſt to the elector of Saxony. He afterwards went to the court of Frederic William, elector of Brandenburg, with a ſimilar appointment; and ſubſequently to that of Charles XI. king of Sweden, who gave him the title of conſeiller metallique; and, in 1693, granted him letters of nobility, under the name of Kunckel de Loewenſtern. He was elected a member of the imperial Academia Naturæ Curioſorum, under the name of Hermes III. He died in Sweden, in March 1703.

Kunckel laboured in the practical purſuit of chemical knowledge for upwards of fifty years, and obtained an extraordinary ſkill in the art. His patrons defrayed the expence of all the operations which he choſe to undertake; and, as director of the glaſs-works, he had many opportunities of exerciſing his talent of acute obſervation. His theoretical knowledge, however, was very imperfect: for it is allowed that he was altogether deſtitute of the leaſt tincture of philoſophy, and was even ſaid to have been one of the ſearchers for the philoſopher's ſtone. He is now principally known as the diſcoverer of *phoſphorus*, which he prepared from urine, and which bears his name in the ſhops. He was the author of ſeveral works, written in German, in a very bad ſtyle, and with as little method as the reſt of the alchemiſts. His treatiſe "On Phoſphorus" was printed at Leipſic in 1678, and his "Art of Glaſs-making" in 1689. Two or three of his eſſays have been tranſlated into Latin. Eloy. Dict. Hiſt.

KUNDAL, in *Geography*, a town of Bengal; 20 miles S.E. of Comillah.

KUNDALLAH, a town of Hindooſtan, in Dowlatabad; 10 miles E.S.E. of Tooliapour.

KUNDAWILSA, a town of Hindooſtan, in Cicacole; 20 miles S.W. of Cicacole.

KUNDERA, a town of Hindooſtan; 35 miles W. of Poonah.

KUNDJEH, a town of Turkiſh Armenia, on the Euphrates; 65 miles S. of Erzerum.

KUNDOZERSKAIA, a town of Ruſſia, in the government of Archangel; 128 miles S. of Kola.

KUNDRUTCHIA, a town of Ruſſia, in the country of the Coſſacks, on the Donetz; 68 miles N.E. of Azoph.

KUNGIPARA, a town of Hindooſtan, in the ſubah of Delhi; 10 miles S.E. of Tannaſar.

KUNGUR, a town of Ruſſia, and diſtrict of the government of Perm, on the river Sylva; 40 miles S. of Perm.

KUNK, CONGO, or CUNG, a ſea-port town of Perſia, in the province of Lariſtan, on the coaſt of the Perſian gulf, oppoſite the iſland of Kiſhme; 60 miles S.E. of Lar. N. lat. 26° 44′. E. long. 54° 50′.

KUNNERSDORF, a town in the Middle Mark of Brandenburg, remarkable for a battle fought between the Pruſſians and the united forces of the Auſtrians and Ruſſians, Auguſt the 12th, 1759; 3 miles E.N.E. of Francfort on the Oder.

KUNNIPOUR, a town of Hindooſtan, in Benares; 15 miles E. of Merzapour.

KUNOE, one of the Faroer iſlands.

KUNOSY, a town of Lithuania, in the palatinate of Novogrodek; 34 miles E.S.E. of Novogrodek.

KUNOVATSKOI, a town of Ruſſia, in the government of Tobolſk, on the Oby; 80 miles S. of Obdorſkoi.

KUNOW, a town of Poland, in the palatinate of Sandomirz; 16 miles S.S.E. of Radom.

KUNTE, a town of Japan, in the iſland of Xicoco; 18 miles S. of Ijo.

KUNTZEN, a town of Pruſſia, in the province of Samland, on the Curiſch Nerung; 28 miles N. of Konigſberg.

KUNZEN, ADOLPH. CART., in *Biography*, born at Wittemburg in 1720, was an excellent performer on the harpſichord and organ, who in early youth, about the middle of the laſt century, came to England, where his maſterly and powerful manner of treating theſe inſtruments, both as a performer and compoſer, may be ſtill remembered with pleaſure by thoſe who heard him. On his return to Germany, he was appointed organiſt of Lubec, where he died in 1771.

KUOPIO, in *Geography*, a town of Sweden, and capital of Savolax, and that part of Carelia reſerved to Sweden, formed into one province under the appellation of Hoedingedorne of Kuopio. The town ſtands on the weſt ſide of an extenſive lake; 150 miles S.S.E. of Ulea. N. lat. 62° 54′. E. long. 27° 28′.

KUORTANE, a town of Sweden, in the government of Waſa; 52 miles E.S.E. of Waſa.

KUPENKA, a town of Ruſſia, in the government of Voronetz; 128 miles S.S.W. of Voronetz.

KUPERPEH, a town of Natolia; 35 miles W.N.W. of Boli.

KUPFENBERG, a town of Bavaria, in the biſhopric of Bamberg; 32 miles N.E. of Bamberg.—Alſo, a town of Bavaria, in the biſhopric of Aichſtadt; 10 miles E.N.E. of Aichſtadt.

KUPFER NICKEL. See NICKEL.

KUPFERBERG, in *Geography*, a town of Sileſia, in the principality of Jauer; 15 miles S.S.W. of Jauer. N. lat. 50° 40′. E. long. 15° 55′.—Alſo, a town of Bohemia, in the circle of Saatz; 22 miles W.S.W. of Saatz. N. lat. 50° 23′. E. long. 13° 5′.

KUPH, a decayed town of Syria, bearing amongſt its ruins marks of ancient ſplendour. Its houſes are conſtructed of yellow hewn ſtone; the walls are about eighteen inches thick, and are neither faſtened with iron, nor laid in mortar. The houſes are built round courts, and appear like palaces. Croſſes over the doors indicate that they were erected by Chriſtians; and from the ſtyle of architecture, Dr. Pococke ſuppoſes that it was about the fourth or fifth century; 35 miles S.S.W. of Aleppo.

KUPHE, a name given by Guettard to a petrifaction, the body of which is conical, the anterior part blunt, and the poſterior part forked, while the interior is divided into two hollows or tubes.

KUPINATZ, in *Geography*, a town of Croatia; 14 miles E. of Carlſtadt.

KUPISZKI, a town of Lithuania, in the palatinate of Troki; 30 miles S.S.E. of Birza.

KUPLIAGHISI, a town of Natolia; 16 miles S. of Sinob.

KUPPENHEIM, a town of Baden; 3 miles S.S.E. of Raſtadt.

KUPPOREAH, a town of Hindooſtan, in the circar of Sirhind; 50 miles S.W. of Sirhind.

KUPRI, a river of Natolia, which runs into the gulf of Satalia, N. lat. 36° 59′. E. long. 37°.

KUPRIBAZARI, a town of Aſiatic Turkey, in Caramania; 6 miles W. of Satalia.

KUPSINGA, a town of Hindooſtan, in the circar of Gangpour; 10 miles S.S.W. of Gangpour.

KUR, a river of Aſia, the ancient *Cyrus* (which ſee), riſes in the Caucaſian mountains, and purſuing a rapid courſe through Georgia, Schirwan, &c. falls into the Caſpian ſea, 70 miles S.S.W. of Baku. In the vicinity of this river the land is ſubject to inundations, and overgrown with high rich graſs; towards the ſea it is brackiſh and barren, but fertile towards the mountains. About 14 miles upwards from its mouth, the Kur receives from the right the Aras, or ancient Araxes; and there on the left bank is ſituated a large village, named Dſchawat. After its junction with the Aras, the Kur is about 70 fathoms broad, and only ſo far navigable; the rocks in the bed of the river hindering the navigation higher up. At about four German miles from the ſea, it branches out into a number of arms, the northernmoſt and ſouthernmoſt of which are the moſt conſiderable. The iſlands thus formed belong to Schirwan. On the northern main arm lies the town of Sallian, which properly conſiſts of a number of villages extending along the river, and owes its proſperity to the uncommonly productive fiſhery of the Kur; for this river abounds with ſturgeon and other fiſh. Between the Kur and the Terek lies a tract of land, along the Caſpian ſea, extending in length from the 39th to the 44th degree of N. latitude, and of various breadth, though for the moſt part inconſiderable in proportion to its length. This tract contains ſomewhat more than 2500 French ſquare miles, and is divided into three provinces, *viz.* *Kumak*, *Dagheſtan*, and *Shirwan*, of which the firſt is now dependent on Ruſſia, and the two latter on Perſia. See each reſpectively.

KURA, a ſmall iſland in the Caſpian ſea, with ſteep ſhores round it. N. lat. 39°.

KURABAD, a town of Candahar; 8 miles W. of Attock.

KURAGGI, a town of Japan, in the iſland of Niphon; 45 miles N.N.E. of Jedo.

KURCH, a town of Natolia; 34 miles W. of Sinob.

KURDIUM, a town of Ruſſia, in the government of Saratof, on the Volga; 16 miles N.N.E. of Saratof.

KURGAN, a town of Ruſſia, and diſtrict of the government of Tobolſk, on the river Kurgan; 68 miles S.W. of Yalutorovſk.—Alſo, a river of Aſia, which riſes in Khoraſan, and runs into the Caſpian ſea, W. of Aſtarabat.

KURIAT, a town of Arabia, in the country of Oman, at the mouth of a river of the ſame name, which runs into the Arabian ſea, S. of cape Kuriah; 20 miles S.E. of Maſcat.

Kuriat, *Cape*, or *Ras Kuriat*, a cape on the coaſt of Arabia. N. lat. 23° 27'. E. long. 57 50'.

KURJAUN, a town of Hindooſtan, in the circar of Gohud; 25 miles S.W. of Gwalior.

KURIKKA, a town of Sweden, in the government of Waſa; 36 miles N.E. of Chriſtineſtadt.

KURILA, a town of Sweden, in Eaſt Bothnia; 20 miles S.W. of Braheſtad.

KURILAUT, a town of Kharaſm; 60 miles S.S.E. of Urkonje.

KURILE, or Kurilſkoi, *Iſlands*, a chain of iſlands, running in a S.W. direction from the ſouthern promontory of the peninſula of Kamtſchatka, or the Kuriloy Lopatka, to Japan, extending from N. lat. 51° to 45°. They obtained this name from the inhabitants of the neighbourhood of Lopatka, who being themſelves called Kuriles, gave their own name to theſe iſlands, on firſt becoming acquainted with them. Some of them are inhabited and wooded, others quite bare and rocky, and a few that are volcanic. According to Spanberg, they are 22 in number, without reckoning the ſmall ones. Of the two Kurile iſlands that lie neareſt to Lopatka, the firſt accounts were brought to Ruſſia in the year 1713. The others have been ſucceſſively known from that period to 1779, by means of Ruſſian mariners, who, at the time, put them under contribution to the crown. The 22 iſlands are Shoomtſhu or Shoomſka, Poromuſhir, or Paramouſir, Sherinki, Makan-Kur-Aſſey, Anakutan, Ar-Amakutan, Syaſkutan, Ikarma, Tſhirinkutan, Muſſyr, Rach-koke, Mutova, Raſſagu, Uſſaſſyr, Ketoi, Semuſſyr, Tſhirpa-Oi, Urup, or Ooroop, Etorpu, Kunaſſyr, Tſhikota, and Matmai. Anakutan is diſtant from the fourth iſland (in the order of enumeration) 35 verſts; it is about 100 verſts long and 15 broad; has three elevated ſummits of mountains, of which two have exhauſted craters; the wood is ſcrubbed and ſcanty; red foxes are pretty numerous, but on the coaſt are few ſea-beavers, &c. Several ſtreams of hard water flow from it into the ſea. From this Ar-Amakutan is diſtant ſix verſts: its length is twenty verſts and breadth ten; in the centre of the iſland is a rocky mountain, which was formerly a volcano, and towards the ſtrait between it and the fifth iſland, on the eaſtern ſhore, ſtands another, which is reported to have been a burning mountain. This iſland is uninhabited, and is only viſited by the Kurils, on account of the chace, as it abounds with foxes; and on the ſhores are ſea-lions and ſea-otters. Ikarma is about 12 verſts from the ſeventh iſland, and is eight verſts long. Upon it is a volcano, which occaſionally emits flames; the ſhore is ſtony, preſenting here and there a ſulphureous ſpring. It has neither lakes nor ſtreams; and with reſpect to wood and animals, it is in the ſame ſtate with Syaſkatan. For an account of the other iſlands, ſee the reſpective articles. Of theſe 22 Kurile iſlands, the firſt 21 are ſubject to Ruſſia; and all of theſe do not pay tribute. The iſlanders are reported by their miſſionary, the paſtor of Paratounca, who viſits them once in three years, to be a friendly, hoſpitable, generous, humane race of people, and excelling their Kamtſchadale neighbours, not leſs in the formation of their bodies than in docility and quickneſs of underſtanding. Of theſe iſlands it is ſaid, that four only are inhabited, and their population is eſtimated at 1400 perſons. The inhabitants are generally hairy, wear long beards, and live entirely upon ſeals, fiſh, and the produce of the chace. The more ſoutherly and independent iſlanders ſometimes paſs in canoes the channel that ſeparates them from the Ruſſian Kuriles, in order to give ſome of the commodities of Japan, ſuch as ſilk, cotton, iron, &c. in exchange for furs, dried fiſh, and oil. The inhabitants of as many of the iſlands as are brought under the Ruſſian dominions are, at preſent, converted to Chriſtianity; and probably the time is not very diſtant, when a friendly and profitable intercourſe will be brought about between Kamtſchatka and the whole of this chain of iſlands; which will be followed by a communication with Japan itſelf. Theſe iſlands extend from N. lat. 42° to 51°. Tooke's Ruſſ. Emp. vol. i. Cook's Third Voyage, vol. iii.

KURISONDA, a town of Aſiatic Turkey, in Caramania; 60 miles N.N.E. of Tocat.

KURISSIMA, a town of Japan, in the iſland of Xicoco; 16 miles W. of Ijo.

KURK, a town of Candahar; 25 miles E. of Cabul.

KURKIN, a town of Bengal; 11 miles N.E. of Ramgur.

KURKUMBA, town of Hindooſtan, in the circar of Ruttunpour; 32 miles E. of Ruttunpour.

KURKUNA, a town of Hindooſtan, in the circar of Surgooja; 25 miles N.E. of Surgooja.

KURKSTAT, a town of Sweden, in the province of Nyland; 18 miles W. of Helſingfors.

KURMA. See Kourma.

KURMAVATARA, in *Mythology*, the ſecond of the ten incarnations of the Hindoo god Viſhnu, of which the following account is given in the Hindoo Pantheon. "The ſecond grand avatara of Viſhnu, in the form of a tortoiſe, evidently refers alſo to the deluge. In that of Matſya, or the fiſh, (ſee MATSYAVATARA,) we find the neceſſity of a deluge to cleanſe the world from its ſinful taints. By the demon Hyagriva having ſtolen the Vedas while Brahma was doſing, we muſt underſtand the dereliction of mankind from the doctrines and conduct preſcribed in the ſcriptures, and the criminal indifference of their paſtors. The preſerving attribute of the deity interpoſed, ſaved a remnant of creatures from deſtruction, and by recovering the ſcriptures, reclaimed mankind to purity of faith and conduct. For the purpoſe of reſtoring to man ſome of the comforts and conveniences that were loſt in the flood, Viſhnu is fabled to have become incarnate again in the form of a tortoiſe; in which ſhape he ſuſtained the mountain Mandara placed on his back to ſerve as an axis, whereon the gods and demons, the vaſt ſerpent Vaſoky ſerving as a rope, churned the ocean for the recovery of the *amrita*, or beverage of immortality." (See KETU.) Plate 49, of the Hindoo Pantheon exhibits this proceſs, where Viſhnu is ſeen in his place with the two other great powers oppoſed to the Aſuras, or demons; and appears again on the ſummit of the mountain, and again beneath it in the form of the tortoiſe. The hiſtory of this avatara forms an epiſode in the Mahabarat, and Mr. Wilkins has introduced a fine tranſlation of it in his elegant verſion of the Gita, where, however, the metamorphoſis of Viſhnu into the tortoiſe is not directly mentioned. But ſuch is the uſual mode of telling and receiving the ſtory, which is one of the moſt popular, both in recitation and painting, among the monſtrous maſs of ſubjects derived from the copious Pantheon of the Hindoos.

Kurma, or Koorma, is the Sanſcrit appellation of the avatara. Among the Mahrattas, and others in the weſtern parts of India, it is more commonly called Katch, that word, or Katchiva, meaning, like Kurma, a tortoiſe or turtle. The reſult of the operation, in view to which the incarnation appears to have occurred, was obtaining from the churned ocean fourteen articles, uſually called fourteen gems, or chaterdeſa-ratana; in common language chawda-ratny; uſually thus enumerated: 1. the Moon, Chandra or Soma; 2. Sri or Lakſhmi, the goddeſs of fortune and beauty; 3. Sura, wine, or Suradevi, the goddeſs of wine; 4. Oochiſrava, an eight-headed horſe; 5. Kuſtubha, a jewel of ineſtimable value; 6. Paryata or Pariyata, a tree that ſpontaneouſly yielded every thing deſired; 7. Surabhi, a cow ſimilarly beautiful; 8. Dhanvantara, a phyſician, or the god of phyſic; 9. Iravat, the elephant of Indra with three proboſci; 10. Shank, a ſhell conferring victory on any one who ſhould found it; 11. Danuſha, an unerring bow; 12. Bikh, poiſon, or drugs; 13. Rhemba, a beautiful woman, correſponding in many points with our popular Venus; 14. The Amrita, or beverage of immortality, which appears, though laſt obtained, to have been the primary object of this churning proceſs; the other gems appear to have been obtained incidentally.

Under moſt of the articles whoſe foreign names occur in this, ſome notice is taken of them, and we refer thither reſpectively and generally for farther information thereon.

KURMDYA, in *Geography*, a town of Bengal; 55 miles S S.W. of Doeſa.

KURMUKI, a town of the principality of Georgia; 105 miles S.E. of Teſlis.

KURMYK, a town of Ruſſia, and diſtrict of the government of Simbirſk, on the Sura; 104 miles N.W. of Simbirſk.

KUROPATNIKI, a town of Auſtrian Poland, in Galicia; 45 miles E.S.E of Lemberg.

KUROSAKI, a town of Japan, in the iſland of Ximo; 27 miles N. of Taiſero.

KUROW, a town of the duchy of Holſtein; 9 miles N.N.W. of Lubeck.

KURRA, a river of Hindooſtan, which runs into the Beema; 32 miles N. of Viſiapour.

KURRABAGH, a town of Candahar, in the province of Ghizni; 20 miles W.S.W. of Ghizni. N. lat. 33° 30′. E. long. 67° 59′.

KURRERA, a town of Hindooſtan, in the circar of Gohud; 12 miles S.S.E. of Narwa.

KURRIGOORA, a town of Bengal; 45 miles S.S.W. of Doeſa.

KURRYA, a town of Bengal; 30 miles S.E. of Palamow.

KURSK, a government of Ruſſia, which was formerly part of that of Bielgorod; comprehending 16 diſtricts: it is bounded on the N. by the government of Orel, on the E. by that of Voronetz, on the S. by Voronetz and Kharkof, and on the W. by Tchernigof; about 112 miles from N. to S., and generally 100 from E. to W., extending, however, by a narrow part, about 12 miles wide, 40 miles further weſt.—Alſo, the capital of the above-mentioned government, on the river Tukar, which falls into the Seim or Sem. N. lat. 53° 40′. E. long. 36° 24′.

KURSY, a town of Hindooſtan, in Candeiſh; 45 miles S.W. of Burhanpour.

KURTACULAC, a town of Aſiatic Turkey, in Aladulia; 25 miles S.E. of Adana.

KURTAPOUR, a town of Hindooſtan, in Lahore; 10 miles S. of Jallindar.

KURTCHI, an order of ſoldiery among the Perſians.

The word, in its original, ſignifies *army*, and is applied to a body of cavalry, conſiſting of the nobility of the kingdom of Perſia, and the poſterity of thoſe conquerors, who placed Iſmael Sophi on the throne. They are in number about eighteen thouſand men.

Their commander is called *kutchi baſchi*, which was formerly the firſt poſt in the kingdom; equivalent to a conſtable in France.

KURTUS, in *Ichthyology*, a genus of the jugulares, conſiſting only of a ſingle ſpecies, called *Indicus* from its being an inhabitant of the Indian ſeas. The body in this genus is carinated each ſide, the back elevated, and the gill-membrane furniſhed with two rays. The ſpecies known ſubſiſts on crabs and ſhells, or teſtaceous animals: the body is ſhort, ſlender, golden, and appearing as if covered with ſilvery plates: the head is large, compreſſed, and obtuſe; eyes very large, with black pupil, and iris above blue, beneath white; mouth large; jaws with numerous teeth; tongue ſhort and cartilaginous; lateral line ſtraight, and commencing above the pectoral fin; firſt ray of the dorſal and ventral fins hard, and two firſt of the anal ſpinous.

KURU, in *Geography*, a town of Sweden, in the government of Abo; 63 miles E.N.E. of Biorneborg.

KURU, in *Hindoo Mythological Legends*, was the brother of Pandu, who was the father of the five heroes of the Mahabarat. Kuru had a hundred ſons, whoſe conteſts with the Pandus are the ſubject of that poem, which is a continued allegory of the ſtruggles between man's virtues and vices, perſonified in the offspring of the brothers. See MAHABARAT, and PANDU.

KURUMA, in *Geography*, a town of Japan, in the iſland of Ximo; 16 miles E.N.E. of Ikua.

KURYMA, a town of Hungary; 12 miles N.E. of Szeben.

KUSA, in *Botany*, the ſpecies of graſs *poa cynoſuroides*, eſteemed by the Hindoos very ſacred and myſtical, and uſed by the Brahmans in many of their ſacred or ſuperſtitious ceremonies. Among this race of fabuliſts ſome poetical legend exiſts, accounting, in their way, for every ſubject and alluſion in their complex mythology and theogony. Of the kuſa graſs this is related in the Hindoo Pantheon. "Some legends make Garuda the offspring of Kaſyapa and Diti. (See Kasyapa.) This all-prolific dame laid an egg, which, it was predicted, would produce her deliverer from ſome great affliction: after a lapſe of five hundred years, Garuda or Superna (ſee Superna) ſprang from the egg, flew to the abode of Indra, extinguiſhed the fire that ſurrounded it, conquered its guards, and bore off the amrita, (ſee Kurmavatara,) which enabled him to liberate his mother, at that time afflicted in captivity. A few drops of this immortal beverage falling on the kuſa, it became a graſs eternally conſecrated; and ſome ſnakes, greedily licking up the ambroſia, ſo lacerated their tongues with the ſharp blades of the graſs, that they have ever ſince remained forked: but the boon of eternity was inſured to them alſo by their thus partaking of the immortality-conferring fluid. (See Ketu.) This cauſe of ſnakes having forked tongues is ſtill popularly, in the tales of India, attributed to the above greedineſs." P. 341.

KUSAMO, in *Geography*, a town of Sweden, in the government of Ulea; 85 miles E. of Tornea.

KUSBAH, a town of Hindooſtan, in Benares; 22 miles W.N.W. of Benares.

KUSCAN, a town of Perſia, in the province of Segeſtan; 21 miles N.E. of Kin.

KUSCARI, a town of Mingrelia; 30 miles N.N.E. of Anarghia.

KUSCHAIL, a town of Ruſſia, in the government of Tobolſk; 28 miles S. of Tomſk.

KUSHA, a town of Poland, in Podolia; 32 miles E. of Kaminiecz.

KUSHAL, Kushel, or *Kuthal*, a fortreſs of Aſia, in Kuttore. N. lat. 35° 17′. E. long. 70° 39′.

KUSHKAT, a town of Great Bucharia; 72 miles W. of Kojend.

KUSKO, a town of the duchy of Warſaw; 18 miles W.S.W. of Kaliſch.

KUS-KHUSER, a town of Perſia, in Farſiſtan; 31 miles N. of Schiras.

KUSMA, a ſmall town of Arabia, ſtanding upon a high hill, in the province of Yemen, inhabited by free Arabs; 50 miles E. of Hodeida. The mountains, which extend far into the country, produce coffee.

KUSSI, a town of Japan, in the iſland of Niphon; 65 miles N.E. of Jedo.

KUSSNACHT, a bailiwick of Switzerland, in the canton of Zurich.—Alſo, a town of Switzerland, in the canton of Schweitz, near which is a chapel, erected on the ſpot where William Tell ſlew the Auſtrian governor; 10 miles W. of Schweitz.

KUSSOOR, a town of Hindooſtan, in Lahore; 26 miles W.N.W. of Firoſepour.

KUSTANGI, or Chiustengi, a town of European Turkey, in Bulgaria, on the Black ſea, formerly called *Conſtantia*. N. lat. 44° 30′. E. long. 28° 37′.

KUSTER, Ludolph, in *Biography*, was born in 1670, at Blomberg, in Weſtphalia, of which town his father was a magiſtrate. He ſtudied under his elder brother at the Joachim college of Berlin, and was afterwards appointed tutor to the two ſons of the count Schwering. On quitting that ſtation, with a penſion, he went to Frankfort on the Oder, and there publiſhed, in 1696, his "Hiſtoria Critica Homeri." He was promiſed a profeſſorſhip in the univerſity of Joachim, and till that ſhould be vacant he reſolved to travel, and viſited Leyden and Utrecht; at the latter place he delivered a courſe of lectures on the law of nations, and publiſhed his "Bibliotheca Librorum." He then went to England, and thence to France, for the purpoſe of collating MSS. for a new edition of Suidas. Having furniſhed himſelf with many very valuable materials and fragments for his work, from the king's library, he returned to England. Here he lived in great familiarity with Bentley and other learned men, and upon the publication of his work, which was printed partly at the expence of the univerſity of Cambridge, he was honoured with the degree of doctor of laws. Several advantageous offers were made him if he would remain in England, but he was called back to Berlin, and inſtalled in the profeſſorſhip promiſed to him. The ſituation did not anſwer his expectations, he was rendered uncomfortable by diſputes reſpecting his ſalary, and by having incurred the ſuſpicion of being addicted to the principles of Arianiſm, ſo that in a ſhort time he found it expedient to retire to Amſterdam. Here he was reduced to abſolute poverty by the failure of his banker. He afterwards went to Antwerp, embraced the Catholic religion, and was rewarded by a penſion from the king, and with an admiſſion into the Academy of Inſcriptions. He died at the age of forty-ſix. He was a great maſter of the Latin tongue, and wrote well in it; but his chief excellence was his ſkill in the Greek language, to which he almoſt entirely devoted himſelf. Beſides the works already referred to, he publiſhed "Jamblicus Porphyrius, et Anonymus apud Photium de Vita Pythagoræ." A new edition of Dr. Mill's Greek Teſtament. "Ariſtophanes Gr. et Lat." "De vero uſu verborum mediorum," which has been much eſteemed as a grammatical treatiſe.

KUSTUBHA, in *Hindoo Legends*, is an ineſtimable gem, of which many wonderful tales are related. It is one of the fourteen precious things recovered from the ocean when churned for the amrita, by gods and demons, in the *Kurmavatara*; which ſee.

KUTALI, in *Geography*, a ſmall iſland, in the ſea of Marmora. N. lat. 40° 30′. E. long. 27° 22′.

KUTAN, a town of Hindooſtan, in Oude; 30 miles E. of Kairabad.

KUTATS, a town of Japan, in the iſland of Niphon; 25 miles E. of Meaco.

KUTINA, a town of Sclavonia; 33 miles W.N.W. of Poſzega.

KUTSCHINA, a town of Servia; 16 miles S.S.W. of Orſova.

KU-TSING, a city of China, of the firſt rank, in the province of Yun-nan; ſurrounded with mountains, about which the ſoil is fruitful. Its juriſdiction comprehends five towns of the ſecond claſs, and two of the third. The inhabitants are induſtrious in cultivating the ground. N. lat. 25° 34′. E. long. 103° 27′.

KUTSKOI, a town of Ruſſia, in the government of Irkutſk, on the Kuta, where it joins the Lena; 60 miles E. of Ilimſk. N. lat. 56° 40′. E. long. 123° 20′.

KUTTENBERG, or Kutna-Hora, a town of Bohemia, in the circle of Czaſlau, famous for its ſilver mines, formerly abundant, diſcovered by a monk in 1237; 4 miles N.W. of Czaſlau. N. lat. 49° 52′. E. long. 15° 19′.

KUTTORE, a tract of country between the N.E. part of Cabul, and the N.W. of Cachemire, now ſubject to Candahar. This tract borders on the N. of Sewad, Bijore, Puckholi, &c. It has obtained from the Mahometans the name of *Caferiſtan*, or land of infidels, and is claſſed by the people of Hindooſtan as a dependency of Caſhgar. It occupies nearly the place of Ptolemy's *Comedi*, and anſwers to it in deſcription, being entirely mountainous. An author, cited by Rennell, ſtates that Kuttore contains a great number of towns and villages, and is exceedingly populous Its principal towns are Towkul, called alſo Showkul, and Jourkull; theſe being the reſidence of its rulers. It abounds in fruits, ſuch as grapes, plumbs, &c. It likewiſe yields rice, wheat, and other ſorts of grain. The natives are exceedingly fond of wine and hog's fleſh; although their country is well-ſtocked with cows and goats. They have a diſtinct language not at all reſembling that of any other people; and their arms conſiſt of the bow and arrow, the ſabre and the ſling. Another author ſays, that they are, for the moſt part, idolaters; that they are of a robuſt make, and that their complexion is a mixture of red and white.

KUTTORE is alſo a town and fortreſs in the above deſcribed country; 100 miles N.E. of Cabul. N. lat. 35′ 27′. E. long. 70° 17′.

KUTTRY. See RAJPOOTS.

KUTTUHDUA, a ſmall iſland in the bay of Bengal, near the coaſt of Aracan, inhabited chiefly by fiſhermen. It is well wooded. N. lat. 21° 52′. E. long. 91° 45′.

KUTUM, a town of Hindooſtan, in Benares; 10 miles N.E. of Bidrigur.

KUTZABAR, a town of Perſia, in Mazanderan; 40 miles S.W. of Fehrabad.

KUVA, a ſmall town of Perſia, S. of Derbent; the reſidence of a khan.

KUVERA, in *Hindoo Mythology*, is the regent of wealth, correſponding with the Plutus of the weſtern Pantheon. He is deſcribed, in reſpect of externals, as a mere man, gloomy, ſelfiſh, and deformed; but as a magnificent deity, reſiding in the ſplendid city Alaka, and borne through the ſky in a gorgeous car, called *puſhpaka*, or flowery. He is alſo called Viteſſa, Paulaſtya, and Dhanada; and as the ſon of a ſage named Viſrava, he is called Viſravana, a name likewiſe of Ravena, half brother, by the ſame father, of Kuvera. (See RAVENA.) His ſervants and companions are the Yakſhas and Guhyakas, into whoſe filthy forms tranſmigrate the ſouls of thoſe men who in this life are addicted to ſordid and baſe paſſions, or abſorbed in worldly proſperity. The term Guhyaka is derived from *guh* (ordure) a word retained in ſeveral dialects. He has a conſort named *Kauveri*, which ſee; but neither would be invoked by a Hindoo, for the boon of riches, but *Lakſhmi*, which ſee.

The Hindoos have aſſigned regents to each cardinal and intermediate point of the compaſs. (See MARUT.) Kuvera rules the north.

KUWANA, or QUANO, a ſea-port of Japan, in the province of Owari.

KUYALI, a town of European Turkey, in Romania; 27 miles E.S.E. of Filippopoli.

KUYNDER, a ſea-port town of Holland, in Frieſland, on the W. ſide of the river of the ſame name, at its entrance into the Zuyder ſee; 23 miles S. of Lewarden. N. lat. 52 48. E. long 5° 46′.

KUYP, or CUYP, ALBERT, in *Biography*, a painter who ranks among the beſt and moſt original artiſts. He was born at Dort in 1606, and was the ſon of Jacob Gerritz Kuyp, a landſcape painter of much merit. From his father he firſt learnt the rudiments of the art; but ſurpaſſed him infinitely in his progreſs. He was one of the moſt agreeable painters that ever lived; imitating with the greateſt perfection the purity and brilliancy of light. No artiſt ever repreſented the atmoſphere which ſurrounds all objects more completely than Cuyp; not even Claude: and in the effect of ſun-ſhine, none ever approached him. The ſimpleſt ſcenes and combinations of objects were ſufficient for him to exert his talents upon; and he never failed to give an intereſt to them by the ſweetneſs of his colour, and the beauty of his light and ſhade.

Little or nothing is known of his life. His works are numerous, and therefore he muſt have lived long; for they are of ſo highly finiſhed a quality that he muſt have given much time to them.

In the various collections among the nobility in England, works of his ſhine with almoſt unrivalled luſtre; and are not very uncommon. At the marquis of Stafford's is a very fine one of the landing of prince Maurice at Dort. There are alſo ſeveral others of great merit.

KUZNETCHICHA, in *Geography*, a town of Ruſſia, in the government of Simbirſk, on the Volga; 16 miles N.E. of Simbirſk.

KUZNETZK, a town of Ruſſia, and diſtrict of the government of Saratof, ſeated on a rivulet, falling into the Sura; 96 miles N.N.E. of Saratof.

KUZNETZK, a town of Ruſſia, and diſtrict of the government of Kolyvan, ſituated on the river Tom, oppoſite to the mouth of the Kondama; built in 1618, on a place whither the Tartars generally reſorted, and colonized from Tomſk, and ſome other towns. It contains about 300 houſes, and the inhabitants are chiefly employed in the manufacture of iron; 188 miles E.S.E. of Kolyvan. N. lat. 53° 40′. E. long. 86° 49′.

KUZNETSKOI MOUNTAINS, a range of mountains, forming one of the ſub-diviſions of the Ruſſian ſhare of the Altaian mountains, the other being the Oby and the Yeniſſey. See ALTAI.

KUZNIK, a town of Ruſſia, in the government of Viatka; 48 miles S.S.W. of Glazov.

KUZOMEN, a town of Ruſſia, in the government of Archangel, on the coaſt of the White ſea; 124 miles N.W. of Archangel.

KUZREKA, a town of Ruſſia, in the government of Archangel, on the N. coaſt of the White ſea; 140 miles S.S.E. of Kola.

KWASSITZ, a town of Moravia, in the circle of Hradiſch; 14 miles N. of Hradiſch.

KWASSOWA, a town of Poland, in Volhynia; 28 miles N. of Zytomiers.

KYANITE, or CYANITE, Wern.; *Diſthène*, Haüy; *Sappare*, Sauſſure. Other names derived from fancied reſemblances, are blue-ſhorl, blue talc, blue mica, foliated beryl, ſapphir ſpar, blue feldſpar, &c. Haüy's name implies the power this ſubſtance poſſeſſes of acquiring both vitreous and reſinous electricity; all the other denominations are expreſſive of its characteriſtic.

Colour, which is generally azure-blue, light Pruſſian blue, or ſmalt-blue; but it is alſo ſeen blueiſh-grey, milky, greyiſh and greeniſh-white, and more ſeldom ſeladon, and other ſhades of blueiſh-green. Theſe colours are either uniform or mixed: the blueiſh-grey, ſtriped or flamed with various ſhades of Pruſſian blue, is the moſt common mixture.

It occurs maſſive, diſſeminated in blunt-edged pieces, and cryſtallized. The following are the modifications we are acquainted with: 1. The oblique quadrangular priſm, (which appears alſo to be the primitive form of this ſubſtance,) with two oppoſite ſides very narrow, which give the cryſtal a contracted tabular form. 2. The lateral edges formed by the acute angles of the preceding cryſtals, intercepted each by a plane, or truncated: this plane is generally very narrow. 3. The lateral edges formed by the obtuſe angles of N° 1, intercepted each by a plane, or truncated. This modification appears to be very ſcarce. 4. Four of the terminal edges of N° 2, intercepted each by a plane, which, if they met in a point, would form a four-ſided pyramid. This we have obſerved in a ſmall cryſtal included in rock-cryſtal.

Theſe cryſtals, eſpecially thoſe from Mount St. Gothard, are not unfrequently ſeen as twin-cryſtals, or macles.

They are moſtly middle-ſized, but alſo ſmall, and very ſmall; and occur imbedded, either ſingly, or in groups, interſecting each other. They are not unfrequently ſeen curved and twiſted, as if they had ſuſtained preſſure, when not yet hardened.

The internal, and generally alſo the external luſtre of the cyanite is ſhining and ſplendent; it is a perfectly pearly luſtre.

The longitudinal fracture of the cryſtals is foliated, with two-fold cleavage, one of which is much more diſtinct than the other. In the uncryſtallized varieties the fracture is broad, ſtraight, or curved-radiated, ſometimes paſſing into foliated. The fragments are ſplintery, wedge-ſhaped, or even approaching the rhomboidal figure. The wedge-ſhaped diſtinct concretions, in which it occurs, are often grown together in all directions.

The maſſive cyanite is faintly tranſlucent; but the cryſtals are often perfectly tranſparent: refraction ſimple.

It is ſemi-hard, nearly ſoft: a ſteel needle eaſily ſcratches the broad planes of the cryſtals, but not the narrow and truncating planes.

It is ſlightly flexible, but not elaſtic: and eaſily frangible.

Its ſpecific gravity is ſtated to be 3.517 by Sauſſure, 3.622 (the Siberian) by Herrmann, and 3.092 (the blueiſh-grey var. from Tyrol) by Kirwan.

The following are the reſults of the analyſes made of this ſubſtance.

		Sauſſure, ſen.	Sauſſure, jun.
Silica	-	12.81	29.2
Alumine	-	66 92	55.0
Lime	-	1.71	2.25
Magneſia	-	13.25	2.0
Oxyd of iron		5 48	6.65
Loſs and water		0.0	5.0
		100.17	100.

		Struve.	Herrmann.
Silica	-	51.5	23
Alumine	-	5.5	30
Lime	-	4.0	3
Magneſia	-	30.5	39
Oxyd of iron		5.0	2
Loſs and water		4.5	3
		100.	100

The two following analyſes differ from the preceding, particularly in the abſence of magneſia and lime:

		Laugier.	Klaproth.
Silica	-	38.5	43.
Alumine	-	55.5	55.50
Lime	-	0.5	0.0
Oxyd of iron		2.75	0.50
Loſs and water		2.75	Soda a trace

Cyanite is infuſible before the blow-pipe, a property which, according to Sauſſure, renders it a convenient ſupport for ſubſtances to be tried by that inſtrument.

This ſubſtance is found only in primitive mountains, imbedded in mica ſlate and talc ſlate, accompanied by granatite or ſtaurolite and garnets, with now and then iron ochre, iron pyrites, calcareous ſpar, &c. In Moravia and Saxony it occurs in ſmall groups imbedded in a variety of a primitive rock called weiſs-ſtein, or white-ſtone.

Its principal localities are Switzerland (eſpecially at Airolo, on the ſouth ſide of Mount St. Gothard); Saltzburg and Tyrol (in the Zillerthal); Carinthia (on the Sau-Alpe); Scotland (Aberdeenſhire, near Banchory, and in the Mainland, one of the Shetland iſlands); France (in the neighbourhood of Lyons); it has alſo been found in Norway, in Siberia, in Braſil, &c.

When cut and poliſhed it reſembles in colour ſome varieties of ſapphir, and ſpecimens of it are ſometimes exhibited under this name; but, not to mention the ſtriæ always obſervable in the interior of cyanite ſtones, their inferior luſtre, and comparative ſoftneſs, will ſoon clear up all doubts reſpecting their nature.

Sauſſure has endeavoured to introduce the name *Sappare* for this mineral, and he tells us, that in Scotland it is known by that appellation. Some authors have lately criticiſed this name as being derived from the bad pronunciation of the word *ſapphire*, with which the cyanite is ſaid to have been confounded by the perſon who pointed it out to Sauſſure: but this is a miſtaken notion, the name ſappare being known to occur in ſeveral old works on mining; and as it appears to have been a very vague ſort of name, it is not improbable that it may alſo have included the ſubject of this article.

KYBAR, in *Geography*, a town of Norway; 6 miles S.S.W. of Wardhuys

KYBURG, a bailiwick of Switzerland, in the canton of Zurich.

KYDREBAD, a town of Hindooſtan, in Oude; 8 miles N.E. of Fyzabad.

KYHOLM, a ſmall iſland of Denmark, near the iſland of Samſoe.

KYL, a town of Sweden, in the province of Warmeland; 25 miles S.E. of Carlſtadt.—Alſo, a town of Sweden, in the province of Nericia; 8 miles N.W. of Orebro.

KYLA, a town of Sweden, in Warmeland; 23 miles S.W. of Carlſtadt.

KYLE *of Durneſs*, a bay on the N. coaſt of Scotland, at the mouth of the river Durneſs: the entrance, W. of Farout-head, is in N. lat. 58° 40'. W. long. 4° 42'.

Kyle *of Rhea*, a narrow ſtrait between the iſland of Sky, and the main land of the county of Inverneſs. N. lat. 57° 15'. W. long. 5° 40'.

Kyle *Scowie*, a bay on the W. coaſt of Scotland, and county of Sutherland. N. lat. 58° 16'. W. long. 5° 5'.

Kyle *of Tongue*, a bay on the N. of Scotland, and county of Sutherland; 13 miles W.S.W. of Strathy-head. N. lat. 58° 35'. W. long. 4° 13'.

KYLLINGIA, in *Botany*, ſo called by Rottböll, in memory of his countryman, Peter Kylling, a Dane, who, in 1688, publiſhed at Copenhagen, the *Viridarium Danicum*, which is a catalogue in Latin, Daniſh, and German, of the native plants of Denmark, making 174 quarto pages.—Rottb. Gram. 12. Linn. Fil. Nov. Gram. Gen. 24. t. 1. Am. Acad. v. 10. 2. 24. t. 1. Suppl. 11. Schreb. 40. Willd. Sp. Pl. v. 1. 256. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 125. Brown. Prodr. Nov. Holl. v. 1. 218. Juſſ. 27. Lamarck Illuſtr. t. 38.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ.

Gen. Ch. *Flowers* aggregate, in an oblong ſcaly head. *Cal.* Glume of two unequal valves, compreſſed, nearly ſingle-flowered, ſingle-ſeeded; valves lanceolate, channelled, acute, much ſhorter than the corolla. *Cor.* Glume of two unequal valves, compreſſed, larger than the calyx, keeled, ſpreading; the larger lanceolate, folded, very acute, embracing the ſmaller. *Stam.* Filaments three, awl-ſhaped, flat; anthers terminal, linear, erect. *Piſt.* Germen ſuperior, obovate, compreſſed, gibbous at one of its edges, without any briſtles at the baſe; ſtyle thread-ſhaped; ſtigmas two or three, capillary. *Peric.* none, except the permanent corolla. *Seed* oblong, triangular, beardleſs.—The ſame calyx ſometimes contains alſo either a male or a neutral flower.

Eſſ. Ch. Flowers aggregate, in an oblong, imbricated, head. Calyx of two valves. Corolla of two valves. Seed without briſtles at the baſe.

This genus, adopted from Rottböll by the younger Linnæus, had by his father been confounded with *Schoenus*, which its flowers in ſome meaſure reſemble; but the habit, eſpecially the aggregate, long, floral leaves, are akin to *Cyperus*. In the *Supplementum* four ſpecies are defined; Willdenow has eight; and a new one, K. *intermedia*, is deſcribed by Mr. Brown in his *Prodromus*, as found at Port Jackſon, New South Wales.—They are all natives of warm countries, chiefly in the Eaſt or Weſt Indies, and moiſt ſituations. Their roots ſeem to be perennial. Their herbage is ſlender. Stem ſimple, triangular, ſtriated, and roughiſh. Leaves narrow, rough-edged. Heads pale or whitiſh, terminal, uſually ſeſſile, among the floral leaves, either ſolitary or ſeveral together, roundiſh or oblong, conſiſting of numerous, ſmall, denſely crowded flowers, whoſe glumes are more or leſs ribbed or ſtriated, deſtitute of awns.

Examples of this genus are,

K. *monocephala*. Rottb. Gram. 13. t. 4. f. 4. (Schoenus coloratus; Linn. Sp. Pl. 64.)—Stem ſlender, triangular. Head globoſe, ſeſſile, ſolitary. Floral leaves three, very long.—Native of both Indies. *Root* creeping. *Stems* ſolitary, a ſpan high, bearing two or three *leaves* at the baſe, and three as long at the top, accompanied ſometimes by a ſmaller one. The head of *flowers* is ſcarcely bigger than a large pea, whitiſh, very denſe.—*Thryocephalon nemorale* of Forſter, from Otaheite, appears to be preciſely this plant.

K. *triceps*. Rottb. Gram. 14. t. 4. f. 6. (Scirpus glomeratus; Linn. Sp. Pl. ed. 1. 52. Schænus niveus; Syſt. Veg. ed. 13. 81.)—Heads about three together, cluſtered, ſeſſile, ſomewhat ovate.—Native of both Indies. Rather larger than the laſt, of which, in the 2d edition of *Species Plantarum*, it is made a variety, but it is a ſmoother plant, and the cluſtered rather leſs globular heads diſtinguiſh the preſent ſpecies.

K. *incompleta*. Jacq. Coll. v. 4. 101. Ic. Rar. t. 300.—Umbel compound. Spikes numerous, cylindrical. Calyx of one valve.—Native of the Caraccas. This is a very large ſpecies, with a ſharply triangular *ſtem* three or four feet high, very long *floral leaves* under the general umbel, and many ſmall leaves under the partial ones. The numerous cluſtered *heads*, or rather *ſpikes*, are oblong, various in ſize, greeniſh, of numerous ſpreading *flowers*, whoſe calyx, according to Jacquin, has but one valve.

K. *monocephala*, *triceps*, and *umbellata*, are cultivated in the ſtoves at Kew, where they flower in ſummer or autumn, but probably excite little attention, except among curious botaniſts.

KYLY, or Kyela, in *Geography*, a ſea-port on the W. coaſt of the iſland of Celebes, with a ſpacious harbour. S. lat. 1° 15'.

KYMITS, an iſland in the Baltic, near the coaſt of Finland; 20 miles long, and from one to two broad. N. lat. 60° 16'.

KYMMEN, a river of Finland, which flows from the lake of Pejend, or Pejana, into the centre of the gulf of Finland.

KYNE, a town of Sweden, in Eaſt Bothnia; 18 miles N.E. of Waſa.

KYNETON. See Kineton.

KYNTO, a lake of Ruſſia, in the government of Olonetz, about 48 miles long, and from 12 to 16 broad. N. lat. 65° 40'. E. long. 28° 40'.

KYPER, Albert, in *Biography*, a phyſician, was born at Konigſberg, in Pruſſia, and probably took the degree of M. D. at Leyden, where he was ſtudying in the year 1642. He was afterwards choſen firſt profeſſor of phyſic, in the new medical ſchool eſtabliſhed at Breda in 1646: but he quitted this ſtation two years afterwards, in order to take poſſeſſion of a medical chair, to which he was elected, at Leyden; an appointment which he held till his death, which occurred in September, 1655, at the time when he was rector of that univerſity. He publiſhed ſeveral works. "Methodus Medicinam ritè diſcendi et exercendi," Leyden, 1642. "Inſtitutiones Phyſicæ," ibid. 1647. "Anthropologia, corporis humani contentorum, et animæ naturam et virtutes, ſecundum circularem ſanguinis motum, explicans," ibid. 1647, &c. "Inſtitutiones Medicæ ad hypotheſin de circulari ſanguinis motu compoſitæ," Amſterdam, 1654. "Collegium Medicum, xxvi. Diſputationibus breviter complectens quæ ad Inſtitutiones pertinent," Leyden, 1655. This volume contained alſo ſome miſcellaneous and political tracts. Eloy. Dict. Hiſt. de Med.

KYPHONISM, Kyphonismus, or *Cyphoniſmus*, an ancient puniſhment, which was frequently undergone by the martyrs in the primitive times; wherein the body of the perſon to ſuffer was anointed with honey, and ſo expoſed to the ſun, that the flies and waſps might be tempted to torment him. This was performed in three manners; ſometimes they only tied the patient to a ſtake; ſometimes they hoiſted him into the air, and ſuſpended him in a baſket; and ſometimes they ſtretched him out on the ground, with his hands tied behind him. The word is originally Greek, and comes from κυφων, which ſignifies either the *ſtake* to which the patient was tied, the *collar* fitted to the neck, or an *inſtrument* wherewith they tormented him; the ſcholiaſt on Ariſtophanes ſays, it was a wooden lock, or cage; and that it was called ſo from κυπτειν, *to crook* or *bend*, becauſe it kept the tortured in a crooked bowing poſture; others take the κυφων for a log of wood laid over the criminal's head to prevent his ſtanding upright: Heſychius deſcribes the κυφων as a piece of wood, whereon criminals were ſtretched and tormented. In effect, it is probable the word might ſignify all theſe ſeveral things. It was a generical name, whereof theſe were the ſpecies.

Suidas gives us the fragment of an old law, which puniſhed thoſe who treated the laws with contempt, with kyphoniſm for the ſpace of twenty days; after which they were to be precipitated from a rock, dreſſed in women's habit.

KYRA, in *Geography*, a town of Hindooſtan, in Rohilcund; 20 miles S. of Budavoon.

KYRADAW, a town of Hindooſtan, in Malwa; 7 miles S.W. of Kimlaſſa.

KYRADEE, a town of Bengal; 14 miles W.S.W. of Curruckdeagh.

KYRALFALVA, a town and caſtle of Hungary; 12 miles S.W. of Sivat.

KYRANTY, a town of Bootan; 60 miles S. of Taſſaſudon.

KYREZYCE, a town of Poland, in the palatinate of Volhynia; 56 miles N.W. of Zytomiers.

KYRIE, in *Eccleſiaſtical Muſic*, the firſt word of every maſs in muſic. It furniſhes, with *eleiſon*, the only articulations of the firſt movement of all maſſes ancient and modern. *Kyrie*, the vocative caſe, implies O Lord, and joined with *eliſſon*, is equal to "Lord have mercy on us." Kyrie, in ſpeaking of a maſs in muſic, is often uſed ſubſtantively, as "there is a well written kyrie in that maſs or ſervice."

KYRILA, in *Geography*, a town of Sweden, in Eaſt Bothnia; 36 miles E.N.E. of Chriſtianſtadt.

KYRITZ, a town of Brandenburg, in the Mark of Pregnitz; 40 miles N.W. of Berlin. N. lat. 52° 26′. E. long. 12° 26′.

KYRKAS, a town of Sweden, in the province of Jamtland; 7 miles N.E. of Oſterſund.

KYRKSTATT, a town of Sweden, in the province of Nyland; 16 miles W. of Helſing.

KYRO, a town of Sweden, in North Finland, on a lake of the ſame name; 42 miles E. of Biorneborg.

KYRO, *Lille*, a town of Sweden, in Eaſt Bothnia; 12 miles E.S.E. of Waſa.

KYRO, *Stor*, a town of Sweden, in Eaſt Bothnia; 20 miles S.E. of Waſa.

KYSCHAW, a town of Pruſſia, in Pomerelia; 32 miles S.E. of Dantzic.

KYSTIS, Κυστις, in *Anatomy*. See CYSTIS.

KYTEE, in *Geography*, a town of Bengal; 12 miles S. of Burdwan. N. lat. 23° 3′. E. long. 88°.—Alſo, a town of Hindooſtan, in Bahar; 28 miles S.S.W. of Arrah.

KYTEKIEHL, or KYTZBUHL, a town of the county of Tyrol; 45 miles N.E. of Inſpruck.

KYUQUOT, a large ſound or bay on the N.W. coaſt of N. America, having on one ſide of it Robert's iſland. N. lat. 50°. W. long. 127° 20′.

KZILKAN, a town of Aſiatic Turkey, on the Tigris; 21 miles N. of Tecrit.

KZIKEN, a town of Aſiatic Turkey; 15 miles W. of Merdin.

L.

L, EL, a ſemi-vowel, or liquid conſonant, making the eleventh letter of the Engliſh alphabet, and always preſerving the ſame ſound.

The *l* is pronounced by applying the tongue to the palate.

Paſſerat obſerves, that *l* was frequently uſed among the ancients for *b*, as in *cillibæ* for *cibillæ*; for *d*, as *alipe* for *adipe*; for *c*, as *mutila* for *mutica*; for *n*, as *arvilla* for *arvina*, *belle* for *bene*, *colligo* for *conligo*; for *r*, as *fratellus* of *frater*, *balatrones* for *baratones*; for *ſ*, as *ancille* of *am* and *cæſum*, *equilio* for *equiſio*; for *t*, as *equiſelis*, for *equiſetis*, *Thelis* for *Thetis*. See B, T, &c.

The *ll* is a modern contrivance, and was never uſed among ancient Roman authors: they wrote *alium*, not *allium*; *macelum*, not *macellum*; *polucere*, not *pollucere*.

The *ll* of the Greeks was ſometimes changed by the Romans into *li*, as in αλλομαι, *ſalio*; αλλος, *alius*; φυλλον, *folium*: *r* has alſo been turned into *ll*; as *hira*, *illa*; *farare*, *ſatullare*; &c. and *l* into *x*, or *xill*; as *ala*, *axilla*; *mala*, *maxilla*; *velum*, *vexillum*; *d* was alſo uſed for *l*, *n* for *ll*, and *r* for *l*. See R, &c.

L is alſo frequently uſed inſtead of *d*, as in *Ulyſſes*, from the Greek Οδυσσευς, in that Æolic dialect Υδυσσης. Thus alſo for *dautia*, we ſay *lautia*; for *dacrumæ*, *lacrymæ*, &c. See D.

There are ſeveral people, for inſtance, the Chineſe in Aſia, the Illinois in America, &c. who cannot pronounce the *r*, but always change it into *l*. Thus, when any of them have been baptized by the name of *Petrus*, *Franciſcus*, &c. they always pronounce it *Petlus*, *Flanciſcus*, &c. See R.

Among the Saxons the *l* was aſpirated, and the Spaniards and Welſh uſually double it at the beginning of a word, which ſounds nearly the ſame with our *hl* or *ſl*. At the end of a monoſyllable it is always doubled, except after a diphthong. The monoſyllables in which it is doubled, as *kill*, *vill*, *full*, were originally written *kille*, *ville*, *fulle*, and when the *e* firſt became ſilent, and was afterwards omitted, the *ll* was retained, to give force, according to the analogy of our language, to the foregoing vowel. In a word of more ſyllables it is written ſingle. It is ſometimes inſerted before *e*, and ſounded feebly after it, ſo as to be almoſt mute; as *table*, *ſhuttle*.

The figure of our L we borrowed from the Latins, they from the Greeks, and they again from the Hebrews, whoſe *lamed* is much like our L, excepting that the angle is ſomewhat more acute.

L was alſo a numeral letter among the ancients, and is ſtill ſo in the Roman cyphering, ſignifying *fifty*; according to the verſe,

> "Quinquies L denos numero deſignat habendos."

When a daſh was added at the top, thus, L̄, it ſtood for *fifty thouſand*.

L was uſed for fifty, being half a C, which ſignified a hundred, and was formerly written thus E, which, according to Paſquire, makes two LL, the one upright, the other inverted.

The French Louis-d'ors have a croſs on them, conſiſting of eight L's interwoven, and diſpoſed in form of a croſs. The letter L is marked on the money coined at Bayonne. The epochas on Greek medals are uſually written with the ancient *lambda*, L; which, according to the tradition of the antiquaries, ſtands for Λυκαβαντος, a poetical word, unknown in common ſpeech, ſignifying *anno*, and which it is probable was more uſed in Egypt than Greece.

L as an abbreviature ſtands for Lucius; and LLS. for a ſeſterce. In Engliſh, it denotes a pound ſterling.

LA, in *Muſic*, is the ſixth ſound of the Guido ſcale. See Gammut, and Solmisation.

LAAB, or Lava, in *Geography*, a town of Auſtria, on the river Taya; 26 miles N. of Vienna. N. lat. 48° 39′. E. long. 16° 16′.

LAADSTEE, a town of Norway; 112 miles N. of Bergen.

LAAGE, a town of Mecklenburg; 14 miles S.E. of Roſtock. N. lat. 55° 58′. E. long. 12° 30′.

LAALAND, or Laland, an iſland of Denmark, ſituated at the entrance into the Baltic, from the Great Belt; about 50 miles long, and 20 in its medial breadth, and reckoned the moſt fertile ſpot in the Daniſh dominions. It produces variety of grain, particularly wheat, and alſo peaſe; and is chiefly appropriated to the cultivation of corn. Its woods, in which it is not deficient, are more frequent in the eaſt, than on the weſt ſide of the iſland. As its ſituation is low, the air is damp and the climate is inſalubrious. Of all the inhabitants, the clergy are moſt liberally provided for, according to their rank. The nobility are numerous, and poſſeſs large eſtates with fine houſes. This iſland, like Tealſter, has a peculiar governor; but both are under the ſpiritual juriſdiction of the biſhop of Funen. The capital is Naſkow. N. lat. 54° 40′ to 55°. E. long. 10° 59′ to 11° 52′.

LAALGUNGE, a town of Hindooſtan, in Oude; 25 miles E. of Manichpour.

LAARET, an iſland in the Eaſt Indian ſea, about 50 miles in circuit. S. lat. 6° 48′. E. long. 132° 36′.

LAAS, or Losch, a town of Carniola, with a citadel; 23 miles E.N.E. of Trieſte. N. lat. 45 58′. E. long. 14 25′.

LAASPHA, or Laspa, a town of Germany, in the county of Witgenſtein; 64 miles E. of Cologne. N. lat. 50° 53′. E. long. 8° 30′.

LAB, a town of Germany, in the biſhopric of Wurzburg; 6 miles E.S.E. of Volkach.

LABAAR, a town of Hindooſtan, in the ſubah of Agra; 75 miles S S.E. of Agra.

LABACCAN, a northern province of Celebes, which, together with Bougero and Sageree, are the plains lying between Tello and Tanete, the proper granaries of Celebes. Labaccan has one native regent, who has the appellation of "Crain."

LABADDA, a town and diſtrict of Africa, on the Gold Coaſt.

LABADIE, John, in *Biography*, a celebrated enthuſiaſt, was born at Bourg, in Guienne, in the year 1610; when he was ſix years old he was ſent to Bourdeaux to be inſtructed in the Jeſuits' ſchool, and was at an early age admitted into the order, of which he continued a member fifteen years. He was ſo highly eſteemed for piety and learning, that it was with the utmoſt difficulty he obtained his diſmiſſion when he aſked for it. At length he quitted the ſociety and became an itinerant preacher. The auſterity of his manners, his great zeal, and affected piety, procured him many admirers wherever he went. At Amiens he obtained a canonry, but being detected in ſome criminal intrigues, the biſhop ordered him to be arreſted; he, however, eſcaped, and concealed himſelf at Paris. On this and ſome other parts of Labadie's conduct, Bayle makes the following remarks, which, in ſome degree, are probably applicable to religious enthuſiaſts of other countries beſides France: "I do not," ſays the biographer, "warrant the certainty of all theſe facts, but I affirm that it is very probable, that ſome of thoſe ſpiritual devotees, who make people believe that a ſtrong meditation will raviſh the ſoul, and hinder it from perceiving the actions of the body, have a mind to toy with their devout ſiſters with impunity, and to do ſtill worſe. In general, there is nothing more dangerous to the mind than too myſtical and too abſtracted devotions; and, doubtleſs, the body in that caſe runs ſome hazard, and many are glad to be deceived." Labadie became a director of a convent of nuns, among whom he introduced a new rule, and the notions of the Quietiſts, with additions of his own, *viz.* that the ſcriptures were not neceſſary to ſalvation: that outward worſhip is of no avail: that all prayer ought to be mental; and that there are two churches, that of Chriſtians in degeneracy, and the other regenerate. About the year 1650, Labadie renounced the Romiſh religion at Montauban, at the ſame time declaring he had contemplated this meaſure more than fifteen years. His converſion excited much converſation and many diſcuſſions among the Catholics; ſeveral attempts were made to engage him to return to the boſom of the true church, but without producing any effect on his mind. His licentious practices were now expoſed, and probably very much exaggerated: the Proteſtants, proud of ſo important a convert to their cauſe, would liſten to none of the accuſations, and he was choſen paſtor of the reformed church at Montauban in the year 1651. Here he exerciſed the duties of the miniſterial office for eight years, and then, on accoount of ſome diſputes on ſubjects which he was unable to juſtify, he went to Geneva. Here his devout manners and popular preaching gained him a vaſt multitude of adherents, but by others every means was taken to drive him from the town, and in 1666, theſe people accompliſhed their purpoſe, by procuring an invitation to be ſent to him from the Walloon church at Middleburgh, the capital of Zealand, which he readily accepted. He made many converts in this place, among whom was the celebrated Anna Maria Schurman, of Utrecht, whoſe great learning rendered her ſo famous in the republic of letters during the ſeventeenth century. Labadie ſent diſciples to propagate his doctrines, and to gather contributions in different parts of Holland, on which account he was obliged to withdraw to Erfurt, the capital of Thuringia, and from thence to Altona, where he died at the age of ſixty-four, in the year 1674. After his death, the community ſettled at Wievert, in North Holland, where it found a peaceful retreat, and ſoon fell into oblivion. Labadie was author of many works which are full of myſticiſm: but they carry evident marks of a lively and glowing imagination. Bayle. Moſheim.

LABADISTS, or LABBADISTS, in *Eccleſiaſtical Hiſtory*, a ſect of religioniſts, followers of the opinion of Jean de Labadie, who lived in the 17th century, and was contemporary with Mademoiſelle Bourignon.

Some of his tenets were, that, 1. God could and did deceive men. 2. That in reading the ſcriptures, greater attention ſhould be given to the internal inſpiration of the Holy Spirit, than to the words of the text; that the ſcripture was not ſufficient to lead men to ſalvation, without certain illuminations and revelations from the Holy Ghoſt; and that the efficacy of the word depended upon him that preached it. 3. That baptiſm ought to be deferred till mature age. 4. That the good and the wicked entered equally into the old alliance, providing they deſcended from Abraham, but that the new admitted only ſpiritual men. 5. That the obſervation of Sunday was a matter of indifference. 6. That Chriſt would come and reign a thouſand years on earth. 7. That the euchariſt was only a commemoration of the death of Chriſt; and that though the ſymbols were nothing in themſelves, yet that Chriſt was ſpiritually received by thoſe who partook of them in a due manner. 8. That a contemplative life was a ſtate of grace, and of divine union during this life, the ſummit of perfection, &c. 9. That the man whoſe heart was perfectly content and calm, half enjoys God, has familiar entertainments with him, and ſees all things in him. 10. That this eſtate was to be come at by an entire ſelf-abnegation, by the mortification of the ſenſes and their objects, and by the exerciſe of mental prayer. He alſo maintained, that the faithful ought to have all things in common, and that there is no ſubordination or diſtinction of rank in the church of Chriſt. It is ſaid that the Browniſts, and afterwards the Quakers, offered to connect themſelves with this ſectary, but were rejected. See Journ. des Sçavans for October, 1727, where we have ſome account of Labadie and his followers, which were moſtly women; and with ſome of whom, it has been ſaid, he took criminal liberties.

LABAREES, in *Geography*, a town of Spain, in the provice of Aſturia; 12 miles W. of Santillana.

LABARIFERI, among the *Romans*, ſtandard bearers, who carried the labarum.

LABARIUM, a looſeneſs of the teeth.

LABARUM, in *Antiquity*, the banner or ſtandard borne before the Roman emperors in the wars.

The labarum conſiſted of a long lance, or pike, with a ſtaff at the top, croſſing it at right angles; from which hung a rich ſtreamer, of a purple colour, adorned with precious ſtones, and curiouſly inwrought with the images of the reigning monarch and his children.

Till the time of Conſtantine, this ſtandard had an eagle painted upon it; but that emperor introduced in lieu of it a croſs. Accordingly, the ſummit of the pike ſupported a crown of gold, which incloſed the myſterious monogram, at once expreſſive of the figure of the croſs, and the initial letters of the name of Chriſt, as repreſented under the article CROSS. The ſafety of the labarum was entruſted to 50 guards, of approved valour and fidelity; their ſtation was marked by honours and emoluments; and ſome fortunate accidents ſoon introduced an opinion, that as long as the guards of the labarum were engaged in the execution of their office, they were ſecure and invulnerable, amidſt the darts of the enemy. This ſtandard the Romans took from the Germans, Dacæ, Sarmatæ, Pannonians, &c. whom they had overcome.

The name labarum was not known before the time of Conſtantine; but the ſtandard itſelf, in the form we have deſcribed it, abating the ſymbols of Chriſtianity, was uſed by all the preceding emperors.

In the ſecond civil war Licinius felt and dreaded the power of this conſecrated banner, the ſight of which, in the diſtreſs of battle, animated the ſoldiers of Conſtantine with an invincible enthuſiaſm, and ſcattered terror and diſmay through the ranks of the adverſe legions. Euſebius (in Vit. Conſtantin. l. ii. c. 7, 8, 9.) introduces the labarum before the Helvic expedition; but his narrative ſeems to indicate that it was never ſhewn at the head of an army, till Conſtantine, above 10 years afterwards, declared himſelf the enemy of Licinius, and the deliverer of the church. The Chriſtian emperors, who reſpected the example of Conſtantine, diſplayed in all their military expeditions the ſtandard of the croſs; but when the degenerate ſucceſſors of Theodoſius had ceaſed to appear in perſon at the head of the armies, the labarum was depoſited as a venerable, but uſeleſs, relic in the palace of Conſtantinople. Its honours are ſtill preſerved on the medals of the Flavian family. Their grateful devotion has placed the monogram of Chriſt in the midſt of the enſigns of Rome. The ſolemn epithets of, ſafety of the republic, glory of the army, reſtoration of public happineſs, are equally applied to the religious and military trophies; and there is ſtill extant a medal of the emperor Conſtantius, where the ſtandard of the labarum is accompanied with theſe memorable words, "BY THIS SIGN THOU SHALT CONQUER."

The derivation and meaning of the word *labarum*, or *laborum*, which is employed by Gregory Nazianzen, Ambroſe, Prudentius, &c. ſtill remain totally unknown; in ſpite of the efforts of the critics, who have ineffectually tortured the Latin, Greek, Spaniſh, Celtic, Teutonic, Illyric, Armenia, &c. in ſearch of an etymology.

Some derive the word from *labor*, as if this finiſhed their labours; ſome from *ευλαϐεια*, *reverence*, *piety*; others from *λαμϐανειν*, *to take*; and others from *λαφυρα*, *ſpoils* The labarum has afforded very ample matter for criticiſm, and has been diſcourſed of by Fuller, Alciatus, Cujas, Gyraldus, Lipſius, Meurſius, Voſſius, Hoffman, Valois, Du-Cange, &c.

LABAT, JOHN BAPTIST, in *Biography*, was born at Paris in 1663: at the age of twenty he entered into the Dominican order, and made his profeſſion in 1685. Having completed his ſtudies he became profeſſor of philoſophy at Nantz, after which he was, in 1693, ſent by his ſuperiors to America as a miſſionary. He returned to Europe in 1705, and being landed at Cadiz, he travelled through Spain and Italy, where he reſided ſome years. During this period he employed himſelf in drawing up a narrative of his obſervations, which he publiſhed at Paris, in 1722, with the title "Nouveau Voyage aux Iſles de l'Amerique, &c." in ſix volumes. A ſecond edition was given to the world in eight volumes, in the year 1741. He was author likewiſe of "Travels in Spain and Italy," in eight volumes: and he edited the following, *viz.* "New Relation of Weſtern Africa," 5 vols.: "Voyages of the Chevalier Merchais to Guinea:" "Hiſtorical Relation of Weſtern Æthiopia:" and "Memoirs of Chevalier d'Arvieux," in 6 vols. Labat died at Paris in 1738. Moreri.

LABATA, in *Geography*, a town of Spain, in Aragon; 10 miles E. of Hueſca.

LABATIA, in *Botany*, named by profeſſor Swartz, in memory of John Baptiſt Labat, a Dominican monk, who, between the years 1700 and 1713, inveſtigated the plants of Africa and the Weſt Indies, of which he drew up numerous deſcriptions, collecting every thing memorable reſpecting their economical uſes, and their modes of cultivation and preparation. Haller ſpeaks of him as a ſhrewd man of buſineſs, rather than an able naturaliſt.—Swartz. Prodr. 32. Fl. Ind Occ. v. 1. 263. Schreb. 790. Willd. Sp. Pl. v. 1. 623. (Chætocarpus; Schreb. 75. Pouteria; Aubl. Guian. v. 1. 85. Juſſ. 156. Lamarck Illuſtr. t. 72.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Bicornes*, Linn. *Guaiacanæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, permanent, of four leaves; the two oppoſite ones erect; two ſmaller ovate, obtuſe, concave, internal. *Cor.* of one petal; tube ſomewhat bell-ſhaped, ſhorter than the calyx; limb in four minute, erect, bluntiſh, equal ſegments, with two oppoſite, ſmaller, intermediate, lanceolate ones. *Stam.* Filaments four, the length of the corolla, erect, awl-ſhaped, cloſe to the piſtil; anthers erect, pointed. *Piſt.* Germen ſuperior, roundiſh, minute; ſtyle awl-ſhaped, equal to the ſtamens; ſtigma ſimple, obtuſe. *Peric.* Capſule large, roundiſh, rough, of four cells and four valves. *Seeds* ſolitary, oblong, compreſſed.

Eſſ. Ch. Calyx inferior, of four leaves. Corolla ſomewhat bell-ſhaped, four-cleft, with two ſmaller intermediate ſegments. Capſule of four cells. Seeds ſolitary.

1. L. *ſeſſiliflora*. Sw. Fl. Ind. Occ. t. 6.—Flowers ſeſſile. Leaves ſilky.—Found by Swartz in buſhy parts of the mountains of Hiſpaniola. The *ſtem* is ſhrubby, ſix feet or more in height, erect, ſmooth, with a greyiſh ruſty bark; the branches alternate, ſtraight, bearing upright, round, ruſty ſmaller branches. *Leaves* alternate, ſtalked, oblong-lanceolate, pointed, entire, wavy, rigid, two or three inches long, elegantly ribbed and veined beneath; the young ones ſhining and ſilky, with a golden ruſty hue; the older more ſilvery. *Footſtalks* ſhort, round, ruſty. *Flowers* axillary, ſeſſile, moſtly ſolitary, whitiſh, very ſmall. *Fruit* the ſize of a nutmeg, roundiſh, rough and ruſty, the internal partitions yellow. Sometimes there are but two cells and as many ſeeds, the fruits of this natural order being liable to vary greatly in the number of their diviſions. The flowers appear in May and June; the fruit ripens in December and January.

2. L. *pedunculata*. With. n. 2. (Pouteria guiannenſis; Aubl. Guian. t. 33.)—Flowers ſtalked. Leaves ſmooth.—Native of woods in Guiana, where it is called by the Indians *Pourouma-Pouteri*. Aublet found it bearing both flowers and fruit in November. The *trunk*, according to this writer, is 40 feet high, and a yard in diameter, with a rough reddiſh bark, and hard, cloſe-grained, white wood; the branches long and ſubdivided, leafy at their extremities. *Leaves* obovate, pointed, entire, ſmooth, three or four inches long, on foot-ſtalks nearly half that length. *Flowers* ſmall, greeniſh, on ſhort ſimple axillary ſtalks, two or three together. *Fruit* oval, hard, rough with rigid ſhort hairs, red internally, as is likewiſe the ſkin of the ſeeds.

LA BATIE NEUVE, in *Geography*, a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Gap. The town contains 200, and the canton 3130 inhabitants, on a territory of 125 kiliometres, in eight communes.

LABBE, Philip, in *Biography*, was born at Bourges in the year 1607, and at the age of ſixteen he entered the ſociety of the Jeſuits, and became diſtinguiſhed as a teacher of the languages, of rhetoric, and philoſophy, in the college of his native place. He was afterwards profeſſor of moral theology at Paris, where he reſided till his death, which happened in 1667. He was reckoned a man of profound learning, and indefatigable induſtry. He was author of many works, of which ſeveral relate to the hiſtory of his own order; the moſt important is "A General Collection of Councils," with notes, in ſeventeen vols. fol. His grammatical work for the uſe of ſtudents in the languages, entitled "Eruditæ Pronuntiationis Catholici Indices," has been frequently reprinted in this country. The edition by Edward Leedes is well known in our ſchools. Its object is to point out the quantity of Latin proper names of perſons, places, &c. Moreri.

Labbe, in *Ornithology*. See LARUS *paraſiticus*.

LABBOCK Bay, in *Geography*, a bay on the N.E. coaſt of the iſland of Borneo. N. lat. 6° 2′. E. long. 117° 55′.

LABDACISM, Λαϐδακισμος, in *Rhetoric*, the too frequent repetition of the letter L, as *ſol et luna luce lucebant*, and *alba levi lactea*.

LABDANUM, in the *Materia Medica*. See LADANUM.

LABDARA, in *Geography*, a ſmall iſland in the gulf of Venice. N. lat. 44° 14′. E. long. 15° 19′.

LABEL, a long thin braſs ruler, with a ſmall ſight at one end, and a centre-hole at the other; commonly uſed with a tangent line on the edge of a circumferentor, to take altitudes, &c.

Label, in *Law*, is a narrow ſlip of paper, or parchment, affixed to a deed or writing, in order to hold the appending ſeal. Any paper annexed by way of addition, or explication, to any will or teſtament, is alſo called a label, or codicil.

Among apothecaries likewiſe, the ſlip of paper round their phials, containing directions how to uſe the medicine, is called a label.

Label, in *Heraldry*, a kind of addition to the arms of the heir or firſt ſon, to diſtinguiſh him from the others. See FILE.

Although the file or label be uſed as a diſtinction of houſes, it is nevertheleſs properly placed by Holme, as an ordinary, becauſe it is variouſly borne and charged.

The label is eſteemed the moſt honourable of all differences; and is formed by a fillet uſually placed in the middle, and along the chief of the coat, without touching its extremities. Its breadth ought to be a ninth part of the chief.

It is adorned with pendants ſomewhat like the drops under the triglyphs in the Doric frieze. When there are above three pendants, the number muſt be ſpecified in blazoning. There are ſometimes ſix.

The label, variouſly charged, is the difference generally affixed on the coats of arms belonging to any of the royal family; when his majeſty ſhall think fit to command that arms be granted them.

LABELLA Leporina, in *Surgery*. See HARE-LIP.

LABELLED Line, in *Heraldry*, a term uſed by ſome to expreſs the line in certain old arms, called more uſually *urdée* or *champagne*. Others apply the ſame word to expreſs the patee or dove-tail line, called alſo the *inclave line* by Morgan. It ſomewhat reſembles the joint called a *dovetail* by our joiners, and its points, as they proceed from the ordinary, whether chief or feſs, reſemble the ends of labels. See URDÉE and PATEE

LABEO, C. Antistius, in *Biography*, an eminent Roman lawyer, the ſon of one of the perſons who conſpired againſt the life of Julius Cæſar, was a diſciple of Trebatius, and lived under Auguſtus. He became a very learned man, preſerved a free and independent ſpirit under the rule of a deſpot, and ſhewed on various occaſions that he had not forgotten,

gotten, nor was careleſs of the liberties of his country. His great rival in juriſprudence was Ateius Capito, and Tacitus, ſpeaking of theſe two rivals, calls them "the two ornaments of peace in their age:" he however celebrates the incorrupt freedom of the latter, which was the cauſe of his riſing no higher than the prætorſhip; while the obſequiouſneſs of the former was rewarded with a conſulate. Labeo divided his time between buſineſs and ſtudy, ſpending ſix months at Rome, in giving advice and attending to public duties, and living the other ſix in a country retreat. He wrote a number of books chiefly relating to juriſprudence. Aulus Gellius refers frequently to the commentaries of Labeo, on the twelve tables. Suetonius, Lempriere.

Labeo, in *Ichthyology*, a name given by the old Latin writers to the fiſh uſually called *cheilon* and *chelon*. See Cyprinus *Labeo*.

LABER, in *Geography*, a town of Bavaria, in the principality of Newburg; nine miles W.N.W. of Ratiſbon.

LABERIUS, Decimus, in *Biography*, a writer of dramatic pieces, ſimilar in ſome reſpects to our pantomimes, was a knight by birth. He was ſixty years of age when Julius Cæſar, in the plenitude of his power, urged him, by the promiſe of a liberal reward, to appear on the ſtage, in one of his own pieces. The poet conſented with great reluctance, and ſhewed his reſentment during the acting of the piece, by throwing ſevere aſperſions upon Julius Cæſar, and by broadly hinting at the tyranny and deſpotiſm of which he was guilty. In pronouncing the following line, he fixed the eyes of the whole aſſembly upon the uſurper:

"Neceſſe eſt multos timeat quem multi timent."
"Many he dreads in turn, whom many dread."

Cæſar reſtored him to the rank of knight, which he had loſt by appearing on the ſtage, but he could not ſo eaſily reſtore him to the good opinion of his friends. When he went to take his ſeat among the knights, no one offered to make him room, even his friend Cicero farcaſtically ſaid "Recipiſſem te niſi anguſté ſederem;" *I would make you room if I were not ſo much crowded:* to which Laberius replied, "Mirum ſi anguſté ſedes, qui ſoles duabus ſellis ſedere," *I wonder you ſhould be crowded, who uſually ſit upon two ſeats at once;* alluding to the orator's meanneſs and duplicity, during the civil wars between Cæſar and Pompey. Laberius died in the year 44, B.C. Some fragments of his poetry remain, and are given in Mattaire's Corpus Poetarum: the titles of his ſeveral pieces are preſerved in Aulus Gellius. Horace alludes, but without any reſpect to the *mimes* of Laberius, this was, probably, rather in contempt of the ſpecies poetry, than the author.

LABES, in *Geography*, a town of Hinder Pomerania; 30 miles S. of Colberg. N. lat. 53° 39′. E. long. 15° 39′.

LABEZ, a province, ſometimes called a kingdom, of Algiers, S. of Boujeah.

LABIA, or Lips, in *Anatomy*. See Deglutition.

LABIAL, a term in the French law, uſed in the ſame ſenſe with oral.

Labial *Letters*, among *Grammarians*, are thoſe whoſe pronunciation is chiefly effected by the motion of the lips. By which they ſtand contradiſtinguiſhed from palatal, dental, guttural, &c. letters.

Labial *Offers* are ſuch as are only made by word of mouth, or even by writing, where there is no valuable conſideration. In courts of equity theſe are not regarded.

LABIALIS, in *Anatomy*, an epithet given to certain parts belonging to the lips, as the arteries, veins, glands, &c.

LABIATÆ, in *Botany*, a natural order of plants, ſo called, after Tournefort, from *labium*, a lip, in alluſion to the ſhape of the corolla, which reſembles the mouth and lips of an animal. This order, the 39th of Juſſieu's ſyſtem, and the ſixth of his eighth claſs, is equivalent to Linnæus's 42d natural order, *Verticillatæ;* or to the *Didynamia Gymnoſpermia* of his artificial ſyſtem; except that the latter neceſſarily excludes ſuch genera of *labiatæ* as have but two ſtamens, and which are therefore referred to his ſecond claſs, *Diandria*.

The characters of Juſſieu's eighth claſs are—"Cotyledons two. Corolla of one petal, inferior." (See Gentianæ.) He defines the order in queſtion thus.

Calyx tubular, either equally five-cleft, or two-lipped. *Corolla* tubular, irregular, generally two-lipped. *Stamens* four, two longer and two ſhorter, ſituated under the upper lip of the corolla; in ſome caſes only two, the others being abortive. *Germen* four-lobed; ſtyle ſolitary, ſpringing out of the receptacle, between the lobes of the germen; ſtigma cloven. *Seeds* four, naked, erect, affixed to the receptacle by their baſe, and concealed in the permanent calyx. *Embryo* deſtitute of *albumen*. *Stem* quadrangular, oppoſitely branched, for the moſt part herbaceous, but ſometimes ſhrubby. *Leaves* oppoſite. *Flowers* oppoſite, often bracteated, or attended by briſtles, ſolitary or whorled, corymboſe or ſpiked, terminal or axillary.

The ſections are four.

1. Stamens two fertile, two abortive. This contains *Lycopus*, *Amethyſtea*, *Cunila*, *Ziziphora*, *Monarda*, *Roſmarinus*, *Salvia* and *Collinſonia*, to which are added by Mr. Brown (Prodr. v. 1. 501.) *Weſtringia*, Smith's Tracts, 277. t. 3, *Microcorys*, *Hemigenia* and *Hemiandra* of Brown; ſee the two latter articles in their places.

2. Stamens four, all fertile. Upper lip of the corolla wanting, or nearly ſo.—*Ajuga* of Linnæus, (which Juſſieu chooſes to call *Bugula* after Tournefort), and *Teucrium*, with *Aniſomeles* a new genus of Mr. Brown's.

3. Stamens four, all fertile. Corolla with two lips. Calyx five-cleft.—*Satureia*, *Hyſſopus*, *Nepeta*, *Perilla*, *Hyptis*, *Lavandula*, *Sideritis*, *Mentha*, *Glechoma*, *Lamium*, *Galeopſis*, *Betonica*, *Stachys*, *Ballota*, *Marrubium*, *Leonurus*, *Phlomis* and *Moluccella*, to which are to be added *Elſholtzia* (ſee that article), and *Leucas* of Burmann and Brown.

4. Stamens four, all fertile. Corolla with two lips. Calyx two-lipped.—*Clinopodium*, *Origanum*, *Thymus*, *Thymbra*, *Meliſſa*, *Dracocephalum*, *Horminum* (now reduced to *Meliſſa*), *Melittis*, *Plectranthus* (which is *Germanea* of Lamarck and Juſſieu), *Ocymum*, *Trichoſtema*, *Prunella*, *Scutellaria*, *Praſium* and *Phryma*, with *Chilodia* and *Cryphia* of Brown, and *Proſtanthera* of La Billardiere.

The plants of this natural order are, for the moſt part, agreeably aromatic, or bitter, none of them poiſonous. The root is generally perennial. Flowers of various colours, ſeldom fragrant in themſelves, except as they partake of the aromatic quality of the herbage. The ſtamens and ſtigma are, as Linnæus obſerves, ſo well ſheltered, in moſt inſtances, from the rain, while the air has free acceſs at the ſides, that impregnation rarely fails. *Mentha*, however, forms an exception, the ſtamens being prominent, and the corolla open; and as its ſeeds are ſcarcely ever prolific, no plant has a more ample increaſe by the roots.

LABIAU, in *Geography*, a town of Pruſſia, in the province of Samland, with an ancient caſtle, on the Deim; 20 miles E.N.E. of Konigſberg. N. lat. 54° 10′. E. long. 21° 15′.

LABIEZ, a town of the duchy of Warſaw; 32 miles N. of Gneſna.

LABINÆ, in *Natural Hiſtory*, a term uſed by the authors who have written of Switzerland, and other mountainous countries, to expreſs thoſe vaſt maſſes of ſnow, which ſometimes fall from the hills and bury houſes, or even whole towns; and when hardened by the froſts, as is often the caſe, into ſolid ſubſtances, they overthrow woods, villages, and whatever ſtands in the way of their courſe, as they roll down the ſteep ſides of the precipices in their way. Some authors have alſo extended the word to a larger ſenſe, and made it expreſs the falling of vaſt rocks, or parts of mountains, and their rolling down in the ſame manner into the flat country: this is a miſchief very frequent in the ſame places, after froſts, and often very fatal. See GLACIERS.

LABIUM, in *Anatomy*, a term given to various parts in the body, which, from their prominent figure, admit of being compared to the lips. Thus the labia pudendi are the two folds of ſkin which bound the external female organs of generation laterally. (See GENERATION.) The edges of the criſta of the os innominatum are called its labia.

LABIUM *Leporinum*, in *Surgery*. See HARE-LIP.

LABO, in *Geography*, a town on the W. coaſt of the iſland of Sumatra, which chiefly trades in pepper. N. lat. 3° 20′.

LABOMAS, a town of the iſland of Cuba; ſeven miles S.E. of Spiritu Santo.

LABON, a town on the W. coaſt of Sumatra, celebrated for gold duſt and camphire; but the inhabitants are reſerved in their traffic with ſtrangers: 150 miles S.S.E. of Acheen. N. lat. 3° 10′. E. long. 96° 40′.

LABOON, a diſtrict of Sumatra, on the banks of the river Cattown, bounding the country of the Rejangs on the N. or inland ſide.—Alſo, a town on the E. coaſt of the iſland of Borneo, ſeated on a peninſula that projects into the ſea. N lat. 5° 9′. E. long. 119° 5′.

LABOR, a town of New Navarre; 280 miles S.E. of Caſa Grande.

LABORATORY is a place furniſhed with chemical apparatus, and entirely devoted to the different operations of chemiſtry, whether on the ſcale of chemical manufacture, or for the purpoſe of experimental reſearch. In the preſent article, however, we ſhall confine ourſelves to the latter, ſince it is more proper to deſcribe the apparatus uſed in the large way under the manufacture of the reſpective articles. Although many of the moſt diſtinguiſhed labourers in chemical ſcience have been content with ſuch apparatus as they have made themſelves, or converted from the common domeſtic utenſils; it muſt, nevertheleſs, be obvious, that they would have ſucceeded better with well contrived and appropriate apparatus, and their reſearches would, in all probability, have been much more extended.

Every chemical experimenter will find a conſiderable advantage in ſo much mechanical talent, as will enable him to make, or repair at leaſt, the moſt common of his apparatus. For this purpoſe he ſhould poſſeſs a ſet of mechanical tools, ſuch as a lathe and vice, with files and raſps for metal and wood. The tools for making ſcrews, as well in the lathe as by the *ſcrew-plate* and *taps*, will alſo be neceſſary. To theſe ſhould be added a ſmall forge, anvil, and hammer, for the purpoſe of forging ſmall articles. A ſet of brazier's and tinman's tools will be found very uſeful, and a little experience will enable the operator to make any article of tin or copper, which is not very complicated. In addition to the above, the glaſs-blower's lamp and bellows will be of eſſential ſervice for ſealing and bending glaſs tubes, and other purpoſes.

Some of theſe may appear unneceſſary, eſpecially in large towns, where the different artiſts may be found, but it will be ſtrongly in the recollection of all who have had occaſion to get apparatus made, that they can ſeldom get them conſtructed to their wiſh, although they ſtand by the artiſt. The want of proper tools, and a little mechanical dexterity, have frequently prevented or put an end to experimental inveſtigations of conſiderable importance. Independent of the apartment containing the mechanical apparatus, the chemiſt will require at leaſt one diſtinct room for a laboratory. Two rooms, however, ſhould be employed when it is convenient. The principal room of the laboratory ſhould be on a ground floor, for ſeveral reaſons. A furnace for great heat ſhould be in a low room, in order to have the greateſt length of chimney. The aſh-pit of this furnace ſhould terminate in a cellar under the laboratory, in order that the air may enter perpendicularly, and of the loweſt poſſible temperature. See FURNACE.

That ſide of the laboratory allotted for furnaces ſhould have an arch projecting into the room about three or four feet, and of ſuch height that a perſon may freely walk under it. In the higheſt part of this arched portion muſt be an opening into a chimney diſtinct from the reſt, and built up in the ſame ſtack.

It will be found more convenient to uſe portable furnaces for moſt purpoſes, having none fixed but for producing very great heats, upon a larger ſcale, and what are generally denominated melting furnaces.

The iron chimney of the portable air-furnace may be carried to any height, and placed under or within the chimney, uſed for the eſcape of ſmoke and vapours.

A chimney with a funnel may, in the ſame way, be placed over the mouth of the portable blaſt furnace, invented by Mr. Aikin. This furnace may be ſo contrived that when the body of it is removed, the baſe may form a forge hearth, which will be found very uſeful. For the varieties of furnaces uſed in the laboratory, ſee FURNACE.

On another ſide of the laboratory muſt be placed a ſtone trough or ſink, joined to a tub or ciſtern of water, which can be filled and emptied at pleaſure, by means of a ſtop-cock over it, and a plug in the bottom. Over the ſink-ſtone ſhould be ſuſpended a rack for holding bottles and glaſſes to drain after waſhing. On the ſame ſide may be placed a large block of wood or ſtone, for the purpoſe of holding a mortar or anvil occaſionally.

A third ſide of this room muſt be occupied by cupboards and ſhelves, for holding the different apparatus of glaſs and earthen ware, and for the different ſubſtances hereafter to be mentioned.

The fourth ſide, which ſhould be the lighteſt, muſt be provided with a table the whole length of this ſide, in the front of which, down to the floor, ſhould be a number of drawers for holding all the dry ſubſtances. This table is for making the experiments upon, and for holding the apparatus in uſe at any time.

If poſſible, every laboratory ſhould be joined to a ſecond room, however ſmall it may be, in which to perform the very nice and delicate experiments, and for keeping a few books, and choice inſtruments of metal, ſuch as balances, &c. This room ſhould be kept very clean and dry, and as free as poſſible from ſteam and the fumes of acids.

If any part of the furniture require to be painted, the paint ſhould be made with ſulphat of lead, ſince it is not acted upon by acids. This ſubſtance has been uſed by Dr. Henry not only for this purpoſe but for repairing broken glaſs and labelling bottles. The following are the moſt particular apparatus with which a laboratory ſhould be furniſhed.

Mortars.—Theſe are of various kinds, caſt-iron, bronze, ſteel, and Wedgewood ware. The caſt-iron mortar is generally uſed for vegetable ſubſtances, and ſuch as are not liable to grind off the iron. The hardneſs of this inſtrument is much increaſed by caſting the interior ſurface upon a metal mould, of the greater weight the better.

The hardneſs of the bronze mortar, which is generally uſed for the ſame purpoſes, may be increaſed by the ſame means.

The ſteel mortar is uſed for reducing very hard minerals into ſmall bits, fitted for grinding in the mortar of agate. It conſiſts of a cylinder of hardened ſteel, with a flat bottom, and a peſtle of the ſame made to fit the mortar, accurately, from top to bottom. It is uſed by putting the pieces of the mineral into it, and ſtriking the peſtle with a hammer. By this means it can be reduced into tolerably ſmall particles, without grinding off any portion of the mortar.

Hardened ſteel mortars of the common ſhape would be of great uſe, but it would be difficult to harden ſo large a maſs without cracking. It might perhaps be made by welding a plate of caſt ſteel upon a thick piece of iron, and afterwards working it into the required ſhape, and poliſhing it in the inſide. If the ſubſtance is not very particular, it may be ground in a mortar of Wedgewood ware. If, on the contrary, it be very hard, the matter from the mortar will be liable to be mixed with the powder. In this caſe the agate mortar is much to be preferred; ſome ſtones are, however, ſo hard as to act upon the agate. In this inſtance, the matter to be ground ſhould be weighed before and after grinding, and the increaſe of weight may be ſafely deemed ſilex, and allowed for in the analyſis accordingly.

Balance.—This inſtrument is of great importance to the analytical chemiſt, and ought to weigh 100 grains to the $\frac{1}{1}$ th of a grain. A very maſterly account of the principles and conſtruction of the balance will be found under the article BALANCE.

It will be almoſt unneceſſary to obſerve, that ſo delicate an inſtrument ſhould be kept in a ſeparate apartment from the laboratory where fumes of acids do not prevail. It ſhould be cloſely ſhut up in a glaſs caſe having a ſliding door in the front. The ſtrings to which the ſcales are ſuſpended, ſhould be of fine gold or ſilver cord, and the ſcales of ſilver or platina, and very thin. One of the ſcales ſhould be provided with a looſe pan of very thin platina, and balanced with the other, for the purpoſe of holding the ſubſtance to be weighed. The weights for chemical ſubſtances ſhould be reckoned in, and marked with grains and decimals of grains.

Lamp.—This valuable inſtrument is a very great improvement upon the ſand-bath. Its heat is regular, and may, by means of the concentric wick, be made of ſufficient intenſity for moſt purpoſes. Its greateſt advantage, however, conſiſts in the facility with which it can be applied or withdrawn without loſs of time. See LAMP.

For nice and delicate purpoſes, where the heat of the lamp is required, alcohol, inſtead of oil, gives an intenſe and ſteady heat, and is not very expenſive when a proper veſſel is uſed for burning it. The latter kind of lamp is particularly adapted for a public lecture.

Fig. 1. *Plate* XVI. *Chemiſtry*, is a ſtand ſupporting the lamp, and at the ſame time the ſubſtance to be heated, and the connecting apparatus A B is a frame of wood. F a pillar of wood or iron, ſmooth and cylindrical throughout, ſo as to admit of the ſliding rings, ſuch as *g*, to move freely without ſhaking. C is the Argand lamp, having a chimney at *o* of iron. This chimney conſiſts of two concentric tubes, connected together by ſmall wedges of baked clay, or ſome other incombuſtible ſubſtance which is a bad conductor of heat. This contrivance not only economizes the heat, but keeps the outer tube ſo cool, that it may be taken hold of with the fingers. In this lamp the wick is raiſed by the ſcrew, inſtead of the rack, which is performed by turning the chimney round.

The funnel-ſhaped ring D is an improvement upon the common ring uſed for ſupporting the retort. It conſiſts of a number of conical hoops, one fitting upon the other, ſo as to hold different ſized retorts. The ſmalleſt hoop is about two inches in diameter, and the largeſt, which is attached to the ſliding part, about five inches. The conical ſurface directs the heat to the retort, which on the common plan only ſerves to annoy the fingers and face of the operator, and at the ſame time heats the neck of the retort, where the condenſation of the vapour ſhould take place: *f* is a retort ſupported by the ring: *g* is a ſlider, having two prongs at *p* to keep the retort from falling ſideways: E is a receiver to receive the contents of the retort, which may be either uſed alone, or with Woulfe's bottles *a*, *b*, *c*, hereafter to be deſcribed. G is a ſtand, with three inclined prongs of wood to ſupport receivers of different ſizes, and which may be placed at different elevations by means of the ſcrew *n*.

Retort.—*Fig.* 2. This is a chemical utenſil of very ancient origin, and is the moſt ſimple apparatus for diſtillation. Retorts are of glaſs, earthen-ware, and metal. Thoſe of glaſs are ſometimes of green glaſs, particularly when ſuch heat is employed in the naked fire, as might ſoften the more fuſible white glaſs. Thoſe of flint-glaſs ſhould be as thin as poſſible, in order to avoid breaking by an unequal expanſion. When the retort is provided with a glaſs ſtopper, as at *a*, it is ſaid to be tubulated.

This appendage is neceſſary only, when ſome fluid, ſuch as an acid, has frequently to be added, or when it would be difficult to get the materials into the mouth of the retort. In order to add any fluid from time to time while the proceſs is going on, the veſſel (*fig.* 3.) called an *acid holder* is made to fit in the place of the ſtopper of the retort, the part *d* being ground to fit the ſame. The acid is put into this veſſel, and let into the retort, by a little at once, through the glaſs ſtop-cock *c*.

When the retort is uſed for purpoſes of diſtillation, the neck is fitted or luted into the neck of the receiver (*fig.* 4.) This receiver is uſed for the diſtillation of liquids, the vapours of which are eaſily condenſible, ſuch as water or alcohol. When the vapours, coming over, are accompanied with elaſtic fluids, which are incondenſible, the receiver (*fig.* 5.) is better adapted. If the elaſtic fluid be of no importance, and inoffenſive, it may eſcape at the conical ſtopper of the latter veſſel every time the preſſure is ſufficient to raiſe it. It is, however, ſometimes neceſſary to collect the gaſeous fluid. In this caſe the bended tube (*fig.* 6.) is put into the place of the ſtopper (*fig.* 5.), the other end terminating in a pneumatic apparatus where the gas is collected. In the diſtillation of very volatile liquids, ſuch as ether, it is ſometimes neceſſary to remove the receiver to a diſtance from the retort, by placing between them an intermediate veſſel, (*fig.* 7.) called an *adopter*. The receiver (*fig.* 8.) is employed for collecting the product of different degrees of ſtrength by the application of the bottle *b*.

In the diſtillation of ſubſtances, which require a greater heat than glaſs will bear, earthen retorts are employed. They are of the ſame ſhape with thoſe already deſcribed, and ſhould be made of the materials with which crucibles are made. This ſort of retort is generally uſed for the diſtillation of phoſphorus. If its texture be not cloſe, the phoſphorus will eſcape in vapours through the pores. This, however, may be prevented by covering the ſurface with ſome glazing material. Iron retorts, from their great firmneſs, are well adapted for diſtilling ſuch ſubſtances as will have no chemical action upon them. Hence they are unfit for diſtilling ſulphur, phoſphorus, and acids, but are extremely proper for ammonia, mercury, and pitcoal. A retort of lead is uſed for the diſtillation of fluoric acid, owing to that acid combining with the ſilex of glaſs.

Woulfe's Apparatus.—In the diſtillation of ſubſtances which are merely to be raiſed into vapour by heat and condenſed by cold, the retort, or ſtill, with the receiver and the proper means of producing cold, are the only apparatus neceſſary. There is another diſtinct branch of diſtillation, in which the product is a gas, which is incondenſible at the common temperature, and requires to be abſorbed by water, or by ſome other ſubſtance diſſolved in that liquid. In theſe proceſſes, therefore, the temperature and ſize of the receiving veſſels are not of ſo much importance as the expoſure of the gaſeous product to the greateſt poſſible quantity of the abſorbing liquid. Before the diſcovery of this moſt uſeful apparatus by Mr. Woulfe, from whom it takes its name, the common retort and receiver were uſed for all purpoſes. The elaſtic fluids were in conſequence either compreſſed, and the operator was conſtantly in danger of being injured by the burſting of veſſels, or, to remedy that evil, they were ſuffered to eſcape, and he was perpetually annoyed by the ſuffocating fumes which were ſet at liberty.

In *fig.* 1. the retort contains the materials for furniſhing the elaſtic fluid to be abſorbed by ſome liquid contained in the receiver E, and the ſucceeding bottles *a*, *b*, *c*, with their connecting tubes *r*, *h*, *t*: *v* conſtitutes the *Woulfe's apparatus*. A certain portion of the gas is taken up by the liquid in the receiver E. The exceſs paſſes through the tube *r* to the bottom of the liquid into the ſecond receiver, by which another portion of the gas is abſorbed. The reſidual gas paſſes along the tube *h* to the third receiver, which gives the gas a third chance of abſorption. In this way it may be made to paſs through any number of bottles, according to the greater or leſſer facility with which the gas is abſorbed. The laſt tube *v*, which is provided with a column of mercury, conveys the remaining gas, which is preſumed to be unabſorbable, into the atmoſphere, or it may be collected by a jar in the pneumatic apparatus. When the gas ceaſes to be furniſhed from the retort, in a quantity equal to the abſorption in the receiving veſſels, a retrograde motion will begin to take place. Atmoſpheric air will enter at the tube *v*. The liquid in the laſt receiver will be forced by its preſſure into the preceding one, and if the abſorption were to become complete, the whole of the liquid would be carried into the firſt receiver, and from thence to the retort. This evil has been very completely removed by what is called a tube of ſafety *f*, *l*, *x*.

Fig. 1.—The bulb *l* contains as much mercury as will be contained from *q* to *x*, ſo that when the gas, from defective abſorption, accumulates in E, till its force is equal to the preſſure of ſuch a column, the exceſs of gas will bubble through the mercury into the atmoſphere. On the contrary, when the abſorption of the gas exceeds its evolution, the preſſure of the atmoſphere, to reſtore the equilibrium, will cauſe the mercury to occupy the ball *l*, and common air will bubble through it into the veſſel E. Although this ingenious contrivance completely prevents any evil ariſing from the inequality of internal preſſure, it is very objectionable, owing to its delicate ſtructure, on which account it is conſtantly liable to be broken.

We are indebted to Mr. Knight for a great improvement on the tube of ſafety. This conſiſts in having a valve of glaſs, ſimilar to that of the *Nooth's apparatus* (deſcribed below), placed between the firſt and ſecond veſſel, ſo that the liquid in the ſucceeding bottle can never have a retrograde motion. To this valve there is no other objection than the difficulty of getting it made in places diſtant from the metropolis, and its liability to be faſt, eſpecially in making cryſtalline ſalts, ſuch as the oxymuriat or carbonat of potaſh.

The ſame objection which we have made to the tube of ſafety, we are ſorry to ſay applies to the whole of the *Woulfe's apparatus*. The connecting tubes are with very great difficulty ground into bottles, which makes the apparatus very expenſive, and then are ſo liable to be broken, as to render it frequently uſeleſs.

We have before hinted, that the eſſential part of ſuch an apparatus, is to expoſe the greateſt poſſible quantity of the gas and the liquid to each other in a given time. In the Woulfe's bottles, this advantage does not obtain in ſo great a degree as might be effected in a ſimpler apparatus. We ſhall here ſubjoin a deſcription of an apparatus of this kind, anſwering all the purpoſes to which the Nooth's and Woulfe's apparatus are ſeparately applied. Although it has not been before made known, it has been uſed with great ſucceſs by the writer of this article, and will no doubt be found an acquiſition to the experimental as well as the manufacturing chemiſt.

Fig. 9. *Plate* XVII. *Chemiſtry*, is a repreſentation of the apparatus for the abſorption of gaſes. A is a retort from whence the gas is furniſhed, connected with the firſt bottle B, which contains the liquid to be impregnated, and into which the tube *a* is ground, reaching near to the bottom, ſo that when the gas enters this veſſel, the liquid will be raiſed into the bottle C; at the ſame time the tube will be conſtantly filled, with the exception of the ſpace occupied by bubbles of gas paſſing through it. If the gas is not all abſorbed during its paſſage through this tube, the exceſs will paſs down the tube *b* into the bottle D, which alſo contains the abſorbent liquid. The ſame takes place in this bottle which is obſerved in that of B. The liquid aſcends into the bottle E, the gas following it as before. The reſidual gas, ſhould there be any, may either be conveyed into another bottle ſituated like D, or may be collected in a pneumatic trough, or eſcape through the tube of ſafety *e*.

This apparatus was invented for the purpoſe of making the oxymuriats of the earths, for which it is admirably adapted. The earths which are mixed with the water being conſtantly at the bottom, if not kept in agitation, the abſorption is very ſlow and imperfect. In this apparatus no agitation is neceſſary. The earth, which is at the bottom of the veſſels B and D, is firſt raiſed into the tubes *a* and *c*, and becomes as much expoſed to the gas as any part of the liquid medium. The tubes *a* and *c* are each about two feet long, but they do not require to be ſo long for moſt experiments of this kind. Their diameter is about ½ inch, ſo that in the courſe of about one minute, no leſs than about nine ounces are brought in contact with the gas, independent of the circular ſurfaces in the bottles.

In the common ſized Woulfe's bottles, the tubes through which the gas enters ſeldom dip more than three inches into the fluid, ſo that we may ſafely rate the apparatus propoſed as equal to at leaſt eight of Woulfe's bottles. Theſe bottles are the ſame with thoſe of Woulfe's; the tubes are much ſimpler, and being ſtronger are leſs liable to break. Another great advantage is that of its not requiring a *tube of ſafety*. The great facility with which it can be applied to all the purpoſes of the Nooth's apparatus, as well as the Woulfe's, and with much more effect, will be ſoon appreciated. Under the article WOULFE will be found the deſcription of a differently conſtructed apparatus. See *Plate* V. *Chemiſtry*.

Nooth's Apparatus.—This is repreſented in *fig.* 10. *Plate* XVI. It conſiſts of three veſſels fitted together by ground joinings. It differs in its uſe from the Woulfe's, in being ſolely adapted for impregnating water and other bodies, with ſuch gaſes as are diſengaged from their combinations without heat, ſuch as the carbonic acid, and ſulphuretted hydrogen. The lower veſſel A contains the ſubſtance from which the gas is obtained, ſuch as carbonat of lime; the ſulphuric acid being introduced occaſionally at *d*; the gas enters the veſſel B through the glaſs valve *a b*. This is magnified in *fig*. 12. The tubes *b* and *d* are at firſt in one piece and ground into the part *a e*; the portion *c* is then cut away, to make room for the hemiſpherical valve, the under ſide of which is ground flat, to fit the end of the tube *b*. The valve, on being raiſed by the gas, inſtantly falls and prevents the water from deſcending into the lower veſſel. The air then enters the liquid in B, *fig*. 10, through ſmall holes to diſperſe it as much as poſſible. When the gas accumulates in B, a portion of the liquid is driven up into the veſſel C, the bubbles of air following it tending ſtill more to promote the abſorption. The air in C, if not abſorbed, will at certain intervals raiſe the conical ſtopper *e*. This ſtopper ſhould be ſo heavy as juſt to riſe before the veſſels would burſt, and ſhould be ſo conical as not to ſtick in the leaſt degree. After the liquid is impregnated it is drawn off at the cock D.

Fig. 11. is a ſimpler and better apparatus for this purpoſe, invented by Dr. Hamilton. It is ſimpler, becauſe the veſſels are fewer, and the valve, which is complicated and liable to be faſt, is diſpenſed with; and it is better becauſe the gas comes in contact with more of the liquid in a given time, and conſequently the abſorption is effected ſooner. The gas is furniſhed by the retort B, ground into the veſſel A. From the latter the abſorbing liquid is raiſed into the veſſel C, till the air bubbles go through it, and if not abſorbed paſſes out at *d*. This apparatus wants nothing more than a tube of greater length, for the gas to paſs through, to make it complete.

In comparing the two laſt with that of *fig*. 9, the latter will be found much ſuperior even to that of *fig*. 11.

Gaſometer and Gas Holder.—The difference between theſe two veſſels, conſiſts merely in one having the means of meaſuring the quantity of gas which it contains at any time, and the other not, while both are employed as gas holders.

The gaſometer was made a very expenſive and magnificent apparatus by the celebrated Lavoiſier, at the time he proſecuted his experiments upon elaſtic fluids. This inſtrument, much ſimplified, we ſhall deſcribe in *fig*. 13. *Plate* XVII. A is a veſſel containing water or ſome other liquid, which will not be acted upon by the gas to be held in it. B is a veſſel inverted in the veſſel A, and capable of moving up and down in it. E and F are cords by which the veſſel B is ſuſpended, the weights and pullies being concealed in the tube C D. *Fig*. 14 is a ſection to ſhew the interior parts of this apparatus. K L is an interior veſſel of the ſame ſhape, with the veſſel B ſoldered to the bottom of the veſſel A, ſo that no water or other liquid in A can communicate with the inſide of it. This is done for the ſake of uſing leſs of the liquid employed, which in the mercurial gaſometer is very deſirable, as well for the ſake of economy, as making the apparatus more portable; *a* is a pipe paſſing through the middle of the veſſel K L, and communicates with the tubes *o* and *d*. The air is introduced at the ſtop-cock *e*, and paſſing along the pipes *o* and *a*, raiſes the veſſel B, which is counterpoiſed by the weights *r* and *q*. Theſe weights are conducted down the middle of the tube C D, by the ſmall pullies *x x* and *y y*. The tube *d*, which, with that of *o*, is common to the tube *a*, is to let the air out of the gaſometer at the ſtop cock *f*, ſo that the air paſſes through *a*, both in its entry and its exit: *g*, *fig*. 13, is a flexible tube, ſerving to conduct the air to a pneumatic trough for examination, or for uſing the blowpipe when the veſſel contains oxygen. This apparatus is provided with a graduated ſcale G, which tells the number of cubic inches contained in it. It is this ſcale which conſtitutes it a gaſometer, without which it would be ſimply a *gas-holder*.

The mercurial gaſometer is on the ſame plan with the above, but the materials muſt be unſuſceptible of the action of the mercury. The veſſels are generally made of caſt-iron. The outer and the fixed inner veſſels may be caſt in one piece. The moveable veſſel may be of the ſame metal, or of glaſs. The pipes muſt be of wrought iron, and accurately ground into the caſt iron. Two gaſometers with water, and one with mercury, will be indiſpenſable in experiments in gaſeous chemiſtry.

A very ingenious apparatus, anſwering the common purpoſes of gas-holder and gaſometer, and in many inſtances the pneumatic trough, has been invented by Mr. Pepys. It conſiſts of a tin veſſel A, *fig*. 15, and a pan or tray B connected with it by pillars. The pipe *a* opens into the middle of the tray, and proceeds in a contrary direction near to the bottom of the veſſel A: *v* is another pipe which alſo communicates with the tray, and juſt enters the veſſel A: *r s* is a glaſs tube cemented firmly into two braſs ſockets, which communicate with the top and bottom of the veſſel A. This tube is graduated, and ſhews how high the water ſtands in the veſſel, and conſequently tells the quantity of air contained in it. The veſſel A is firſt filled with water by opening the cocks *a* and *v*, and ſhutting that of *n*, C being cloſed at the ſame time. The tray is now filled with water, which deſcends through the tube *a* into A, while the air in the ſame eſcapes at the opening into the tray, from *v*. When the veſſel A is full of water, the cocks *a* and *v* muſt be cloſed, and the plug may be taken out of C. If the veſſel and pipes be air-tight above, no water will be diſcharged at C, ſince this pipe is inſerted at ſuch an angle into A, that the loweſt part of the outer end is higher than the higheſt part of the inner end. The next thing is to fill the veſſel with gas, and for this purpoſe the neck of a retort, or other tube from which the gas is to proceed, ſhould be introduced at *c* till it paſſes the inner end of the ſame. The gas will riſe in bubbles into the upper part of the veſſel, while the ſame quantity of water will run out at the pipe C into an open veſſel placed under it. When the water ceaſes to run out, and air-bubbles eſcape at C, the tube from whence the gas was furniſhed may be withdrawn, and the ſcrew-plug put in its place.

In order to transfer the gas from this veſſel into a jar, the tray muſt be filled with water, and alſo the jar, which muſt then be placed over the aperture from *v*. On opening the ſtop-cock *v*, that of *a* being previouſly opened, the air will aſcend into the jar, while the ſame quantity of water will deſcend into the veſſel A, to ſupply its place.

This apparatus may be uſed for ſeveral other purpoſes. A bladder may be tied to the ſtop-cock *n*, which being opened at the ſame time *a* is opened, the bladder will be filled with the gas. A flexible tube may be ſcrewed on the ſame ſtop-cock for making experiments with the blow-pipe. The gaſometer, *fig* 13, will be found better for the blow-pipe, on account of the equable preſſure in the apparatus laſt deſcribed.

Pneumatic Trough.—This is a ſimple trough or ciſtern made of tin or copper japanned, and is uſed for collecting different gaſes. The ſize is generally about 18 inches long, 12 wide, and 12 deep. *Fig*. 16. *Plate* XVI. repreſents this trough. A is a ſliding ſhelf which can be taken out. It is formed of two plates laid together; the under plate is made ſo concave, that when the convex ſide touches the upper plate in the middle, they are diſtant at the edges about one inch.

A rim being ſoldered round the two gives the ſhelf the appearance of a ſolid, concave on the under ſide and flat on the upper ſide.

Any gas coming from the retort B, paſſing under the ſhelf in any ſituation, muſt be determined to the round hole in the middle, which is about half an inch wide. The trough, when uſed, is filled with water about an inch above the ſhelf, the jar C being filled with the ſame, and placed over the aperture through which the bubbles aſcend. The ſtand D, having a foot of lead or iron, will be found very uſeful for ſupporting a retort or other veſſel in theſe experiments. When a number of veſſels are occupying the ſhelf, and frequently ſome are very tall, and of ſmall diameter, it will be found neceſſary to ſupport them to prevent their being thrown over. This may be effected by having a number of ſupporters of different ſizes, ſuch as A. This is better repreſented in *fig.* 17. At *d* is a ſocket to fit the pins which ſurround the ſhelf; *n*, *o*, are ſpringing claws to embrace the glaſs.

In making experiments upon gaſes, a number of veſſels, ſuch as *fig.* 18, will be neceſſary. Theſe are generally called eudiometer tubes, ſome of them are graduated into cubic inches, for the purpoſe of meaſuring the volume of gas uſed, or reſulting from any experiment. See EUDIOMETRY.

Beſides the trough already deſcribed, which is uſed with water, it is neceſſary to be provided with one for mercury. Indeed the latter is abſolutely indiſpenſible when the gaſes, which are the ſubject of experiment, are abſorbable by water: ſuch as the muriatic acid gas, and ammoniacal gas.

Fig. 19. is a view of the mercurial trough: it is generally made of a ſolid block of ſome hard wood, or of marble; or it may be made much neater, and with leſs labour, of pieces of wood joined together, cloſely and firmly by iron ſcrews. The firſt cavity, *a e b*, may be about eight inches long, four inches broad, and one inch in depth: the ſecond or lower cavity, *d*, ſhould be about $6\frac{1}{2}$ inches long, $1\frac{3}{4}$ wide, and the ſame depth: *c* is a ſmaller cavity, about $\frac{3}{4}$ of an inch wide, $1\frac{1}{2}$ long, and one inch deep. The cavity *d* is intended to receive the glaſs jar, *fig.* 20, for the purpoſe of filling it with mercury: *a*, *b*, are ſmall cavities in which to introduce the fingers for the purpoſe of raiſing the jar when full of mercury. The cavity at *c* is to place the inverted jar over, for the purpoſe of introducing any gas into it. The ſide *a c* anſwers as a ſhelf to reſt the inverted jars upon: *fig.* 21. is a ring of iron, with a leg to ſlip into holes on the ſide of the trough, for the purpoſe of ſupporting the jars, which would otherwiſe be liable to fall on account of their ſmall baſe.

Eudiometer.—Formerly the uſe of this inſtrument was confined to the analyſis of the atmoſphere. It has now, however, become of great importance in gaſeous chemiſtry, and has been conſiderably improved within theſe few years.

In order to aſcertain the nature of, and to diſtinguiſh the different gaſes, chemiſts have generally recourſe to ſome ſubſtance capable of abſorbing the gas under examination. The eudiometer is the veſſel which contains, or communicates with the ſubſtance which is to abſorb the gas, and the tube being graduated marks out the quantity abſorbed, and ſhews how much of that particular gas was preſent.

The firſt inſtrument of this kind, adapted to general purpoſes, was invented by Dr. Hope, of which a deſcription will be found under EUDIOMETRY. Under the ſame article will be found Mr. Davy's eudiometer for the analyſis of the atmoſphere.

Mr. Pepys has lately invented a very good eudiometer: it differs from Dr. Hope's in the bulb, which holds the abſorbing liquid, being an elaſtic gum bottle inſtead of glaſs. A glaſs neck is tied into the neck of the bottle, into which the graduated tube is ground. When this eudiometer is uſed, the elaſtic bottle is filled with the abſorbing liquid (lime water, for inſtance), and the tube filled with the gas under examination (ſuppoſed to be carbonic acid), introduced into the neck.

On agitating the liquid to mix it with the gas, as the abſorption goes on, the elaſtic bottle collapſes, by the atmoſpheric preſſure, and the liquid occupies the place of the abſorbed gas in the tube.

The only objection to this eudiometer is its want of flexibility, and this varying under different circumſtances, ſo that the denſity of the contained air can never be accurately known. The writer of this article has done away the above objection, by uſing a bag of oiled ſilk inſtead of this elaſtic gum bottle. The ſilk muſt be very well coated, and the coating completely dry.

The eudiometer of Volta, which is found very uſeful in the preſence of the electric machine, is alſo called the *detonating jar*. It is uſed with oxygen to detect the preſence of hydrogen, and *vice verſâ*. This inſtrument, *fig.* 22, conſiſts of a very thick glaſs tube A B, having two bits of metal *a*, *b*, paſſing into the tube oppoſite to each other, the inner ends being ſeparated from each other a ſmall diſtance, ſo that an electric ſpark paſſing between them, may be capable of inflaming hydrogen with oxygen.

The gas to be examined is introduced into this jar, and the electric ſpark paſſed through it. If hydrogen and oxygen be preſent, in ſufficient quantity, they will explode, forming water, and producing a diminution of volume equal to the original bulk of gaſes which have entered into combination. In the exploſion of theſe gaſes the water or mercury is apt to be thrown in various directions by the concuſſion. We are indebted to Mr. Pepys for an ingenious method of preventing this evil. The tube A B is ſecured to the iron ſtand D E by means of a ſocket C. D is an iron tube containing a ſpiral ſpring, ſimilar to that of the ſpring *ſteel-yard*. The rod *d*, which acts upon the ſpring, is faſtened to the foot E, which is ſo heavy as not to be raiſed by the force exerted upon the ſpring. When the detonation of the gaſes takes place, the force is exerted equally upon the inſtrument and the liquid, in which it is immerſed, when they are both at liberty. Inſtead of being all exerted upon the latter, it cauſes the tube to riſe, the ſpring in the ſocket D giving way, and thus prevents the liquid from being diſperſed. All the gaſeous bodies containing hydrogen can now be analyſed by this inſtrument. Dr. Henry has diſcovered that ammonia, which does not appear combuſtible, can be exploded with oxygen: its hydrogen forming water with that ſubſtance. See EUDIOMETRY.

Evaporating Veſſels.—Theſe are of metal, earthen-ware, and glaſs. They are generally made broad and ſhallow, as ſeen in *fig.* 23, in order to expoſe a greater evaporable ſurface. During the evaporation of any liquid, a current of air ſhould conſtantly be paſſing over its ſurface. This object can be eaſily attained by placing the veſſel under the mouth of a chimney into which there is a conſiderable draught. By this means alſo the vapour is prevented from coming into the room.

Theſe veſſels are of ſilver for expelling the water from alkalis, and of glaſs, or Wedgewood ware, for acids and ſome ſolutions of ſalts.

Sand and Water Baths.—The ſand bath, although ſuperſeded by the Argand lamp, for diſtillations in the ſmall way, is, nevertheleſs, very uſeful for digeſting ſubſtances ſubjected to ſolution, and for evaporation. Its heat is much more regular than the naked fire, but it may ſometimes be too hot for ſubſtances which are liable to be decompoſed, ſuch as infuſions of vegetable or animal matters. The moſt uſeful ſand bath is made of a plate of caſt iron, under which the flame of a fire plays, and a rim of caſt or wrought iron laid upon it and filled with fine Calais ſand.

A ſand-bath frequently conſiſts of an iron diſh or pan made to fit the mouth of a furnace. See FURNACE.

When an uniform heat, not higher than 212° of Fahrenheit, is required, or when it will be ſufficient, the water bath is found highly uſeful. Inſtead, however, of placing the ſubſtance to be heated in a veſſel of boiling water, which was formerly the caſe, the bath may be heated with ſteam at any diſtance from the boiler. This bath may be a veſſel of any ſhape, having a cavity for ſteam on the outſide, thickly covered with flannel, or any bad conductor of heat, and the inſide filled with ſand. This bath is admirably fitted for the evaporation of ſolutions of animal and vegetable ſubſtances, and for drying precipitates and other ſubſtances liable to be decompoſed or changed by great heat.

Mattras.—This is a veſſel uſed for making ſolutions of ſubſtances. It is generally of a ſpherical form, flattened at the bottom, as ſeen in *fig.* 24, having a long neck to allow the fluid to condenſe and return into the veſſel. This uſeful apparatus is made of glaſs, and thin at the bottom, in order to prevent its breaking. The common Florence flaſk is a good ſubſtitute for the mattras. A ſmaller veſſel of this kind is uſed for boiling a leſs quantity of any liquid; theſe are called *proof glaſſes*. See *fig.* 25.

Precipitating Glaſſes.—See *fig.* 26.—Theſe are tall cylindrical veſſels, in which precipitations are performed, in order to collect the ſeparated matter into leſs room. In waſhing precipitates it is found, that when hot water is poured into the glaſs, if the bottom be thick it is liable to break. This evil has exiſted more or leſs in all the precipitating glaſſes in general uſe. In making this veſſel at the glaſs-houſe, the part to form the bottom ſhould be blown out thin, like the mattras, and then puſhed inwards to make it ſtand firmly. Very ſmall veſſels in this ſhape are uſed for ſmall quantities of any ſubſtance. Theſe are called *teſt glaſſes*.

Gas bottles, ſuch as *fig.* 27, are veſſels for obtaining hydrogen, carbonic acid, and other gaſes. The materials, ſuch as water and zinc filings, are introduced into the bottle A. The ſulphuric acid being put into the bottle B, the plug *b*, which is ground into the neck *d*, can be raiſed to let in the acid as it may be wanted. The gas eſcapes through the crooked tube C, which may be put under the ſhelf of the pneumatic trough.

Funnels are uſed generally for filtration; they are commonly, and always ought to be ribbed for this purpoſe, in order to form channels between the paper and the glaſs, which greatly facilitates the proceſs. In lieu of a ribbed filter, it is common to place a number of ſtraws, or pieces of glaſs, between the paper and the veſſel, which anſwers very well.

The ſeparatory funnel, *fig.* 34, is uſed for ſeparating fluids, ſuch as water and oil, which do not mix from the difference in ſpecific gravity.

The following articles are alſo eſſential to the laboratory, which it will be unneceſſary to deſcribe.

Thermometers and a barometer. Bottle for aſcertaining the ſpecific gravity of liquids.

A common ſtill to furniſh diſtilled water.

A ſmall one of ſilver for nice purpoſes.

The different blow-pipe apparatus, with platina, ſpoon, and leaf platina.

A ſilver crucible, and one of platina.

Crucibles and crucible ſtands of earthen ware. See *figs.* 29, 30, and 32.

Muffels and cupels. See *figs.* 28 and 33.

Iron retort and jointed tube for procuring oxygen gas. *Fig.* 35.

Glaſs jars of different ſizes for collecting gaſes.

Filtering paper, and papers coloured with litmus, turmeric, and red-cabbage.

A general aſſortment of glaſſes, to filter liquids into, &c.

An aſſortment of earthen veſſels for common purpoſes. Thoſe made of the ſame materials as the ſoda water bottles are to be preferred.

Capſules of glaſs, and watch-glaſſes. The former may be cut out of broken retorts and receivers with a ſmall hot iron.

Glaſs tubes of different ſizes, and a ſpirit lamp for bending them.

Glaſs and porcelain rods and ſpoons for ſtirring acids, &c.

Jars of glaſs and earthen ware, with grooves round the top, for luting them cloſely from the air. Theſe ſhould be uſed for containing ſalts in cryſtals.

Ruled paper for labels; copal varniſh to cover the ſame, to keep off the dampneſs and fumes of acids.

Sheets and wires of different metals.

Silk and thread of different ſtrength.

Stands made of wood or ruſhes, for ſupporting veſſels with round bottoms.

Iron ladles of different ſizes.

Hammers, ſhears, and plyers.

Corks, bladders, and ſponge.

Tongs of various forms.

Files, diamond, and magnet.

Lutes, linen, cloth, and tow. See LUTE.

The following philoſophical apparatus;

Air-pump for condenſing and exhauſting.

Syringes, microſcope, and burning lens.

Electric machine and Galvanic apparatus.

Zinc plates and wire, for minor experiments.

Hydroſtatic balance and hydrometer.

We ſhall conclude this article with a liſt of the chemical ſubſtances neceſſary to be kept in a chemical laboratory. Theſe are divided into wet and dry ſubſtances. The firſt of theſe muſt, of neceſſity, be kept in well-ſtopped bottles. The latter ſhould alſo be kept in bottles, the necks of which ſhould be wider than thoſe for liquids.

Subſtances in common uſe ſhould be kept in larger quantity than thoſe which are kept as mere ſpecimens, or only uſed occaſionally and in ſmall quantity.

Liquids in common Uſe.

Sulphuric acid, pure.
——————— common.
Nitric acid, pure.
——————, common.
Muriatic acid, pure.
———————, common.
Acetic acid.
Water ſaturated with ammonia.
Solution of potaſh.
—————— carbonat of potaſh.
—————— potaſh.
—————— ſuper-carbonat of potaſh.
—————— ſoda, and carbonat of ſoda.
—————— carbonat of ammonia.
Lime water.
Diſtilled water.

Alcohol, pure.
———, common.

The bottles in which the above are kept ſhould hold from a pint to a quart each.

After a change of temperature in the air from cold to hot, we find at the tops of bottles, about the ſtopper, a quantity of the liquid which has diſtilled up to the ſtopper, and been forced out by the expanſion of the air in the bottle. This is very troubleſome, eſpecially with acids, and may be remedied by giving to the mouth of the bottle a ſlight funnel ſhape, which forms a receſs for the liquid.

The following are the dry ſubſtances in common uſe.

Oxyd of manganeſe, and common ſalt.
Filings and rods of iron, tin, zinc, copper, and lead.
Chalk and powdered marble.
Quick lime, pipe clay, and ſand.
Magneſia, common and calcined.
Sulphurets of potaſh, iron, and lime.
Iſinglaſs and nutgalls.
Brazil wood and turmeric.
Calcined plaſter of Paris, and bone aſhes.
Black flux and white flux, See FLUX.
Charcoal powder and ſaw-duſt.
Sulphat of lead, as a body for lutes.
Nitre in cryſtals.
Borax and alum.

The following are bodies in ſolution, uſed as teſts and kept in ſmall quantities, in bottles from one to two ounces in ſize. The bottles ſhould be ſhaped at the mouth as above recommended, and the diameter ſhould be half the height in the cylindric part.

Sulphat of potaſh.
——— ſoda.
——— alumine.
——— ammonia.
——— magneſia.
——— zinc.
——— ſilver.
Oxy-ſulphat of iron.
Nitrat of potaſh.
——— ſoda.
——— barytes.
——— ſtrontian.
——— lime.
——— ſilver.
——— copper.
——— lead.
——— biſmuth.
Muriat of potaſh.
——— ſoda.
——— barytes.
——— ſtrontian.
——— lime.
——— ammonia.
——— gold.
——— platina.
——— tin.
——— cobalt.
Oxymuriat of mercury.
Phoſphat of ſoda.
——— ammonia.
Fluat of potaſh.
——— ammonia.
Borat of ſoda.
Carbonat of potaſh.
——— ſoda.
——— ammonia.
Acetat of potaſh.
——— barytes.
——— ſtrontian.
——— alumine.
——— ſilver.
——— copper
——— lead.
Oxyacetat of iron.
Oxalat of ſoda and ammonia.
Succinat of ammonia.
Tartrat of ammonia.
Pruſſiat of potaſh and iron.
——— lime and iron.
Pure gallic acid in alcohol.
Infuſion of galls in alcohol.
——— of litmus.
Acetic acid, pure.
Hydroſulphuret of potaſh.

The following ſubſtances ſhould be kept in the ſolid ſtate, and free from the contact of air and moiſture.

Sulphat of iron kept in alcohol.
Muriat of lime.
Oxymuriat of potaſh.
Barytic earth.
Strontian earth, and all pure earths.
Pure potaſh.
——— ſoda.
Potaſſium and ſodium, kept in naphtha. See POTASSIUM and SODIUM.
Sulphurets of potaſh, iron, and lime.
Phoſphuret of lime.
Phoſphorus.
Pyrophorus.

It is alſo proper that the chemiſt ſhould poſſeſs as great a variety of all the known chemical bodies as poſſible, both ſimple and compound. They are worth poſſeſſing even as a matter of curioſity. But they will be highly valuable in giving a familiar knowledge of the different ſubſtances which the experimentaliſt may expect to meet with, and enable him to diſtinguiſh them from what may be new.

LABORATORY *of an Hoſpital*, is a place where the chemical, &c. remedies are made up

LABORATORY, in a *Camp*, is a tent were the fire-workers and bombardiers prepare their works, drive their fuſees, fix their ſhells and careaſes, make quick-match, &c.

LABORDE, M. DE, in *Biography*, author of an ample and comprehenſive work, entitled "Eſſai ſur la Muſique, ancienne et moderne," publiſhed at Paris 1780, in four vols. 4to. The accumulation of curious materials for this publication is ſuch, as nothing but a long and unwearied diligence could amaſs. It has, however, frequently given us much concern, in conſulting this work, to ſee the ſpirit of ſyſtem operate ſo ſtrongly on the author, as to affect both his candour and conſiſtence. The critique upon muſical writers in the third volume, ſeems only a vehicle for general cenſure of all that have *not* ſubſcribed to the fundamental baſe of Rameau, the triple progreſſion of the Abbé Rouſſier, and praiſe of all that *have*. There is no middle ſtate, no muſic or muſical merit of any kind, theoretical or practical, unſanctioned by theſe dogmas. But will M. de Laborde venture to aſſert, or can he even believe, that till the publication of Rameau's "Syſtème de la Baſſe fondamentale," and the Abbé Rouſſier's "Memoire ſur la Muſique des Anciens," there was no good muſic in the world, or that all which has been produced ſince, by innumerable great maſters in ſeveral parts of Europe, who never ſtudied or heard of either, is execrable? That there are great method and merit in the ſyſtems of both theſe theoriſts, no candid judges of the ſubject will deny; and perhaps there are few who will not grant that the principles of harmony have not been formed into a code, equally luminous and uſeful to ſtudents, by any other writers, and yet will not ſhut their ears to all muſic not built upon their principles. The inconſiſtency of *individually* praiſing Italian compoſers in ſuch glowing terms, and yet ſeizing every opportunity to cenſure and ſneer at Italians and foreigners in *general*, prove the work to have been compiled by perſons of different principles. What a coil is made (v. iii. p. 690.) about a ſharp fifth uſed merely as an appoggiatura, or note of taſte, with which the baſe or harmony has nothing to do, and which, therefore, has no effect on the modulation! And yet M. de Laborde can bear the *quinte ſuperflue*, and have patience to give a rule for its uſe in compoſition! Can any one ſincerely praiſe the compoſitions of Piccini, Sacchini, and Paeſiello, who is diſguſted by thoſe happy licences, in which the very ſoul of Italian muſic conſiſts?

M. de Laborde gives us his muſical creed in pretty plain terms, (v. iii. p. 639,) in anſwer to a remark of Mr. Jamard, who expreſſes his ſurpriſe, that "the Italians, without any formal ſyſtem, compoſe better muſic than the French, who are in poſſeſſion of the true principles of harmony." This M. de Laborde is ſo far from granting, that, on the contrary, he is certain the French muſic, with reſpect to counterpoint, is infinitely ſuperior to the Italian; and that the Italians ſurpaſs

paſs the French in nothing but dramatic muſic, which is not like other muſic, ſubſervient to the laws of counterpoint!—"We will allow," continues he, "that the Italians are ſuperior to us in *melody*; but they in return muſt grant, that with reſpect to *harmony* we write in a manner ſuperior to them in correctneſs, purity, and elegance." What! ſuperior to Leo, Feo, Durante, Abos, Jomelli, Caffaro, and Manna? But neither melody nor harmony, alone, can conſtitute good muſic, which conſiſts in the union of both; and melody without harmony, or harmony without melody, is as imperfect as a man with one arm, or one leg, to whom nature has originally given two.

With reſpect to all the feuds and contentions lately occaſioned by muſic in France, they ſeem to have annihilated the former diſpoſition of the inhabitants to receive delight from ſuch muſic as their country afforded. There are, at preſent, certainly, too many critics, and too few hearers with a diſpoſition to be pleaſed in France, as well as elſewhere. We have ſeen French and German *ſoi-diſant connoiſſeurs* liſten to the moſt exquiſite muſical performance, with the ſame *ſang-froid* as an anatomiſt attends a diſſection. It is all analyſis, calculation, and parallel; they are to be wiſe, not pleaſed. Happy the people, however imperfect their muſic, if it gives them pleaſure! But when it is an eternal object of diſpute; when each man, like Nebuchadnezzar, ſets up his own peculiar idol, which every individual is to fall down and worſhip, or be thrown into the fiery furnace of his hatred and contempt, the bleſſing is converted into a curſe.

LABOUR, in *Agriculture*, the work which is neceſſary to be performed upon a farm, in order to render it fruitful and productive. It is of various kinds, and for the moſt part either performed by hired ſervants or day labourers. Where proper attention is paid by the farmer, to ſee that the labourer underſtands his buſineſs, &c. agricultural labour is probably, in general, beſt done by the piece, or what in ſome places is termed taſk-work. The expence or price of labour varies conſiderably in different diſtricts, from particular circumſtances; ſuch as the ſituation, the ſtate of manufactures, the condition of agriculture, the facility of getting employment, and the manner of living. See LABOURER.

In the Survey of the County of Middleſex, it is ſtated, that agriculture may very properly be conſidered as the art of manufacturing the ſoil, and unqueſtionably ranks the higheſt in the claſs of manufactures; ſince it not only makes a greater return for the labour beſtowed, than all the reſt put together, but it is alſo of the firſt neceſſity, the demands for its products being urgent and irreſiſtible. Any other manufactory, Mr. Dixon remarks, may be laid down at pleaſure, but agriculture muſt be ſupported, as it is the hinge upon which both our lives and actions turn; and the ultimate and only certain reſource of the ſtate, both for men and money.

In the above point of view the ſeed-grain, amounting to about 15*s*. an acre, may be ſaid to conſtitute, according to the writer of the Survey of the County of Middleſex, the raw material. When the corn and ſtraw, produced from this ſeed, are dreſſed and ſent to market, the greater part of it is then fit for conſumption, and may be called a finiſhed manufacture. The additional value above 15*s*. is entirely the produce of labour, at leaſt, in a conjunction with the aſſiſtance of nature; but as not one ſhilling could be procured for the natural products of the world, without the application of labour, the whole may therefore be ſaid to be derived from labour; and amounts to about 9*l*. 5*s*, an acre, or 1233*l*. *per cent*. on the coſt of the raw material. Wheat is ſtill farther manufactured into bread; but, excluſive of the operations of the miller and the baker, this is certainly not above the average for the produce of the arable land of this county; and ſome parts of Surrey, Kent, and Eſſex, yield in the ſame proportion. The raw material, on an average of the arable of the whole of South Britain, amounts to about 16*s*. *per* acre, which is increaſed in value by labour to 5*l*. or 525*l*. *per cent*. Hence the labour beſtowed on fifteen millions three hundred thouſand acres, produce a return of 64,260,000*l*. ſterling.

And the cattle and implements may, it is ſuppoſed in a manufacturing point of view, be deemed the ſtock; the amount of which, on the meadow-land in this county, is about 4*l*. an acre, and the produce 10*l*. The labour and profits of ſtock, therefore, are 150*l*. *per cent*. On a farm purely arable in this county the ſtock would be 5*l*. and the produce 10*l*. or 100*l*. *per cent*. There are not any grazing-farms in the county; if there were, their ſtock would be greater, and they would not yield ſo large an increaſe. The farming capital of South Britain is 5*l*. an acre, or 200 millions; and its annual produce is about 130, that is, 65 *per cent*.

He particularizes the annual produce of the ſoil in this way:

The arable lands, as before ſtated, -	£64,260,000
The hop-gardens make returns to the amount of 30*l*. an acre, for the produce of labour, or about - - -	1,000,000
Nurſery grounds produce upwards of 65*l*. *per* acre. Deduct the raw material, and the produce of labour will not be leſs than 60*l*. on 10,000 acres, is - -	600,000
The fruit and kitchen-gardens are the moſt valuable reſources for labour, and make the greateſt return, probably to upwards of 100*l*. *per* acre, on an average of Great Britain; but he only eſtimates them at that ſum on 50,000 acres, is - -	5,000,000
The graſs land and cider counties, cultivated in South Britain, make returns to the amount of 3*l*. on twenty millions of acres, is - - - - - -	60,000,000
The commons, eight millions, at 1*s*. 3*d*. an acre - - - - -	500,000
Total -	£131,360,000

It is not preſumed to offer the foregoing ſtatement, as one that either is, or can be made out with accuracy and preciſion. But, under all the circumſtances of the caſe, it may, it is believed, be fairly ſtated, that the annual agricultural produce of South Britain is not leſs than one hundred and thirty millions; which muſt be allowed to ſurpaſs all other manufactures that can be brought into competition with it, not only as to the groſs amount, but alſo as to its ſuperior uſefulneſs.

And if it be further ſuppoſed, that there are two millions and a half of perſons employed in agriculture, their average earnings will be, for men, women, and children of all ages, 52*l*. which is a ſum ſo much exceeding their expences, that it is evident this employment muſt enrich ſociety; and it is equally clear, that it contributes at once its ſurplus, wealth, and population, to make up the deficiencies of the other departments both in men and money. This ſurely places the importance of rural labour in ſuch a point of view, as ſhould urge the cultivation of as much land of the kingdom as poſſible.

Labour, in a general ſenſe, imports the exertion of human ſtrength in the performance of any kind of work.

The annual labour of every nation, ſays Dr. Smith in his "Inquiry into the Nature and Cauſes of the Wealth of Nations," (vol. i.), is the fund, which originally ſupplies it with all the neceſſaries and conveniences of life, which it annually conſumes, and which conſiſt always, either in the immediate produce of that labour, or in what is purchaſed with that produce from other nations. As this produce, or its value in purchaſe, bears a greater or a ſmaller proportion to the number of thoſe who are to conſume it, the nation will be better or worſe ſupplied with all the neceſſaries and conveniences for which it has occaſion. This proportion, in every nation, is regulated by two circumſtances, *viz.* the ſkill, dexterity, and judgment with which its labour is generally applied, and the proportion which the number of thoſe who are employed in uſeful labour, bears to that of thoſe who are not ſo employed. Whatever be the ſoil, climate, or extent of territory of any particular nation, the abundance or ſcantineſs of its annual ſupply muſt, in that particular ſituation, depend upon theſe two circumſtances; and chiefly upon the former of them, which has ſerved to improve the productive powers of labour. This improvement has very materially depended on the diviſion of labour, as we may illuſtrate and evince by a ſingle example taken from a manufacture, that is, on the firſt view of it, very trifling; *viz.* that of pin-making. A workman, not educated to this buſineſs, (which the diviſion of labour has rendered a diſtinct trade), nor acquainted with the uſe of the machinery employed in it, (to the invention of which the ſame diviſion of labour has probably given occaſion), could ſcarcely, with his utmoſt induſtry, make one pin in a day, and certainly could not make twenty. But as the buſineſs is now conducted, not only the whole work is a peculiar trade, but it is divided into a number of branches, conſiſting, for the moſt part, of peculiar trades. One man draws out the wire, another ſtraightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; and the making of the head requires two or three diſtinct operations; the putting of it on is a peculiar buſineſs, and the whitening of the pins is another; the putting of them into the paper is a trade by itſelf. Thus the important buſineſs of making a pin is divided into about 18 diſtinct operations, which, in ſome manufactories, are all performed by diſtinct hands, though in others, the ſame man will ſometimes perform two or three of them. Dr. Smith mentions a ſmall manufactory of this kind, where 10 men only were employed, and where ſome of them conſequently performed two or three diſtinct operations. But though they were poor, and their machinery indifferent, they could, with exertion, make among them 12 pounds of pins in a day; each pound conſiſting of upwards of 4000 pins of a middling ſize; theſe 10 perſons could therefore, among them, make upwards of 48,000 pins in a day; ſo that each perſon might be conſidered as making 4800 pins in a day. But if they had all wrought ſeparately and independently, and without having been previouſly educated to this peculiar buſineſs, they certainly could not each of them have made 20, perhaps not one pin a day; that is, certainly, not the two hundred and fortieth, perhaps not the four thouſand eight hundredth part of what they are at preſent capable of performing, in conſequence of a proper diviſion and combination of their different operations. This exemplification is applicable, in a certain degree, and with ſome modifications, to other arts and manufactures; and it ſhews that the diviſion of labour, as far as it can be introduced, occaſions, in every art, a proportionable increaſe of the productive powers of labour. The ſeparation of different trades and employments from one another, ſeems to have taken place in conſequence of this advantage. The great increaſe in the quantity of work, which, in conſequence of the diviſion of labour, the ſame number of people are capable of performing, is owing to three different circumſtances; *firſt*, to the increaſe of dexterity in every particular workman; *ſecondly*, to the ſaving of the time which is commonly loſt in paſſing from one ſpecies of work to another; and *laſtly*, to the invention of a great number of machines which facilitate and abridge labour, and enable one man to do the work of many. This invention and introduction of machinery ſeem to have been originally owing to the diviſion of labour. Of machines conſtructed for abridging and expediting labour, many have been deviſed by common workmen, who have been employed in ſome very ſimple operation, and whoſe attention has been wholly directed to an eaſy and ready method of performing it. Many improvements have alſo been made by the ingenuity of the makers of the machines, when the conſtruction of them became the buſineſs of a particular trade; and ſome by that of thoſe who are called philoſophers and men of ſpeculation, whoſe obſervation has enabled them to combine together the powers of the moſt diſtant and diſſimilar objects. A ſub-diviſion of employment in philoſophy, as well as in every other buſineſs, has taken place among perſons of this deſcription; in conſequence of which dexterity is improved, and time is ſaved. Each individual, appropriating to himſelf a particular branch, performs more work upon the whole, and contributes in a conſiderable degree to augment the quantity of ſcience. It is the great multiplication of the productions of all the different arts, in conſequence of the diviſion of labour, which occaſions, in a well-governed ſociety, that univerſal opulence which extends itſelf to the loweſt ranks of the people. Every workman has a great quantity of his own work to diſpoſe of beyond what he himſelf has occaſion for; and every other workman being exactly in the ſame ſituation, he is enabled to exchange a great quantity of his own goods for a great quantity, or, which comes to the ſame thing, for the price of a great quantity of theirs. He ſupplies them abundantly with what they have occaſion for, and they accommodate him amply with what he has occaſion for; and a general plenty diffuſes itſelf through all the different ranks of the ſociety.

The diviſion of labour, from which ſo many advantages are derived, is not originally the effect of human wiſdom, which foreſees and intends that general opulence to which it gives occaſion. It is the neceſſary, though very ſlow and gradual, conſequence of a certain propenſity in human nature which has in view no ſuch extenſive utility; the propenſity to truck, barter, and exchange one thing for another. As it is the power of exchanging that gives occaſion to the diviſion of labour, ſo the extent of this diviſion muſt always be limited by the extent of that power, or, in other words, by the extent of the market. When the market is very ſmall, no perſon can have any encouragement to dedicate himſelf entirely to one employment, for want of the power to exchange all that ſurplus part of the produce of his labour, which is over and above his own conſumption, for ſuch parts of the produce of other men's labour as he has occaſion for. This leads us to obſerve, that by means of water-carriage a more extenſive market is opened to every ſort of induſtry, than what land-carriage alone can afford it; ſo it is upon the ſea-coaſt, and along the banks of navigable rivers, that induſtry of every kind naturally begins to ſubdivide and improve itſelf; and it is frequently not till a long time after that theſe improvements extend themſelves to the inland parts of the country. If we advert to fact, we ſhall find, that the nations which appear to have been firſt cultivated, were thoſe that occupied the countries around the coaſt of the Mediterranean ſea. And of all theſe countries, Egypt ſeems to have been the firſt, in which either agriculture or manufactures were cultivated and improved to any conſiderable degree. Upper Egypt extends itſelf no where above a few miles from the Nile, and in Lower Egypt this great river breaks itſelf into many different canals, which, with the aſſiſtance of a little art, ſeem to have afforded a communication by water-carriage, not only between all the great towns, but between all the conſiderable villages, and even to many farm-houſes in the country; much in the ſame manner as the Rhine and the Maeſe do in Holland at preſent. The extent and facility of this inland navigation, was probably one of the principal cauſes of the early improvement of Egypt. The ſame obſervation is verified by extending our views to the provinces of Bengal in the Eaſt Indies, and to ſome of the eaſtern provinces of China, where the Ganges and other great rivers, with a multitude of canals, formed an inland navigation favourable to internal commerce, long before foreign commerce was much, if at all, regarded; the caſe is very different with reſpect to the inland parts of Africa, and all that part of Aſia, which lies at a conſiderable diſtance N. of the Euxine and Caſpian ſeas, the ancient Scythia, the modern Tartary and Siberia, which in all ages of the world ſeem to have been in the ſame barbarous and uncivilized ſtate in which we find them at preſent. See Canal, Commerce, and Navigation.

When the diviſion of labour firſt began to take place, the power of exchanging, upon which it chiefly depended, muſt frequently have been very much clogged and embarraſſed in its operations. In order to avoid part, at leaſt, of the inconvenience reſulting from this ſtate of ſociety, every prudent man, in every period of ſociety, after the firſt diviſion of labour, muſt naturally have endeavoured to manage his affairs in ſuch a manner, as to have at all times by him, beſides the peculiar produce of his own induſtry, a certain quantity of ſome one commodity or other, ſuch as he imagined few people would be likely to refuſe in exchange for the produce of their induſtry. Many different commodities, it is probable, were ſucceſſively both thought of and employed for this purpoſe. In the rude ages of ſociety, cattle are ſaid to have been the common inſtrument of commerce. Thus we find, according to Homer, that the armour of Diomede coſt only nine oxen; but that of Glaucus coſt 100 oxen. Salt is ſaid to be the common medium of commerce and exchanges in Abyſſinia; a ſpecies of ſhells in ſome parts of the coaſt of India; dried cod at Newfoundland; tobacco in Virginia; ſugar in ſome of our Weſt India colonies; hides or dreſſed leather in ſome other countries; and Dr. Smith mentions a village in Scotland in which it was not uncommon for a workman to carry nails inſtead of money to the baker's ſhop or the alehouſe. Metals, however, have been preferred for this purpoſe to every other commodity; and different metals have been appropriated by different nations to this uſe. See Coin and Money.

After the diviſion of labour has been once thoroughly eſtabliſhed, it is but a very ſmall part of the neceſſaries and conveniences of life which a man's own labour can ſupply him. The far greater part of theſe he muſt derive from the labour of other people; and he muſt be rich or poor according to the quantity of that labour which he can command, or which he can afford to purchaſe. The value of any commodity, therefore, to the perſon who poſſeſſes it, and who means not to uſe or conſume it himſelf, but to exchange it for other commodities, is equal to the quantity of labour which it enables him to purchaſe or command. Labour, therefore, is the real meaſure of the exchangeable value of all commodities. This, however, is not the meaſure by which their value is commonly eſtimated. It is often difficult to aſcertain the proportion between two different quantities of labour. The time ſpent in two different ſorts of work will not always alone determine this proportion. The different degrees of hardſhip endured, and of ingenuity exerciſed, muſt likewiſe be taken into account. But it is not eaſy to find any accurate meaſure either of hardſhip or ingenuity. Hence it happens, that every commodity is more frequently exchanged for, and thereby compared with, other commodities than with labour. When barter ceaſes, and money has become the common inſtrument of commerce, every particular commodity is more frequently exchanged for money than for any other commodity. Nevertheleſs, labour alone, never varying in its own value, is the ultimate and real ſtandard by which the value of all commodities can at all times and places be eſtimated and compared. It is their real price; money is their nominal price only. But though equal quantities of labour are always of equal value to the labourer, yet to the perſon who employs them, they appear ſometimes to be of greater and ſometimes of ſmaller value. He purchaſes them ſometimes with a greater and ſometimes with a ſmaller quantity of goods, and to him the price of labour ſeems to vary like that of all other things. It appears to him dear in the one caſe, and cheap in the other. In reality, however, it is the goods which are cheap in the one caſe, and dear in the other. In this popular ſenſe, therefore, labour, like commodities, may be ſaid to have a real and a nominal price. Its real price may be ſaid to conſiſt in the quantity of the neceſſaries and conveniences of life which are given for it; its nominal price, in the quantity of money. The labourer is rich or poor, is well or ill rewarded, in proportion to the real, not to the nominal price of his labour.

The real value of all the different component parts of price, ſays Dr. Smith, is meaſured by the quantity of labour, which they can, each of them, purchaſe or command. Labour meaſures the value, not only of that part of price, which reſolves itſelf into labour, but of that which reſolves itſelf into rent (of land), and of that which reſolves itſelf into profit. In every ſociety the price of every commodity reſolves itſelf into ſome one or other, or all, of theſe three parts; and in every improved ſociety, all the three enter, more or leſs, into the price of the far greater part of commodities. In the moſt improved ſocieties, however, there are always a few commodities of which the price reſolves itſelf into two parts only, the wages of labour and the profits of ſtock; and a ſtill ſmaller number, in which it conſiſts altogether in the wages of labour.

The produce of labour conſtitutes the natural recompence or wages of labour. In that original ſtate of things, which precedes both the appropriation of land and the accumulation of ſtock, the whole produce of labour belongs to the labourer; as he has no landlord or maſter to ſhare with him. If this ſtate had continued, the wages of labour would have augmented with all the improvements in its productive powers, to which the diviſion of labour gives occaſion. All things would gradually have become cheaper. They would have been produced by a ſmaller quantity of labour; and as the commodities produced by equal quantities of labour would naturally in this ſtate of things be exchanged for one another, they would have been purchaſed likewiſe with the produce of a ſmaller quantity. But this original ſtate of things, in which the labourer enjoyed the whole produce of his own labour, could not laſt beyond the firſt introduction of the appropriation of land and the accumulation of ſtock.

As ſoon as land becomes private property, the landlord demands a ſhare of almoſt all the produce which the labourer can either raiſe, or collect from it. His rent makes the firſt deduction from the produce of the labour which is employed upon land. A ſecond deduction is made by the profit accruing from the produce of the labour that has been ſo employed. The produce of almoſt all other labour, in all arts and manufactures, is liable to the like deduction of profit. What are the common wages of labour, depends every where upon the contract uſually made between the two parties, to whom belong the profits of ſtock, and the wages of labour; and the intereſts of theſe parties are by no means the ſame. The workmen deſire to get as much, the maſters to give as little, as poſſible. The former are diſpoſed to combine in order to raiſe, the latter in order to lower, the wages of labour. The maſters commonly ſucceed; for being fewer in number, they can more eaſily combine; and beſides, the law authorizes, or at leaſt does not prohibit, their combinations, while it prohibits thoſe of the workmen. But though in diſputes between maſters and workmen, the former muſt generally have the advantage, there is, however, a certain rate, below which it ſeems impoſſible to reduce, for any conſiderable time, the ordinary wages even of the loweſt ſpecies of labour. The wages of a labourer muſt at leaſt be ſufficient to maintain him; and indeed, on moſt occaſions, they ought to be ſomewhat more; otherwiſe it would be impoſſible for him to bring up a family, and the race of ſuch workmen could not laſt beyond the firſt generation. There are certain circumſtances, which ſometimes give the labourers an advantage, and enable them to raiſe their wages conſiderably above the rate already ſpecified; which is evidently the loweſt that is conſiſtent with common humanity. When in every country the demand for thoſe who live by wages, labourers, journeymen, ſervants of every kind, is continually increaſing; when every year furniſhes employment for a greater number than had been employed the year before, the workmen have no occaſion to combine in order to raiſe the wages. The ſcarcity of workmen occaſions a competition among maſters, who bid againſt one another, in order to get workmen, and thus voluntarily break through the natural combination of maſters not to raiſe wages. This demand for thoſe who live by wages, it is evident, cannot increaſe but in proportion to the increaſe of the funds, which are deſtined for the payment of wages: theſe funds are of two kinds: firſt, the revenue which is over and above what is neceſſary for the maintenance; and ſecondly, the ſtock which is over and above what is neceſſary for the employment of their maſters. The demand for thoſe who live by wages, therefore, neceſſarily increaſes with the increaſe of the revenue and ſtock of every country, and cannot poſſibly increaſe without it. The increaſe of revenue and ſtock is the increaſe of national wealth. It is this continual increaſe, and not the whole amount, of national wealth, which occaſions a riſe in the wages of labour. Accordingly, it is not in the richeſt countries, but in the moſt thriving, or in thoſe which are growing rich the faſteſt, that the wages of labour are the higheſt. England is, without doubt, a much richer country than any part of North America; yet the wages of labour are much higher in North America than in any part of England. Although North America is not yet ſo rich as England, it is more thriving, and advancing with greater rapidity to the further acquiſition of riches. The moſt deciſive mark of the proſperity of any country is the increaſe of the number of its inhabitants. In Great Britain, and in moſt other European countries, they are not ſuppoſed to double in leſs than 500 years. In North America, it has been found, that they double in 20 or 25 years. Labour is there ſo well rewarded, that a numerous family of children, inſtead of being a burthen, is a ſource of opulence and proſperity to the parents. The labour of each child, before it can leave their houſe, is computed to be worth 100*l.* clear gain to them. The value of children is evidently the greateſt of all encouragements to marriage. In North America the people generally marry very young; and notwithſtanding the great increaſe occaſioned by ſuch early marriages, there is a continual complaint in that country of the ſcarcity of hands. The demand for labourers, the funds deſtined for maintaining them, increaſe, it ſeems, ſtill faſter than they can find labourers to employ. Another circumſtance deſerves to be mentioned, *viz.* that the price of proviſions is every where in North America much lower than in England, ſo that a family can be maintained at a much cheaper rate. Upon the whole, if the money price of labour be higher there than it is here, its real price, the real command of the neceſſaries and conveniences of life which it conveys to the labourer, muſt be higher in a ſtill greater proportion. The liberal reward of labour, as it is the neceſſary effect, ſo it is the natural ſymptom of increaſing wealth. The ſcanty maintenance of the labouring poor, on the other hand, is the natural ſymptom, that things are at a ſtand, and their ſtarving condition that they are going faſt backwards. The liberal reward of labour, as it is the effect of increaſing wealth, is alſo the cauſe of increaſing population.

It deſerves to be remarked, that it is in the progreſſive ſtate, while the ſociety is advancing to the further acquiſition rather than when it has acquired its full compliment of riches, that the condition of the labouring poor, of the great body of the people, ſeems to be the happieſt and the moſt comfortable. It is hard in the ſtationary, and miſerable in the declining ſtate. The progreſſive ſtate is in reality the chearful and the hearty ſtate, to all the different orders of the ſociety. The ſtationary is dull, the declining melancholy. The liberal reward of labour not only encourages the propagation, but it increaſes the induſtry of the common people. Where wages are high, we ſhall always find the workmen more diligent, active, and expeditious, than where they are low: in England, for example, than in Scotland; in the neighbourhood of great towns than in remote country places. Some workmen, however, when they can earn in four days what will maintain them through the week, will be idle the other three. But this is by no means the caſe with the greater part. Workmen, on the contrary, when they are liberally paid by the piece, are very apt to overwork themſelves, and to ruin their health and conſtitution in a few years. Dr. Smith obſerves, that if maſters would always liſten to the dictates of reaſon and humanity, they have frequently occaſion rather to moderate than to animate the application of many of their workmen: and it will be found, he ſays, in every ſort of trade, that the man who works ſo moderately, as to be able to work conſtantly, not only preſerves his health the longeſt, but, in the courſe of the year, executes the greateſt quantity of work.

Although the variations in the price of labour not only do not always correſpond with thoſe in the price of proviſions, but are frequently oppoſite, we muſt not, upon this account, imagine that the price of proviſions has no influence upon that of labour. The money price of labour is neceſſarily regulated by two circumſtances; the demand for labour, and the price of the neceſſaries and conveniences of life. The former determines the quantity of the latter which muſt be given to the labourer; and the money price of labour is determined by what is requiſite for purchaſing this quantity. Though the money price of labour, therefore, is ſometimes high, where the price of proviſions is low, it would be ſtill higher, the demand continuing the ſame, if the price of proviſions were high. It is becauſe the demand for labour increaſes in years of ſudden and extraordinary plenty, and diminiſhes in thoſe of ſudden and extraordinary ſcarcity, that the money price of labour ſometimes riſes in the one and ſinks in the other. The increaſe in the wages of labour neceſſarily increaſes the price of many commodities, by increaſing that part of it which reſolves itſelf into wages, and ſo far tends to diminiſh their conſumption both at home and abroad. The ſame cauſe, however, which raiſes the wages of labour, the increaſe of ſtock, tends to increaſe its productive powers, and to make a ſmaller quantity of labour produce a greater quantity of work. The owner of the ſtock, which employs a great number of labourers, neceſſarily endeavours, for his own advantage, to make ſuch a proper diviſion and diſtribution of employment, that they may be enabled to produce the greateſt quantity of work poſſible. For the ſame reaſon, he endeavours to ſupply them with the beſt machinery which he or they can think of. There are many commodities, which, in conſequence of theſe improvements, are produced by ſo much leſs labour than before, that the increaſe of its price is more than compenſated by the diminution of its quantity.

Labour is diſtinguiſhed by Dr. Smith into productive and unproductive: the former is that which adds to the value of the ſubject upon which it is beſtowed; the latter is that which has no ſuch effect. Thus, the labour of a manufacturer adds, generally, to the value of the materials upon which he works, that of his own maintenance, and of his maſter's profit. The labour of a menial ſervant, on the contrary, adds to the value of nothing. Though the manufacturer has his wages advanced to him by his maſter, he, in reality, coſts him no expence, the value of theſe wages being generally reſtored, together with a profit, in the improved value of the ſubject upon which his labour is beſtowed. But the maintenance of a menial ſervant never is reſtored. A man grows rich by employing a multitude of manufacturers; he grows poor by maintaining a multitude of menial ſervants. The labour of ſome of the moſt reſpectable orders in the ſociety, is, like that of menial ſervants, unproductive of any value, and does not fix or realize itſelf in any permanent ſubject, or vendible commodity, which endures after the labour is paſt, and for which an equal quantity of labour could afterwards be procured. The ſovereign, for example, with all the officers, both of juſtice and war, who ſerve under him, the whole army and navy, are unproductive labourers. They are the ſervants of the public, and are maintained by a part of the annual produce of the induſtry of other people. Their ſervice, how honourable, how uſeful, how neceſſary ſoever, produces nothing for which an equal quantity of ſervice can afterwards be procured. The protection, ſecurity, and defence of the commonwealth, the effect of their labour this year, will not purchaſe its protection, ſecurity, and defence for the year to come. In the ſame claſs muſt be ranked ſome both of the graveſt and moſt important, and ſome of the moſt frivolous profeſſions: churchmen, lawyers, phyſicians, men of letters of all kinds, players, buffoons, muſicians, opera-ſingers, opera-dancers, &c. like the declamation of the actor, the harangues of the orator, or the tune of the muſician, the work of all of them periſhes in the very inſtant of its production. Both productive and unproductive labourers, and thoſe who do not labour at all, are all equally maintained by the annual produce of the land and labour of the country. This produce has certain limits; and according as a ſmaller or greater proportion of it is in any one year employed in maintaining unproductive hands, the more in the one caſe and the leſs in the other will remain for the productive, and the next year's produce will be greater or ſmaller accordingly; the whole annual produce, if we except the ſpontaneous productions of the earth, being the effect of productive labour. This produce naturally divides itſelf into two parts: one of theſe parts, and frequently the largeſt, is deſtined for replacing a capital, or for renewing the proviſions, materials, and finiſhed work, which had been withdrawn from a capital; the other for conſtituting a revenue either to the owner of this capital, as the profit of his ſtock, or to ſome other perſon, as the rent of his land. This is the caſe with reſpect both to the produce of land and of a great manufactory. The part of the annual produce of the land and labour of any country, which replaces a capital, never is immediately employed to maintain any but productive hands; it pays the wages of productive labourers only. That which is immediately deſtined for conſtituting a revenue either as profit or as rent, may maintain indifferently either productive or unproductive hands. The rent of land and the profits of ſtock are every where the principal ſources from which unproductive hands derive their ſubſiſtence. And, therefore, the proportion between the productive and unproductive hands depends very much upon the proportion between that part of the annual produce, which, as ſoon as it comes from the ground or from the hands of the productive labourer, is deſtined for replacing a capital, and that which is deſtined for conſtituting a revenue, either as rent or as profit. The latter part is not only much greater in rich than in poor countries, but bears a much greater proportion to that which is immediately deſtined for conſtituting a revenue, either as rent or as profit. The funds deſtined for the maintenance of productive labour are not only much greater in the former than in the latter, but bear a much greater proportion to thoſe which, though they may be employed to maintain either productive or unproductive hands, have generally a predilection for the latter. The proportion between theſe different funds neceſſarily determines in every country the general character of the inhabitants as to induſtry or idleneſs. The proportion between capital and revenue ſeems every where to regulate the proportion between induſtry and idleneſs. Wherever capital predominates, induſtry prevails; wherever revenue, idleneſs. Every increaſe or diminution of capital, therefore, naturally tends to increaſe or diminiſh the real quantity of induſtry, the number of productive hands, and conſequently the exchangeable value of the annual produce of the land and labour of the country, the real wealth and revenue of all its inhabitants. See on this ſubject Smith's Cauſes of the Wealth of Nations, paſſim.

Labour, in *Midwifery*. By the term labour is meant the act of detruding a fœtus or child from the uterus; and during the time this proceſs is going on, the woman is ſaid to be in labour. The exertion or efforts uſed by the woman, or any other animal, in effecting the expulſion of the fœtus, are called labour pains, or *throes*, - a Saxon word, meaning ſuffering or enduring.

Labour pains return at intervals of longer or ſhorter duration. In the commencement of labour, the pains only recur once in an hour or two; but as the labour advances, the return of the pains becomes more frequent; and at length they are almoſt continual, one pain being ſcarcely finiſhed when another begins: but in this there is a great variety, not only in different women, but in the ſame woman in ſubſequent labours.

The immediate or exciting cauſe of labour is the exiſtence of a fœtus, with its placenta and membranes, in the uterus, now ripe, and fit for excluſion.

Phyſiologiſts have in vain attempted to explain why the uterus ſhould bear the burthen of the ovum until the contained fœtus has arrived at its maturity, and ſhould then attempt its expulſion. The moſt general and prevailing opinion has been, that the fœtus having acquired ſufficient ſize and ſtrength, and finding itſelf preſſed upon, and ſtraightened, it labours to free itſelf from its confinement, and that the pains are occaſioned by its kicking againſt the ſides and fundus of the uterus. But as pains equally ſtrong are excited to expel a dead as a living fœtus, or to force away the placenta after the birth of the child, and as the eggs of oviparous animals are excluded by ſimilar efforts, it is plain the fœtus is paſſive in the buſineſs.

If the bulk of the fœtus was in any way inſtrumental in occaſioning labour, then the period of geſtation would vary according as the fœtus happened to be larger or ſmaller, which, we know, is not the caſe; except when it is diſturbed by accidental circumſtances, as by falls, hurts, fever, or other diſeaſes. To every animal there is an allotted time for utero-geſtation. This law in the economy of nature is ſo uniformly attended to, that even when the fœtus is contained in one of the Fallopian tubes, or in a ſac, in the cavity of the abdomen, at the end of nine calendar months, the time appointed for women to carry their young, exertions for its excluſion are excited, in the ſame manner as they would have been if it had been contained in the uterus.

When the fruit is ripe, its connection with the parent tree is gradually looſened, and at length it falls to the ground. When the fœtus has acquired that degree of maturity it is intended to attain to in the uterus, the fibres or veſſels that connect the ovum, or bag in which the fœtus is contained, become looſened, and are gradually diſſolved or broken; and the ovum, now an extraneous body, would, like the fruit, fall or ſlide through the vagina, if it were not prevented by the ſtraightneſs of the paſſage through which it is to paſs. It is for the ſame reaſon, *viz* that they are become extraneous bodies, that abortions of two, three, four, or more months, are excluded ſoon after they ceaſe to live.

Labours are divided or diſtinguiſhed by the terms *natural*, *preternatural*, or *laborious*.

Labours are called *natural*, when the vertex of the head of the child preſents to the uterine orifice, the face inclining towards the ſacrum, the hind-head towards the pubes of the mother; the ſize of the head of the child being alſo ſo adapted to the pelvis of the mother, that the expulſion of it may be effected ſolely by the powers of nature, or by the pains, and within the ſpace of a few hours.

Labours are called *preternatural*, when any other part of the child than the head preſents to the uterine orifice, as the feet, the breech, a ſhoulder, or an arm. In all theſe caſes, more or leſs of manual aſſiſtance will be required to complete the birth.

Labours are called *laborious* or *difficult*, in which the head of the child preſents, but either in conſequence of its offering in a wrong poſition, or with an ear, or the face to the uterine orifice, or on account of its diſproportionate ſize, or from ſome diſeaſe in the os uteri or vagina, or diſtortion of the pelvis of the mother, it cannot be brought ſafely into the world, without great difficulty, or without the aſſiſtance of inſtruments.

Progreſs and Management of a natural Labour.—Two or three weeks before the completion of the term of geſtation, the abdomen of the pregnant woman is obſerved to ſubſide, and become leſs prominent; there is a ſecretion of mucus from the glands of the vagina, and perhaps from the cervix uteri. This ſerves to ſoften and relax the paſſage, and to render it more eaſily dilatable. The uterus ſinks gradually lower into the pelvis, and the os externum is frequently, from this cauſe, in a ſmall degree thruſt outward. In ſome women, ſlight pains, recurring every three or four hours, are excited in the courſe of this proceſs; and milk flows from the breaſts. Theſe preliminary ſymptoms occur, but perhaps in a leſs degree, in preternatural and laborious, as well as in natural labours.

The term of geſtation being completed, the fundus uteri begins to contract, and to propel the fœtus downwards, by which the labia of the os internum, called alſo os tincæ, are ſtretched, made thin, and at length forced open, at firſt to the ſize only of a ſixpence, or ſo as ſcarcely to admit the end of the fore-finger of the aſſiſtant, if he ſhould happen to examine the woman at this time. This advance in the labour is uſually announced by the diſcharge of a thicker mucus than what had been diſcharged before, and often tinged with blood, effuſed probably by the ſmall veſſels which had contributed to connect the membranes to the cervix uteri. This diſcharge of mucus tinged with blood is by the woman called a *ſhew*.

Though it may be proper, and is uſually expected, that the accoucheur or midwife ſhould examine into the ſtate of the uterus, early in labour, by paſſing the fore-finger of his right hand, anointed with lard, into the vagina, in order to diſcover what part of the child preſents to the os uteri, and to repeat the examination every hour or two, to aſcertain the progreſs of the labour; yet having found it is the head of the child that preſents, and that there is no unnatural obſtacle to the birth, he muſt be careful to do this in ſo gentle a manner as to give no pain to the woman; and he is on no account to attempt to haſten the dilatation of the os internum, or any part of the paſſage, that being only ſafely to be done by the natural pains.

By the continuance of the uterine contractions, aided by that of the diaphragm and muſcles of the abdomen, the orifice at the womb becomes more and more thin and dilated, until it is ſufficiently open to admit, during the pains, a portion of the membranes, filled with the liquor amnii, or fluid in which the fœtus is ſuſpended. This bag, which is gradually enlarged, contributes materially in opening the uterine orifice, until it becomes ſufficiently extended to admit the vertex of the head of the child, when it uſually burſts, and the contained fluid ruſhes forth generally with violence. The women call this the *breaking of the waters*, and they expect the birth of the child will ſoon follow; and if the buſineſs has been entirely left to the agency of the pains, this uſually happens in the ſpace of one or two hours.

After the burſting of the membranes, there is uſually a ſuſpenſion of the pains for the ſpace of ten or fifteen minutes, when they are again renewed, and the head of the child is forced down, until it preſſes againſt the perinæum and the os externum, or outward orifice. In deſcending to this poſition, the head of the child makes a half turn, to bring the forehead to the ſacrum, the hind-head to the pubes of the mother. The perinæum of the woman becomes now ſo much diſtended, that the diſtance from the edge or frænum of the os externum to the anus amounts to three inches, or more. The pains now become more ſtrong and frequent, diſtending and enlarging the os externum, until it is ſufficiently opened to allow a paſſage for the head of the child, which is at length forced into the world, when it is uſual to ſay the head of the child is born. The pains are now again ſuſpended for the ſpace of ten or fifteen minutes, during which time the fundus uteri gradually contracts, until it comes again into contact with the breech of the fœtus. Two, three, or more pains are required to expel the ſhoulders; and as many more to bring the remainder

mainder of the body of the child into the world. The child being born, the woman now enjoys a degree of happineſs, of which, if it be her firſt child, ſhe had never been conſcious before. But her trouble is not completely over; for at the end of fifteen, twenty, or a few more minutes, freſh pains ariſe, but not ſo violent as thoſe ſhe had before experienced. By theſe the placenta is gradually looſened from the uterus, and thruſt down into the vagina, and at length expelled from the body.

After the birth of the child, but particularly after that of the placenta, there is a conſiderable diſcharge of blood, particularly from the placenta, but, principally, from the uterus. This is called the lochia, and it continues flowing, in greater or leſs plenty, for five, ſix, or more days; diminiſhing every day in quantity, and becoming thinner and paler, and is at length colourleſs. This is occaſioned by the gradual contraction of the veſſels of the uterus, which continues until that viſcus is reduced to nearly the ſize it was before the woman conceived.

With firſt children, and, in a few inſtances, with ſubſequent births, this contraction of the uterus goes on almoſt imperceptibly to the woman, more ordinarily pains are excited, ſimilar to labour pains, and are called *after-pains*. As they are not attended with danger, and generally ſubſide, and entirely ceaſe by the end of three or four days, it is not often found neceſſary to attempt appeaſing them by medicines; but when they are unuſually frequent and violent, preventing ſleep, they may be quieted by opening the bowels with ſome purging medicine, as caſtor oil, an infuſion of ſenna, with ſome of the neutral ſalts, or by an emollient and opening clyſter, and at night giving a draught with ten, fifteen, or twenty drops of the tincture of opium.

The above is the uſual progreſs of a natural labour, but there is a great variety in the number, ſtrength, and frequency of the pains required for the expulſion of the child in different women, as well as in the time taken in completing the labour, which in ſome women is effected in a few minutes, and with very little pain; more ordinarily, it takes from two to ſix, eight, or ten hours. In ſome caſes, when the pains are tardy, the term may be extended to twenty-four hours. If delayed beyond that time, the labour will be denominated laborious or difficult, as ſome aſſiſtance will be required to haſten the birth, leſt the ſoft parts of the mother ſhould be hurt, or the ſtrength of the child exhauſted, by its too long continuance in a ſtraightened ſituation.

During the progreſs of the labour, the woman is to be allowed to be ſitting, walking, or lying down, as ſhe feels herſelf moſt diſpoſed. The friends about her, and perhaps the nurſe, generally adviſe her to hold in her breath, and to preſs down as ſtrongly as ſhe can with every pain, and to enable her to do this, they are inceſſant in offering her caudle, or other heating drinks. But theſe things are not only unneceſſary, but likely to do miſchief. The accoucheur or midwife will therefore interpoſe his advice. They muſt take care to keep the room cool, and not permit more than one or two of the friends of the woman to be in the room together. They may aſſure the parturient woman, that the pains are of themſelves ſufficient for the expulſion of the child, and that by endeavouring to increaſe their force, ſhe will only unneceſſarily fatigue herſelf; and that by taking warm ſpiced drinks, ſhe will become hot and feveriſh, the parts will become more irritable and tender to the touch, whence ſhe will indeed ſuffer more pain, but the birth of the child, inſtead of being accelerated, will be retarded, and rendered more difficult.

To aſſuage her thirſt, if that ſhould be troubleſome, toaſt and water, baum-tea, or any ſimilar beverage, will be much more uſeful than wine or other heating drinks.

If ſhe is coſtive, and feels uneaſineſs from that cauſe, an emollient and gently opening clyſter may be advantageouſly adminiſtered. When the pains become more ſtrong and frequent, and from the complaints of the woman it is apparent that the head of the child is faſt deſcending, it will then be proper that the woman be laid on the bed, either on one ſide or at the foot of it, according as the nurſe has arranged it. The uſual and moſt convenient poſture for the woman is, that of lying on her left ſide, her head and ſhoulders raiſed, her knees drawn up to her belly, and with her feet ſupported on the knees of an aſſiſtant, or preſſing againſt the bed-poſt. She is now to be covered with ſuch a portion of the bed-clothes, as the ſeaſon of the year, or the temperature of the air, may ſeem to render neceſſary. The accoucheur will ſit down behind her, and taking advantage of a pain, he will introduce his fore-finger into the os externum, which, if the labour is as far advanced as has been ſuppoſed, he will find on the full ſtretch, and the perinæum much diſtended. This is the only part in which the aſſiſtant need or ought to give any manual aſſiſtance in a natural labour. It will now be his duty to endeavour, with the greateſt care and diligence, to prevent a rupture of the frænum, and of the perinæum, which may happen if the head of the child ſhould be allowed to paſs into the world with too much rapidity. This diſtreſſing accident, which, when the rupture is conſiderable, extending to the anus, is hardly remediable by any art, rarely happens but with a firſt child, nor often perhaps with firſt children, but when means have been uſed, early in labour, to accelerate the birth. With the view of preventing it, if, on examination, the os externum and the perinæum ſhall be found to be ſtrongly preſſed upon, and diſtended during the pains, and yielding with difficulty, the accoucheur muſt ſeriouſly admoniſh the woman to moderate her exertions, aſſuring her, at the ſame time, that the child will ſpeedily be born. During the pains he muſt ſurround the part of the head of the child which protrudes, or is in the world, with the fingers and thumb of his right hand, the points of them reſting on the edge of the os externum. In this poſition, the end of his thumb will touch the frænum, the part likely to give way firſt. If he finds that part ſo much diſtended as to be in danger of burſting, he will reſiſt the further deſcent of the head during the pain. This operation will be aſſiſted, by keeping his left hand, covered with a cloth, firmly preſſed upon the diſtended perinæum. When one-half of the head of the child has, by this cautious procedure, been conducted into the world, the accoucheur will find the occiput of the child riſing upwards, turning on the pubes of the woman, and drawing the forehead and face from under the perinæum. The head of the child being born, it is uſual with midwives to draw the ſhoulders and the reſt of the body ſoon after. But experience has ſhewn, that it is ſafer and better to wait for the return of the pains, as during the ſuſpenſion of them, which laſts, as has been before mentioned, fifteen or twenty minutes, the fundus of the uterus contracts and deſcends until it comes again in contact with the breech of the child. By this means the ſinuſes and veſſels of the uterus are gradually emptied, and diminiſhed in ſize, whence one of the cauſes of inordinate hæmorrhage is removed, at the ſame time the placenta is looſened and prepared for its exit. The firſt two or three pains occurring after the birth of the head of the child, are uſually expended in giving a favourable turn to the ſhoulders, *viz.* in bringing one of them to the pubes, and one to the ſacrum of the mother; they are then gradually forced into the world, and ſoon after the reſt of the body the accoucheur uſing the ſame precautions in ſupporting the perinæum, as has been recommended during the paſſage of the head.

The child uſually announces its birth, by crying more or leſs violently according to its ſtrength. This ſerves to open the veſſels, and to facilitate the circulation of the blood through the lungs. The child may be allowed to lie ſome minutes under the clothes, before ſeparating it from the placenta, taking care that none of the clothes lie upon its face, which might impede its reſpiration. In that interval the aſſiſtant will lay his hand upon the abdomen of the mother, which, if there ſhould be another child, he will find nearly as much diſtended as it was in the commencement of the labour. In that caſe, it will be neceſſary, having previouſly diſpoſed of the firſt child, that he make a ligature on the end of the funis, which hangs out of the vagina of the woman, but he is on no account to make any effort to bring away the placenta or membranes, which are uſually found to be adherent to thoſe containing the twin. As ſoon as the pains re-commence, which they uſually do at the end of three or four hours, (though ſometimes they do not return until ſix, eight, ten, or more hours,) the accoucheur will paſs the fore-finger of the right hand into the os uteri, to diſcover the poſition of the fœtus. If the head preſents, he will conduct the labour in the manner above deſcribed, but as the parts have been previouſly completely opened, there will be leſs difficulty to the woman, and leſs danger of any accident happening to the perinæum. If the face, or any other part than the head of the child ſhould preſent, it will be neceſſary that he immediately proceed to turn the child, and deliver it by the feet, in the manner to be deſcribed under the article LABOUR, *Preternatural.* If there ſhould not be a ſecond child, the abdomen, particularly the upper part of it, will be found looſe and flaccid, and the accoucheur will perceive the fundus uteri contracted to the ſize of the head of a child.

The more the uterus is contracted, and the lower it is ſunk down in the abdomen, with ſo much the greater eaſe and ſafety the placenta will be expelled. The aſſiſtant will now make a ligature upon the funis umbilicalis, or navel-ſtring, about five inches from its inſertion into the navel of the child, and having done this he will, with a ſharp pair of ſciſſors, divide the navel-ſtring, about an inch beyond the ligature, leaving the other end of the funis hanging out of the vagina. Having then examined the child to ſee that it is perfect, and that no blood eſcapes through the ligature or the funis, he will place it in a proper receiver (a flannel cap being firſt put upon its head) and deliver it to the nurſe. By this time, or ſoon after, the woman will have a bearing pain, preſſing down the placenta, or perhaps, at firſt, only forcing away a clot of blood. During this and ſubſequent pains, the aſſiſtant will aid their effect, by drawing down the funis. If, after waiting twenty or thirty minutes, the placenta ſhould not come away, he will paſs his fingers, or, if neceſſary, his hand, into the vagina, until he gets hold of the placenta, and by this means he will uſually eaſily extract it. It ſometimes happens, though rarely, if the labour has been properly conducted, that the cervix of the uterus contracts, and prevents the deſcent of the placenta, and ſometimes the placenta continues adherent to one ſide, or to the fundus of the uterus, long after the birth of the child. In either caſe, the accoucheur muſt paſs one of his hands, gradually and ſlowly up into the uterus, until it reaches the placenta, when the fingers, and by degrees the whole hand, muſt be inſinuated between the placenta and the uterus, until it be completely ſeparated; it muſt then be brought down to the vagina, whence it will be eaſily extracted by the funis.

In this caſe the diſcharge of blood will be ſometimes ſo great, as to endanger the life of the woman. This accident rarely happens but when the birth has been improperly and prepoſterouſly accelerated, by giving aſſiſtance, as it is called, in the early part of the labour; that is, by dilating the os internum and vagina during the pains; to make room for the head of the child to come down; by giving the woman hot and ſtimulating drinks to increaſe the pains, and by adviſing her to bear down ſtrongly during the pains. As the uterus may from exhauſtion have become torpid, and not diſpoſed to contract, ſo as to leſſen the capacity or ſize of the blood-veſſels, large flannels wrung out of cold water, to which about a fourth part of vinegar has been added, ſhould be laid over the abdomen, and over the os externum of the woman. Theſe applications muſt be renewed every five or ſix minutes, or as often as they become warm, and they will uſually have the effect of exciting the action of the fibres of the uterus, on which the cure entirely depends. In the mean while the woman is to be kept, if practicable, in a quiet and eaſy poſture, her head only moderately raiſed, and covered with a ſingle blanket, the door, or one of the windows of the room being opened, and every five or ſix minutes ſhe ſhould take a ſpoonful or two of a mixture, conſiſting of ſix ounces of diſtilled water, half an ounce of ſpirit of nutmegs, as much ſyrup of red poppies, fifteen drops of the tincture of opium, and as much of the vitriolic acid as will make it grateful to the palate. By theſe means the heat of the body will be diminiſhed, and the rapidity of the circulation checked. When the pulſe, which was ſcarcely to be perceived while the diſcharge was violent, begins to acquire ſtrength, and on examination it appears that little or no blood now flows from the vagina, the cold and wet cloths may be removed, the proper clothes may be put upon the woman, and ſhe may then be placed in the bed in ſuch a poſition as may be moſt agreeable to herſelf.

The proceſs by which a child is produced, or brought into the world, is with great propriety called *labour,* as it is rarely effected without conſiderable exertion, which has the uſual effect, that of exhauſting the ſtrength and ſpirits of the woman. Theſe are to be recruited in the ſame manner as if the waſte had been occaſioned by any other kind of exerciſe; *viz.* by reſt, and by taking a moderate portion of plain and ſimple food at ſmall intervals. In the choice of their food, the women may generally be allowed to conſult their own taſtes, which will rarely, at ſuch times, incline them to ſpiced meats, or to drinks that are heating. It will be proper that they be kept in a recumbent poſture for the firſt four or five days, only leaving their beds ſo long as may be ſufficient to open and refreſh them. By that time the veſſels of the uterus will be ſo much contracted, as to remove all danger of hæmorrhage, or of an inconvenient deſcent of that viſcus, which is ſometimes the conſequence of leaving the bed too early. It is proper alſo, on the ſecond, or at the lateſt, on the third day after being delivered, to procure ſtools, either by ſuch purging medicines as have been before deſcribed, or by giving a clyſter. By this means the fever which is uſually excited by the ſecretion of the milk will be moderated. This, which is called the *milk-fever,* is of ſhort duration, laſting only three or four days, and is not attended with danger. In the cure nothing is required but to keep the body open, and to ſupply the patient with diluting drinks, taken warm, with the view of inducing a gentle perſpiration. The child ſhould be put to the breaſts a few hours after the completion of the labour, that it may get ſome mouthfuls of the thin whey-like fluid which is at firſt ſecreted. This will ſtimulate its bowels, and enable them to diſcharge the meconium, or black viſcid

viſcid excrements with which they are always filled. It will alſo keep the breaſts of the mother from being too much diſtended, the pain occaſioned by which, if it is not the cauſe, yet it certainly tends to increaſe the milk-fever.

But there is another fever to which women are at this time ſubjected, which is attended with conſiderable danger, and which not unfrequently proves fatal. It is called, from an opinion that it is peculiar to this ſtate, the *puerperal-fever*. Its commencement is almoſt always marked by a ſtrong ſhivering fit, which is followed by a quick pulſe, head-ache, laſſitude, and dejection of the ſpirits. It ſometimes makes its attack during the labour, more frequently on the next or ſubſequent day. It is ſometimes miſtaken for the milk-fever, but beſides that its attack is earlier than that of the milk-fever, which never comes on until the third day after delivery, the ſecretion of the milk is in this fever interrupted, and the breaſts, inſtead of being full and turgid, remain flaccid. From after pains, with which it is ſometimes confounded, it is to be diſtinguiſhed by the quickneſs of the pulſe, ariſing very ſoon to 120 ſtrokes in a minute, by the head-ache, nauſea, and other concomitants of fever. Tenderneſs of the abdomen, increaſing to extreme ſoreneſs and pain, ſoon come on, which are increaſed by drawing in the breath, and are rendered almoſt intolerable by coughing. As there is always a high degree of inflammation of the peritoneum preſent in this fever, and perhaps of ſome of the contained viſcera, we cannot be too early in taking away eight, ten, or twelve ounces of blood from the arm, according to the ſtrength of the patient. If the abdomen appears diſtended, attended with ſoreneſs and pain, ſix or eight leeches may be advantageouſly applied to that part, which may be afterwards fomented with flannels wrung out of a decoction of camomile and marſh-mallows moderately heated, and then covered with a poultice made with linſeed-meal. A draught with infuſion of ſenna and ſome neutral ſalt may be given to procure two or three ſtools. The bowels may afterwards be kept open, and the pain relieved by giving a drachm of purging ſalt with two or three drops of the tincture of opium, in a ſufficiency of water to diſſolve the ſalt, every two or three hours. There are few caſes that will require or bear a repetition of the bleeding. If, however, the pulſe ſhould appear to be ſtrong, and the pain, with the difficulty in breathing, require it, that may be done on the ſecond or third day, and a bliſter may be applied over the part of the abdomen which is moſt diſtreſſed. A bliſter applied to the nape of the neck, ſucceeds remarkably in relieving the pain of the head. There is rarely delirium, at the leaſt not to any conſiderable degree, attending this fever. The patient ſhould be nouriſhed with light broths, panada, and ſuch like mild food, and drink barley-water, gruel, baum-tea, toaſt and water, or, where preferred, table-beer. By perſiſting in the uſe of theſe remedies, the fever is frequently ſubdued by the end of four, five, or ſix days, when recourſe may be had to a light decoction or infuſion of Peruvian bark, Columbo, or ſome other tonic taken twice in the day to recruit the ſtrength. Too often, however, theſe and all other means that have been deviſed prove inſufficient, and the patient dies, ſometimes as early as the third or fourth day; at others, not until the ſixth, eighth, tenth, or twelfth day. Puerperal fever is by no means to be conſidered as ſolely the conſequence of tedious and difficult parturition; it full as often makes its attack after natural, eaſy, and expeditious labours, on which account it was thought proper to delineate the hiſtory and treatment of it here, rather than at the end of this diſſertation.

Puerperal fever occurring in lying-in-hoſpitals, or where a great number of ſick or wounded perſons are confined, at ſome times, that is, under certain diſpoſitions and temperatures of the atmoſphere, becomes infectious, almoſt every perſon delivered in the ward where the fever rages partaking of it in a greater or leſs degree. At ſuch times, a larger proportion than uſual of thoſe who are delivered in their own houſes are ſubjected to it. When it has made its way into a lying-in ward, the women ſhould be removed, and ſeparated, where it can be ſafely done, and no more perſons admitted until the ward has been well ventilated and purified. It is recommended, that the floors be ſcoured, the walls and cielings ſcraped and lime-waſhed; that the beds be taken down, and the bed-clothes, and the whole room be expoſed to the vapour of burning ſulphur, or fumigated with the vapour of the marine or nitric acid. All this may with ſafety and propriety be done, but experience does not warrant us in ſaying that they have any effect in extinguiſhing the fever, which, like the yellow fever, or the plague, does not, it is probable, quit the places where it has made its appearance, until the temperature, or other quality of the atmoſphere, to which, perhaps, it owed its origin, is changed.

It ſometimes happens that women are troubled with hæmorrhage, or diſcharges of blood from the uterus, during pregnancy, recurring at intervals of two, three, four, or more weeks. Such diſcharges happening early, that is, within the firſt, ſecond, or third month of geſtation, uſually terminate in *abortion*, which ſee. When the hæmorrhage makes its firſt appearance in the fifth or ſixth month, or later, if it is not very violent or frequent, the woman may go on to the end of her term. The immediate cauſe of the diſcharge is a partial ſeparation of the placenta from the uterus; and it may be occaſioned by taking too much exerciſe, by reaching down any article placed at an inconvenient height, by frequenting aſſemblies or crowded rooms, by dancing, alſo by any ſudden fright or alarm, or by falls, blows, or other accidents. To whatever cauſe hæmorrhage may owe its origin, it is only to be reſtrained, and the ill effects of it to be prevented, by reſt and retirement, and by avoiding all occaſions of exertion; by keeping the air of the room of a moderate temperature, and uſing a diet that is plain, ſimple, and eaſy of digeſtion. If coſtive, the body ſhould be kept open by the uſe of mild cathartics, or glyſters. When a contrary habit of body prevails, and the patient is diſturbed with purging and griping pains in the bowels, a dram of any purging ſalt diſſolved in two or three ſpoonfuls of water, with three or four drops of the tincture of opium, given every two or three hours, rarely fails of appeaſing the tumult, and of reſtraining the hæmorrhage. But though the diſcharge may by theſe means be checked, it will return on the commencement of labour; on which it will have ſo much influence, that even when the preſentation of the child ſhould be ſuch as to bring it under the claſs of natural labour, yet it will be neceſſary, in conducting it to its termination, to deviate conſiderably from the rules that have in thoſe caſes been recommended.

On examining, it will be found that the os uteri, in the earlieſt ſtage of the labour, is more open, ſoft, and yielding, than in ordinary caſes; the pains are alſo generally leſs bearing and efficient. It will therefore be proper to aſſiſt in dilating the opening, by gently moving the end of the fore-finger round its edge. If it is the head of the child that is coming down, which will be eaſily perceived through the membranes, and the diſcharge of blood is not conſtant, or very conſiderable, it will be beſt to let it come in that poſture; continuing, at intervals, to aſſiſt in dilating the os uteri. When that orifice is completely dilated, ſo as to admit the head of the child, the membranes may be opened, by ſcratching them with the nail of the fore-finger, that the waters may be diſcharged. This will enable the uterus to contract, and preſs the placenta againſt the head or body of the child, and ſo ſtop the further effuſion of blood. The completion of the labour may now be effected by the pains, as in common caſes. The placenta being in part detached, uſually comes down ſoon after the birth of the child. If, however, it ſhould be delayed, and the diſcharge of blood continue, it may be brought away in the manner before deſcribed. But when the diſcharge of blood is ſo conſiderable as to endanger the life of the woman, (and this will be the caſe when the placenta is placed near to, or, as it ſometimes happens, part of it lies over the os uteri,) then it will be neceſſary, even although the child is coming down in a natural poſture, as ſoon as the os uteri is ſufficiently dilated, to break the membranes, or to pierce through the placenta, and gradually and ſlowly to paſs firſt the fingers, and then the whole of the hand through the rupture into the bag, and to take hold of the feet of the child, and bring them down into the vagina. Time muſt then be given that the uterus may contract, ſo as to preſs upon the head and ſhoulders of the child, when the labour muſt be completed in the manner deſcribed under the next article.

It ſometimes happens that, on the burſting of the membranes, the funis umbilicalis or navel-ſtring falls down into the vagina, before the head or other part of the child that preſents. In this caſe, it has been uſual to recommend that the prolapſed funis be folded in a piece of ſoft linen, and returned into the uterus: but experience has ſhewn, that however carefully this be done, it conſtantly returns in a few minutes. If the accoucheur ſhould be preſent at the time of the rupture of the membranes, or ſoon after, and find a pulſation in the navel-ſtring,—a ſure ſign that the child is living, he will then, in whatever poſture the child may happen to preſent, treat it as a preternatural labour; that is, he will paſs his hand into the uterus, and turn the child, and bring it by its feet: for if the buſineſs be left to nature, the preſſure on the funis will put a ſtop to the circulation of the blood, and the child will die long before it would be expelled by the pains.

In ſome irritable conſtitutions, the women become convulſed in the courſe of the labour. This accident more frequently occurs with firſt than with ſubſequent children. At whatever time convulſions make their attack, they never completely leave the woman until the labour is over, and ſometimes not until the next or ſubſequent day. In very mild caſes, the brain ſeems but little affected by the convulſions, which partake of the nature of hyſteric complaints. Theſe caſes are eaſily curable, or give way ſpontaneouſly when the labour is completed. More commonly the convulſions are attended with coma, and other affections, indicating oppreſſion on the brain. Theſe are of more difficult management, and often prove fatal even under the moſt cautious and judicious treatment. Of whatever nature, or from whatever cauſes puerperal convulſions may proceed, they aſſiſt very much in forcing down the child.

At whatever period or ſtate of the labour the accoucheur may be called in, he will generally find it expedient to take away ſix, eight, ten, or twelve ounces of blood from the arm; and in the ſpace of two hours after, (unleſs the child is coming into the world,) this ſhould be followed by a clyſter to empty the bowels. After the operation of the clyſter, from twenty to thirty drops of the tincture of opium may be advantageouſly given, which will generally ſucceed in making the fits leſs frequent and violent. The labour muſt now be conducted in the ſame manner it would have been, if it had not been interrupted by the convulſions. If the child preſents in a natural poſture, and the pelvis of the woman is of the natural form and dimenſions, it will be found that the convulſions have aſſiſted much in dilating the os internum, and in accelerating the completion of the labour. If any other part than the head of the child preſents, as ſoon as the internal orifice is ſufficiently dilated, the accoucheur will paſs his hand into the uterus, and turn the child, and bring it by its feet. If, on the other hand, the birth of the child ſhould be retarded, rendered difficult, or impoſſible, without the aid of inſtruments, from diſtortion of the bones of the pelvis, the accoucheur will uſe the lever, forceps, or crotchet, whichever ſhall be required, in the manner directed under the article LABOUR, *difficult*.

LABOUR, *Preternatural*. In all preternatural labours, the deſcent of the uterus and the dilatation of its orifice proceed more ſlowly than in natural labours: hence it often happens that the part of the child preſenting cannot be diſtinctly perceived, even though the woman has been ſeveral hours in pain. If, therefore, on examining a woman in labour, during a pain, whoſe pelvis is of a proper form and dimenſion, no part of the child can be perceived, the accoucheur may be aſſured that it is ſome other part than the head that is coming down. Nothing, however, will be neceſſary to be done in this caſe, until the child is ſo far thruſt down by the pains, and the os uteri is ſo much dilated, as to enable him to perceive the preſenting part through the membranes, or until, by the burſting of the membranes, and the diſcharge of a part of the liquor amnii or waters, a part of the child is forced into the pelvis. If the breech, or one or both of the lower extremities are coming down, the operator will leave the expulſion of the child principally to the effects of the pains, only giving the aſſiſtance directed under the articles BREECH and FEET *Preſentations*. But if the ſhoulder, arm, breaſt, or any portion of the upper part of the trunk of the child ſhall be found to have entered the os uteri, by the general conſent of practitioners, the child muſt be turned, and extracted by the feet. To effect this, the accoucheur will immediately, and before the whole of the waters are drained away, paſs his hand ſlowly and gradually into the uterus, until he comes to the feet of the child, which will often be found at or near the fundus, and graſping them in his hand, bring them down into the vagina; then pauſing a little while, ſtill holding the feet in his hand, he will, by another effort, bring them through the os externum, or into the world.

This operation, if undertaken ſoon after the burſting of the membranes, will generally be performed with great eaſe and ſafety, and with little pain to the woman: but if it be not begun until the waters are entirely evacuated, and the uterus is contracted, and come into cloſe contact with the body of the child, it will require a much greater degree of force to introduce a hand ſo far into the uterus, as to be enabled to take hold of the feet of the child; and the whole of the delivery will be attended with much more pain, difficulty, and hazard.

From a due conſideration of theſe circumſtances, the following practical inference may be drawn, *viz.* that whenever, on examining a woman in the commencement of labour, no part of the child can be felt, or, if felt, not ſo diſtinctly as to enable the accoucheur to decide whether it is the head that is preſenting, he ſhould by no means leave the woman, or be far abſent from her, that he may be at hand to turn the child, if neceſſary, ſoon after the burſting of the membranes. But ſuppoſing this opportunity to have been neglected, or the accoucheur not to be ſent for, until nearly the whole of the liquor amnii or waters are drained off, and the uterus has contracted ſo as to come into contact with, and ſtrictly to embrace the body of the child, yet, even in theſe caſes, if the pelvis of the woman is of the proper form and dimenſions, and the child is not diſproportionably large, by proceeding ſlowly and cautiouſly in the manner about to be deſcribed, the reſiſtance of the uterus may be overcome, and the delivery effected with perfect ſafety to the mother and child.

Method of turning a Child in the Uterus, in preternatural Labours, and bringing it by the Feet.—The woman being laid acroſs the bed, on her left ſide, with her knees drawn up to her belly, a woman ſitting on the ſide of the bed, to hold her feet, and keep her ſteady, the accoucheur muſt introduce, firſt one, then a ſecond, third, and fourth finger of either of his hands, anointed with hog's lard, into the vagina, which he will gradually dilate, ſo as to make room for his whole hand, with which he will ſtill further dilate the paſſage. Then, pauſing a little while, until the ſtraining, on the part of the woman, which the introduction of his hand will have occaſioned, ſhall have ſubſided, he muſt again puſh his hand gently upwards, until it has paſſed the brim of the pelvis and entered the uterus; then, again pauſing until the woman ceaſes to ſtrain down, he muſt again puſh his hand upwards in the intervals between the pains or ſtrainings of the woman, until he reaches one or both of the feet of the child, at which time the whole of his arm nearly, to the elbow, will be in the paſſage.

When the reſiſtance of the uterus has been very great, it ſometimes happens that the hand of the operator is ſo cramped and benumbed, that he has no power to graſp and bring down the feet of the child. In that caſe, he muſt ſlowly and gradually withdraw his hand, and wait ſome minutes until he has recruited his ſtrength, and the woman is a little refreſhed, and then re-introduce the ſame, or his other hand, with whichever he thinks (from the knowledge he has now acquired of the poſition of the child in the uterus) he ſhall be beſt able to complete the delivery. This re-introduction of his hand he will be able to effect much more eaſily than before, the uterus being ſomewhat ſtretched and looſened by his former effort. He will now ſedulouſly endeavour to get hold of, and bring down, both the feet of the child; but if that is abſolutely impracticable, he muſt be contented with one of them, which he will bring down ſlowly, and by intervals, as he had introduced his hand. It will ſometimes happen that the operator will not be able in this way to bring the foot into the world, the contraction of the uterus around the body of the child being ſo conſiderable, as to prevent its turning by any effort he can make in this way. He muſt then withdraw his hand, and, after recruiting his ſtrength, return it again into the vagina, with a nooſe or fillet over it, until he has got hold of the foot of the child, and then, with the fingers of his other hand, puſh up the nooſe until it paſſes the ankle of the child, by which means he will have a double purchaſe; then drawing down with the end of the fillet that hangs out of the vagina with one hand, and with the other graſping and pulling down the foot, he will uſually, in a few minutes, ſucceed in bringing the leg of the child through the external orifice.

The operator may now again paſs his hand up into the uterus to ſearch for the other foot of the child, and bring it alſo down; or, not ſucceeding in this attempt, he will wrap the leg that is in the world in a ſoft cloth, and draw it downward ſteadily with both his hands, and with ſufficient force to bring the breech of the child into the vagina. He will now pauſe a few minutes, both to allow the woman to recover her ſtrength and ſpirits, and to give time for the uterus to contract, and come again in contact with the head and trunk of the child; then, renewing his efforts, he will continue drawing down the thigh, until the breech has freed the external orifice. He muſt now examine the poſture of the child, and if the fore-part of the child lays to the pubes of the mother, he will turn it round to the ſacrum; then taking hold of the breech with both his hands, he will continue drawing downward ſteadily, at the ſame time moving it from ſide to ſide, until the whole of the body is born; he will then paſs a finger firſt along one, and then the other arm of the child, to the joints of the elbows, and draw them down, and if the child be now living, which may be known by a pulſation being felt in the navel-ſtring, he will haſten the birth, drawing down ſteadily and ſtrongly by the ſhoulders. If he finds much reſiſtance, with a view of accelerating the birth of the head, he muſt paſs the fore-finger of his left-hand along the back part of the vagina to the mouth of the child, and draw down the under-jaw, at the ſame time that he extracts by the ſhoulders with his right-hand. The child being born, he will complete the delivery, in the manner directed under the article Labour, *Natural*.

Some writers and teachers of midwifery are very particular in preſcribing the poſture in which the woman ſhould be placed as moſt convenient for the operator in turning a child, which they think ſhould vary according to the poſition of the child in the uterus, as whether the face or fore-parts of the child be turned to the back, belly, or one of the ſides of the mother; they alſo, from the ſame circumſtances, determine which hand will be moſt proper for the accoucheur to uſe in performing the operation. But as the exact poſition of the child can rarely or never be known until the operator has actually introduced his hand into the uterus, there ſeems no neceſſity for embarraſſing him with regulations of this kind. The moſt convenient poſture will generally be found to be that in which women are uſually placed in a natural labour, and, as has been now deſcribed, *viz.* lying on her left ſide, with her knees drawn up towards her belly, her feet in the lap of an aſſiſtant. In reſpect to which hand the operator ſhould uſe, he will be guided by circumſtances, or by his habit or cuſtom: moſt perſons uſing one of their hands more dextrouſly than the other. The moſt important rule is, that the whole operation be performed ſlowly and gradually. Other writers have adviſed that we by no means attempt to turn a child in the uterus, ſo long as the woman continues to have pains, leſt the uterus ſhould be ruptured. But as, at every pain, the uterus contracts, becomes thicker, embraces the body of the child cloſer, as well as thruſts the preſenting part lower into the pelvis, it is evident that by waiting the difficulty of performing the operation will be increaſed. It will be ſufficient, in addition to what has been ſaid of the neceſſity of proceeding ſlowly and leiſurely, to warn the operator only to puſh his hand on in the intervals of the pains.

It was ſuppoſed, by the early practitioners of midwifery, that when an arm of the child preſented, and became conſiderably ſwelled, which it always is, when it has continued long in the vagina, that it ſo filled up the paſſage, as to add very much to the difficulty of paſſing a hand into the uterus, and ſometimes even rendered it impoſſible to be done, until the arm was removed; and, accordingly, it was pretty much the practice in the beginning of the laſt century, firſt to attempt returning the arm into the uterus, but as that was rarely or never practicable, it was uſual in theſe caſes to make an inciſion through the integuments, under the arm-pits of the child, with a pair of ſciſſors, or a ſcalpel, and then twiſt off the limb; and in this mutilated ſtate the children were ſometimes born alive. This practice has long ſince been aboliſhed; experience having ſhewn, that the obſtacle oppoſed by the tumid arm is very inconſiderable, only affecting the firſt part of the operation, and by perſeverance is eaſily overcome.

We have been lately told, by a practitioner of eminence, that when an arm or ſhoulder preſents, and, by the continuance of the pains, has been thruſt ſo low into the pelvis, that it is abſolutely impracticable to turn the child (where the pelvis of the mother is too narrow to admit the hand of the operator, we preſume the writer means), that by paſſing a blunt hook over the neck of the child, and drawing down ſtrongly to ſeparate the vertebræ of the neck, and then twiſting the hook round, the integuments of the neck will break, and the head be diſſevered from the body, which may afterwards be drawn away with the crotchet. From the facility with which this operation is ſaid to be performed, it is to be feared, that perſons of leſs ſkill and ſagacity than the writer here alluded to, may be tempted to try the experiment on children ſuppoſed to be dead, but which are not ſo, or when there is ſufficient room in the pelvis to bring away the child without mutilating it, and thus ſome lives be loſt that might otherwiſe be preſerved. This operation, therefore, ſhould never be performed but in conſultation.

It has in a few caſes happened, when an arm or ſhoulder preſents and enters firſt into the pelvis, and the woman has been neglected, or the aſſiſtant, not being called in time, was not able to turn the child, that by the continuance of the uterine contractions, or pains, the breech has been gradually forced down, the head and ſhoulders receding and mounting upwards, and in this poſture, *viz.* breech foremoſt, the child has been expelled. This turning of the child in the uterus, by the ſole agency of the pains, has been called by Dr. Denman the ſpontaneous evolution of the fœtus, and it has ſometimes happened, we are told, that the child has, in this way, come into the world alive. It is well, as Dr. Denman juſtly obſerves, to know theſe facts, as in ſome extreme caſes it may afford conſolation both to the patient and the attendant; but the exiſtence of the uterus muſt be very great indeed to induce a practitioner, who regards either his fame or his feelings, to truſt to ſuch an event, as in a great majority of caſes the child would be loſt, and not uncommonly the woman would loſe her life alſo.

It ſometimes alſo happens, in caſes where the arm, ſhoulder, or breaſt of the child preſents, and the expulſion of it has been left entirely to the pains, that at the end of many hours, or of two or three days continued labour, the child becomes ſoft and putrid, and inſtead of making the evolution deſcribed, is thruſt down through the pelvis, and into the world doubled, the head lying on the breaſt or back, and yet the woman has ſurvived.

This, however, is rather to be expected in premature births, that is, when the woman is only advanced five, ſix, or ſeven months in pregnancy. At theſe periods, particularly at the two firſt, it will generally be right to let the fœtus come into the world in whatever poſture it may preſent; as both the limbs of the fœtus are then too tender to bear any conſiderable degree of force or extenſion, and the capacity of the uterus is too ſtraight to admit the introduction of the hand of the operator to turn the fœtus, and deliver it by the feet.

Labours of the third and laſt claſs are thoſe which are called *difficult* or *laborious.* Theſe vary much in degree, according as the cauſes vary. When the difficulty is ſolely occaſioned by a mal-preſentation of the head of the child, as when it offers by its face, or by one ear, the head will be frequently forced down in that poſture by the pains, and very little more aſſiſtance will be neceſſary than what is given in natural labours, from which it will only differ by its requiring a greater number of pains, and taking up a longer ſpace of time for its completion. The ſame will happen when the birth is retarded by a diſproportion between the head of the child and the pelvis through which it is to paſs; that is, when a woman whoſe pelvis is ſmall, but perfect in its form, produces a large child, or when the head of the child is more than uſually oſſified. By the continued force of the pains, the bones of the heads of the generality of children, which do not ordinarily meet, or come in contact with each other, will be preſſed together until they ride, or lap one over the other, and ſometimes until the head aſſumes a conical form, the vertex being the apex or point of the cone, and in this ſtate it will come into the world. The midwives are accuſtomed to call the heads of children that have been ſo preſſed, and altered in their ſhape, mould-ſhot heads, or horſe-ſhoe moulds, and are buſy, when dreſſing the children, in forcing the bones back into their places. But this is not neceſſary, the heads never failing, in time, to aſſume their proper figure. Children who have been ſubjected to ſuch a degree of preſſure as to occaſion an alteration in the ſhape of the ſkull, ſhould they be born alive, will generally be found to be ſo much weakened by the injury they have ſuffered, as not to be preſerved without great care and difficulty.

It has here been ſuppoſed, that the expulſion of the head of the child has been left, as in natural labours, to the power of the pains, which will generally be ſufficient for the purpoſe; but this will not happen, in ſome caſes, until, by the long detention of the head of the child in the paſſage, the ſoft parts of the woman ſhall be ſo bruiſed and injured, by the preſſure they have ſuffered, that ſuppuration or mortification of the vagina ſhall enſue, penetrating into the bladder, or rectum, and ſometimes into both, making the vagina the common channel for the urine and the ſtools. To avoid theſe diſtreſſing accidents, which, when they occur, admit no remedy, or are only in a ſmall degree alleviated by time, various contrivances have been invented to bring away the head of the child, when it is enclavée, or fixed in the pelvis, earlier than it would be forced away by the pains. Thoſe which have been preferred, and which are now almoſt univerſally uſed, are the forceps, the invention of Dr. Hugh Chamberlen, and the lever of Roonhuyſen, (ſee the articles Forceps and Lever,) the time and manner of uſing which will now be deſcribed.

In all caſes requiring the aſſiſtance of inſtruments to complete the delivery, the progreſs of the labour will be found, from its commencement, to be ſlower than in thoſe labours which are denominated natural. The obſervation of this circumſtance will induce the practitioner to be careful that the woman be kept cool, and that no efforts be uſed to accelerate or ſtrengthen the pains; that ſhe be encouraged from time to time to void her urine; that her bowels be kept open by clyſters, or by giving her a gently purging medicine, and that ten or twelve drops of the tincture of opium be given at night to procure ſleep. By theſe means, (which muſt be purſued the ſecond day alſo if neceſſary,) her ſtrength will be preſerved, and ſhe will be enabled to meet the difficulties ſhe will have to encounter. Before the end of the ſecond day it will generally be found that the os uteri is completely dilated, that the baſis, or largeſt part of the head of the child, has been forced into the brim of the pelvis, that the membranes have burſt, and that the greater part of the waters has been diſcharged. At this period, as if nature was tired with the conflict, the pains uſually remit, both in frequency and ſtrength; it now, therefore, becomes neceſſary to watch over the ſafety of the woman, and if, at the end of two or three hours, the head continues ſtill unmoved, to proceed, (having previouſly informed the woman and her friends of your intention,) to the uſe of the proper means for expediting the delivery.

Manner of uſing the Forceps.—Having laid the woman on the bed, in the uſual poſition, the accoucheur will ſit down behind her, and will introduce two or three fingers of his right hand into the vagina, and continue puſhing them gently upwards, until he feels an ear of the child, which will generally be found under, or near, the os pubis; he will then take a blade of the forceps, previouſly anointed with lard, and introduce it between his fingers, and the head of the child, continuing to puſh it upwards until it paſs over the ear, and ſo on until the whole of the blade is in the vagina; he will then withdraw his fingers, and raiſe the handle of the forceps towards the pubes of the woman, while he introduces the ſecond blade in the ſame cautious manner, directly oppoſite to the firſt. He will then bring the handles together, and lock them, and that they may not ſlip, he will confine the handles together with a handkerchief, or any appropriate ligature. It generally happens, that the force uſed in applying the forceps gives freſh ſtrength to the pains. During each pain the accoucheur will ſlowly, and gradually, draw the handles of the forceps downwards, with his right hand, moving them, at the ſame time, from ſide to ſide, keeping his left hand againſt the perinæum of the woman, which he will, through the whole proceſs, carefully guard, to prevent, if poſſible, its being ruptured, an accident more likely to occur in firſt, than in ſubſequent labours. Having in this cautious manner extracted the head of the child, the remainder of the delivery will be conducted as directed under the article LABOUR, *Natural.*

Many practitioners in theſe caſes prefer the uſe of the lever, which may be conſidered as a blade of the forceps, and is to be introduced into the vagina between the fingers of the accoucheur and the head of the child, as before directed, and puſhed on until it paſſes over the ear of the child, that lies under or near the pubes of the mother. The accoucheur will then withdraw his fingers from the vagina, and graſping the handle of the lever with his right hand, he will, during every pain, raiſe it over the pubes, guarding the perinæum with his left hand, and continue this movement from time to time, until the head of the child is brought into the world. The plain and ſimple form of this inſtrument, and the greater facility with which it is uſed, have given it a deſerved preference over the forceps. For a fuller account of the manner of uſing the forceps and lever, and for an account of their comparative merit, the reader is referred to Dr. Denman's valuable Introduction to the Practice of Midwifery, and for the hiſtory of the invention of the inſtruments, to Dr. Bland's Account of the Invention and Uſe of the Lever of Roonhuyſen, publiſhed in the ſecond volume of Medical Communications, in the year 1790. It is proper to obſerve, that in all caſes in which it becomes neceſſary to have recourſe to the uſe of inſtruments to finiſh the delivery of the child, and, in fact, in all lingering labours, the operator ſhould pay particular attention to the ſtate of the urinary bladder, and if the urine has been ſuppreſſed, he muſt draw it off with a catheter, before he begins to operate.

In the caſes that have been deſcribed, where the labour has been retarded, and rendered difficult by the cauſes above enumerated, the methods recommended will generally be found to be competent to bringing it to a concluſion, without occaſioning much injury to the mother or to the child. But when the obſtacle ariſes from diſtortion of the bones of the pelvis of the mother, altering the ſhape of the pelvis, and diminiſhing its capacity, means muſt then be uſed to leſſen the volume or bulk of the head of the child, otherwiſe both the mother and child muſt inevitably periſh. The perſons in whom this defect in the pelvis is found, are uſually ſhort and delicate women, whoſe growth had been checked in infancy by the rickets, or who had been confined, too rigidly in their youth, to a ſedentary poſture, in order to acquire a proficiency in muſic, drawing, or ſome other accompliſhment, and had thence been prevented taking that portion of exerciſe in the open air, which is neceſſary for the growth and ſtrength, as well as for the health of the body.

When called upon to attend a perſon labouring under this infirmity, the accoucheur will find, on examining, the lower vertebra of the loins, and the upper portion of the ſacrum, projecting forward, ſo as to prevent the head of the child from entering the brim of the pelvis, and the oſſa ilia, which form the ſides of that cavity, approaching too near to each other, thus ſtraightening the capacity of the pelvis, and changing its form from an oval to a triangular figure. On his diſcovering this derangement, it will be his duty to inform the friend to the woman of the manner in which he propoſes to conduct the labour, and of the neceſſity he believes there will be of opening the head of the child, in order to preſerve the life of the mother. To the parturient woman he will only ſay, that the labour will be ſlow and tedious, that it will be neceſſary that ſhe avoid all heating drinks, and that ſhe manage her ſtrength and her ſpirits in the beſt manner ſhe is able. The bowels muſt be kept ſupple and open by clyſters, the urine muſt be drawn off, if ſuppreſſed, with the catheter, and an opiate given at night, as in ordinary caſes of difficult labour. At the end of the ſecond or third day, according as the pains have been more or leſs ſevere, and frequent, the water being nearly all of it drained off, and the uterus contracted ſo as to be in contact with the body of the child, a ſmall portion of the vertex, or preſenting part of the head, or perhaps only of the tumid ſcalp, will be found to be thruſt through the brim of the pelvis. As no farther aſſiſtance can be expected from the pains, which now would only tend to exhauſt the ſtrength of the woman, and to excite ſuch a degree of heat and fever, as might not afterwards be extinguiſhed, it will be neceſſary to proceed to opening the head of the child, and in that manner complete the delivery. The woman being laid on the bed in the manner before deſcribed, and the accoucheur placed behind her, he will introduce two or three fingers of his left hand into the vagina, and paſs them upwards until they touch the protruded part of the head of the child, and endeavour to find the fontenelle, or the part where the parietal bones meet; he will then, with his right hand, ſlide the perforator up into the vagina, which will be guided by his fingers to the place, which it will readily enter, and having, by opening them in various directions, made an aperture into the ſkull ſufficiently large, he will withdraw the perforator, and alſo the fingers of his left hand, both to give a reſpite to the woman, and to allow the pains to force a larger portion of the ſkull, now yielding more eaſily to the preſſure, through the brim of the pelvis. At the end of two or three hours he will re-commence the operation, and will paſs his left hand, or as much of it as he can, into the vagina, and introduce one or two of his fingers into the aperture of the ſkull of the child; this will ſerve as a guide to the crotchet, which he will now uſe. Having further broken the texture of the brain with the crotchet, he will move it about within the cranium, until he finds it firmly fixed, when he will begin to draw downwards, and continue this action at intervals, until he finds he has brought the whole of the head of the child into the vagina. It is uſeful to keep the left hand, or two or three fingers of it, in the paſſage, that if the crotchet ſhould ſlip, they may prevent any injury being done to the vagina. Having pauſed again, for the ſpace of an hour, to give the uterus opportunity of contracting, he will caſily bring the head of the child, now emptied of its contents, into the world, and the remainder of the labour will be conducted as in ordinary caſes.

In labours of this claſs, that is, in difficult labours, as the progreſs of them is always ſlow, giving opportunity to the uterus to contract, the expulſion of the placenta is uſually performed ſooner, and more eaſily, than in natural labours.

LABOURED Accompaniment. See Accompaniment.

LABOURER, in *Agriculture*, a perſon who performs the manual or moſt laborious part of the buſineſs of a farm. Labourers are moſtly ſuch perſons as live in cottages, or ſmall houſes in the vicinity of the farms, or in the houſes of the farmers themſelves.

The author of Modern Agriculture, after premiſing that in all civilized ſtates, the great body of the people live by labour; and that, of whatever nature it may be, the wages received muſt be more than ſufficient to maintain the labourer, as, were it otherwiſe, he could not bring up his family, and conſequently this claſs of men would ſoon become extinct; obſerves, that in every county or diſtrict, where the uſeful arts are in a flouriſhing ſtate, and where thoſe employed in carrying them on are moſt ſucceſsful in accumulating riches, the rate of wages, or price of labour, is higheſt. Luxury is a never-failing attendant on riches, and the number of ſervants always increaſes with the means of maintaining them. Therefore an increaſing demand for ſervants or labourers, whether for carrying on agriculture, the purpoſes of trade, or for adminiſtering to the artificial wants created by luxury, naturally tends to advance the price of labour. The very great recent advance in the rate of wages in ſome counties in Scotland, as Lanark, Renfrew, Perth, Angus, Fife, &c. amounts, it is ſuppoſed, to the moſt poſitive evidence, that commerce, manufactures, and improvements in agriculture have rapidly increaſed. The ſtill low price of labour in the counties of Caermarthen, Pembroke, Cardigan, &c. in Wales; and Nairn, Inverneſs, and the other northern counties of Scotland, notwithſtanding the great emigrations of labourers to thoſe parts of the iſland, where they are more certain of finding employment, is a ſure ſign that in theſe remote diſtricts the arts have ſcarcely ever been introduced. It ſhews alſo, that little attention is beſtowed by the proprietors to improve the ſituation of the peaſantry, either by inuring them to habits of induſtry, or inſtructing them in the advantages to be derived from a proper diviſion of labour. In thoſe counties where the arts have been introduced, and where the rate of labour has continued for a number of years nearly the ſame, it will be found that agriculture, commerce, and manufactures, although perhaps formerly in a proſperous ſtate, are at preſent ſtationary, and that a national exertion is neceſſary, in order to ſet them again in motion.

And further, that the wages of farm-ſervants, and of labourers, who are occaſionally engaged in the operations of huſbandry, vary nearly as much in the different diſtricts of Great Britain, as they do in the ſeveral kingdoms of Europe. In the counties in England, where commerce and manufactures are carried on to the greateſt extent, as Middleſex, Surrey, Kent, Lancaſter, Cheſter, the weſt-riding of Yorkſhire, &c. the wages of farm-ſervants and day labourers may, it is conceived, be ſtated as follows:

	Average.		
	£.	s.	d.
A ploughman by the year, from 9*l.* to 15*l.* -	12	0	0
A female ſervant, do. from 4*l.* to 6*l.* -	5	0	0
A labourer in the ſummer, from 1*s.* 6*d.* to 2*s.* - - - -	0	1	9
A labourer in winter, without board, from 1*s.* to 1*s* 2*d.* - - -	0	1	1
A maſon ditto, from 1*s.* 10*d.* to 2*s.* 2*d.* -	0	2	0
A carpenter ditto, from 1*s.* 8*d.* to 2*s.* 4*d.* -	0	2	0

Where agriculture is the chief employment of the people, as in Hertford, Buckingham, Rutland, Northampton, Worceſter, Northumberland, &c.

	Average.		
A ploughman's wages may be ſtated from 7*l.* to 12*l.* - - -	9	0	0
A female ſervant, from 3*l.* 10*s.* to 5*l.* -	4	5	0
A labourer in ſummer, without board, from 1*s.* 4*d.* to 1*s.* 8*d.* - - -	0	1	6
Ditto in winter, ditto, from 1*s.* to 1*s* 2*d.* -	0	1	1
A maſon, ditto, from 1*s.* 10*d.* to 2*s.* 2*d.* -	0	2	0
A carpenter, ditto, from 1*s.* 8*d.* to 2*s.* 4*d.* -	0	2	0

In thoſe counties in Wales, where improved modes of huſbandry are little practiſed, and where there are ſcarcely any commerce or manufactures,

	Average.		
A ploughman's wages are from 4*l.* 10*s.* to 7*l.* - - - -	5	15	0
A female ſervant, from 2*l.* 10*s.* to 4*l.* 4*s.* -	3	7	0
A day-labourer in ſummer, without board, from 8*d* to 1*s.* - - -	0	0	10
Ditto, in winter ditto, from 6*d.* to 8*d.* -	0	0	7
A maſon, ditto, from 1*s.* 6*d.* to 2*s.* -	0	1	9
A carpenter, ditto, from 1*s* 4*d.* to 1*s.* 8*d.* -	0	1	6

It has been obſerved, that the rate of wages has advanced very rapidly of late years, in many counties in Scotland. In that part of the kingdom ſouth of the Grampian mountains, the riſe in the price of labour has, he ſays, been general, and is now nearly double what it was twenty years ago.

	Average.		
A ploughman's wages is from 7*l.* to 12*l.* -	9	10	0
A female ſervant, from 3*l.* to 4*l.* 10*s.* -	3	15	0
A day labourer, in ſummer, without board, from 1*s.* 2*d.* to 1*s.* 6*d.* - - -	0	1	4
Ditto in winter, ditto, from 10*d.* to 1*s.* 2*d.*	0	1	0
A maſon, ditto, from 1*s.* 6*d.* to 2*s.* 4*d.* -	0	1	11
A carpenter, ditto, from 1*s.* 4*d.* to 2*s*, -	0	1	8

In the northern diviſions of the kingdom, where there is little commerce or manufactures, and where improvements in agriculture are only partially introduced,

	Average.		
A ploughman receives from 3*l.* to 6*l.* -	4	10	0
A female ſervant, from 2*l.* 2*s.* to 3*l.* 14*s.* -	2	18	0
A day labourer, in ſummer, without board, from 8*d.* to 1*s.* - - -	0	0	10
Ditto, in winter, ditto, from 6*d.* to 8*d.* -	0	0	7
A maſon, ditto, from 1*s.* to 1*s.* 6*d.* -	0	1	3
A carpenter, ditto, from 1*s.* to 1*s.* 4*d.* -	0	1	2

From the above averages, the following table, which may be conſidered as containing pretty nearly, he ſays, the medium rate of agricultural labour in theſe kingdoms, at the preſent period, is formed:

	General Average. £.	s.	d.
A ploughman - - - -	7	3	6
A female ſervant - - - -	3	7	0
A day labourer, in ſummer, without board	0	1	3
Ditto, in winter, ditto - - -	0	0	11
A maſon, ditto - - - -	0	1	10
A carpenter, ditto - - -	0	1	8

In the above ſtatements, the difference in the rate of wages does not, it is ſuppoſed, appear ſo conſiderable (except in Wales, and the north of Scotland, compared with the better cultivated parts of Great Britain), as, had it been poſſible to aſcertain the price of labour in each particular county, would have been evident; local circumſtances frequently operating to augment or depreſs the rate of wages in particular diſtricts, which is not diſcernible when numbers are claſſed together.

But the rates of wages, or prices of labour, have increaſed in the proportion of, from a quarter to a half, ſince the period in which the above was written, which is only a very few years. Theſe are, he conceives, affected by ſome or all of the following cauſes, *viz.* 1ſt. The increaſe of commerce and manufactures: 2dly. The depreciation in the value of money, and its preſent nominal value, compared with the price of the ordinary articles of proviſions: 3dly. The general introduction of improvements, and of new modes of cultivation; whereby, although fewer hands are neceſſary, thoſe poſſeſſing ſuperior ſkill become more in requeſt: 4thly. The eaſe or difficulty of finding conſtant or regular employment: and, 5thly. The mode in which a farm-ſervant, or labourer, maintains his family.

With reſpect to the firſt, it is ſuppoſed, that the increaſe of commerce and manufactures of the towns has contributed to the improvement of the country, as well by affording a ready market for the produce of the ſoil, as by various other means, will not be denied; but that the rapid increaſe of them within theſe few years has had a great effect in raiſing the price of labour is equally evident. The great numbers of people crowded together in large cities and manufacturing towns, are not only againſt the increaſe of population, but alſo againſt longevity. There are beſides ſeveral ſorts of manufactures, which are well known to be deſtructive of the human conſtitution; not to mention the many accidents to which thoſe employed in the various branches of commerce and manufactures are expoſed, tending to ſhorten life, and from which thoſe engaged in the operations of huſbandry are exempted. For theſe reaſons, there is a conſtant demand for people from the country, in order to keep up the population, and to carry on the commerce and manufactures of the towns. The great additional price commonly paid for commercial and manufacturing, beyond that for agricultural labour (except where the influence of the former affects the latter), and the habits of luxury, in which the labouring part of the community live in towns, compared with the generality of their neighbours of the ſame claſs in the country (particularly in Scotland), are ſtrong inducements, it is contended, with many of the peaſantry, either to remove to the towns, or ſend their children thither: while others, in conſequence of the too general practice of adding farm to farm, and demoliſhing cottages, are forced to ſeek that aſylum in towns which is refuſed them in the country. The demand for labourers from the towns being complied with, the country is thereby drained of uſeful hands, and the price of agricultural labour advanced. This muſt neceſſarily happen, it is thought, in every kingdom during the period that its commerce and manufactures are on the increaſe; and more eſpecially in thoſe nations where the legiſlature turns its attention to ſupport commerce and manufactures at the expence of agriculture.

The ſecond, the depreciation in the value of money, is alſo another and ſubſtantial reaſon for the apparent riſe in the price of labour. The increaſe of commerce and manufactures, which has been gradually taking place in this iſland ever ſince the beginning of the reign of queen Elizabeth, and the immenſe additions which have been made almoſt every year to the national debt within the preſent century, ſeem to have rendered it neceſſary to increaſe, nominally, by means of bank-notes, promiſſory-notes, bills, &c. the quantity of money in circulation. That theſe ſubſtitutes for ſpecie have had the effect to reduce the value of money is an obvious fact. If, therefore, the value of money has fallen, the labourer of the preſent day requires of courſe a greater quantity to carry to market than his predeceſſors, to purchaſe even ſuch articles as are conſumed in the particular diſtrict where he reſides (whether right or wrong), as indiſpenſibly neceſſary for the maintenance of a peaſant's family. Whether the Middleſex labourer goes to market to purchaſe beef or mutton, or the Aberdeenſhire cottager oatmeal, it will, it is conceived, be found that nearly double the ſum is required to purchaſe the ſame quantity now that it did thirty years ago.

After this, ſome facts are ſtated in order to ſhew that, however much the nominal price of labour has increaſed, its real price, compared with that quantity of proviſions it will purchaſe, remains all over the iſland nearly the ſame, except only where a variety of circumſtances combine; ſuch as contiguity to large towns, or extenſive manufactories and public works; and the want of due attention to the providing of work, from improved modes of huſbanday, not being introduced to raiſe or depreſs it beyond its ordinary level.

In regard to the third, it is obſerved, that beſides forming canals and turnpike-roads, which may be conſidered equally beneficial to the intereſts of commerce and manufactures as to thoſe of agriculture, there have been many improvements introduced in huſbandry, which, while they have contributed to advance alike the proſperity of the nation, the proprietors and farmers have alſo been the means of bringing about a conſiderable alteration in the ſituation of the inhabitants at large, as well as in the price of labour. The immenſe number of people neceſſary for carrying on the various operations of incloſing, draining, planting, erecting farm-buildings, digging marle, quarrying and burning lime-ſtone, hoeing potatoes, turnips, and other green crops, muſt firſt have had the effect of giving full employment to the people in thoſe diſtricts where ſuch improvements were introduced, and gradually to advance the rate of wages, in conſequence of the increaſed demand for labourers. The general introduction of new modes of cultivation, whereby, although fewer people are neceſſary, thoſe poſſeſſing ſuperior ſkill become more in requeſt, is another reaſon of the advance in the wages of the farm-ſervants. This obſervation will be conſidered as well founded by all thoſe who recollect the period, when ploughing with a man and two horſes, without a driver, became common in Scotland. The number of horſes or oxen formerly worked in the plough varied in ſome caſes, according to the nature of the ſoil; but was more frequently regulated either by the cuſtom of the diſtrict, or the fancy of the farmer. When, in conſequence of the ſpirited exertions of ſome individuals in ſeveral counties, the practice of ploughing with two horſes was pretty generally introduced, the farmers found themſelves thereby relieved of a very great ſhare of the annual expence of cultivation ; but as it was then conſidered a very arduous undertaking to manage a two-horſe plough, every farmer ſelected the beſt ploughman he could find ; and theſe becoming thereby in requeſt, it was no difficult matter for them to bargain for an augmentation of wages, which the farmers of that period could very well afford, and which many now living will not heſitate to acknowledge they granted on principles of economy.

In reſpect to the fourth, it is ſuggeſted, that the eaſe or difficulty which labourers frequently have in finding conſtant and regular employment ; or, in other words, when labourers are only partially employed, the rate of wages muſt be affected by that circumſtance. It has already been obſerved, that thoſe who live by labour muſt receive ſuch a compenſation as is more than ſufficient for their ſubſiſtence. When a labourer has conſtant employment, whatever be the rate of wages, as it muſt be equal to the price of the ordinary articles of proviſions in whatever part of the iſland he is ſituated, his incomings and outgoings will be nearly the ſame. Hence it follows, that when, from the difficulty of finding employment, he can only procure work for three, four, or five days in the week, he muſt receive the ſame ſum for theſe three, four, or five days that in the other caſes he would do for the labour of ſix ; otherwiſe his incomings muſt be leſs than he is neceſſarily called to expend. When that happens, labourers are often obliged to remove occaſionally to another quarter, or betake themſelves to ſome mechanical employment ; and in either caſe, their ſervices are loſt to the farming part of the community where they reſided. The want of conſtant employment, therefore, it is conceived, operates in two ways to raiſe the price of labour ; firſt, by the neceſſity the labourer is under while he continues in that capacity of demanding as much for the work of three, four, or five days, as is fully equal to his ſubſiſtence for a week ; and ſecondly, many of them being obliged to betake themſelves to other means for providing for themſelves and families, the number of labourers becomes greatly diminiſhed, and the remainder of courſe more in requeſt.

And on the laſt point, it is ſuppoſed that the various modes in which farm-ſervants and labourers maintain their families muſt neceſſarily have a very great influence on the expence of agricultural labour in different parts of the iſland. In a great part of England, butcher's-meat, dumplings or puddings, bread made of fine flour, with beer, ale, and very commonly tea, are reckoned indiſpenſible articles of cottage houſe-keeping : while in Scotland, oatmeal, cooked in various ways, vegetables, and now and then a little butcher's-meat, are the chief articles which conſtitute the food of the people employed in huſbandry, even in the beſt cultivated parts of the kingdom. This eſſential difference in the mode of living muſt, it is conceived, be a great additional expence in the article of labour to the Engliſh farmer beyond what thoſe in Scotland are ſubject to, and might induce ſuch as are not acquainted with the various circumſtances connected with the huſbandry of both kingdoms, to give a decided preference in favour of Scotland. It ſhould, however, be remembered, that this kind of additional tax paid by the Engliſh farmer more properly affects the landlord, and is one of the principal reaſons why lands in England are rented lower than thoſe of the ſame quality in Scotland ; it being an indiſputable fact, and which, in Scotland, daily experience proves well-founded, that a great proportion of what the farmers ſave in the article of labour, or by the introduction of more improved and leſs expenſive cultivation, ſooner or later finds its way into the landlord's pocket.

And a very reſpectable author, Dr. Smith, in his work on the Nature and Cauſes of the Wealth of Nations, vol. i. has obſerved, that “ the difference in the mode of labourers' ſubſiſtence is not the cauſe, but the effect, of the difference in their wages ; although, by a ſtrange miſapprehenſion, I have frequently heard it repreſented as the cauſe.” It is farther added, that “ it is not becauſe one man keeps a coach while his neighbour walks a-foot, that the one is rich and the other poor ; but becauſe the one is rich he keeps a coach, and becauſe the other is poor he walks a-foot.”

The author of Modern Agriculture thinks it will be admitted, that at the period when a general alteration has taken place for the better in the eſtabliſhed mode in which labourers maintain their families (as in the ſouth of Scotland, where the price of labour has nearly doubled within theſe twenty years), the expence at which a cottager's family is maintained has advanced in the ſame proportion. They eat better food, wear more expenſive clothes, and live in more comfortable dwellings,—all which, he ſays, no doubt, as Dr. Smith obſerves, is the effect, not the cauſe, of the recent increaſe in the price of labour.

But that in England, where the mode of maintaining a labourer's family has undergone little alteration for ages, it is preſumed, that although the difference in the modes of living was, at firſt, the effect naturally to be expected from a riſe in the price of labour, yet it is now one cauſe why the rate of wages continues in that kingdom to advance. Thoſe articles which with that claſs were once deemed the luxuries, are now conſidered only as the bare neceſſaries of life, and the prices have advanced in nearly the ſame proportion as their wages. For inſtance, thoſe who in that country require labourers, muſt either pay them ſuch an advance of wages as will enable them to ſubſiſt according to the general mode eſtabliſhed in the country, whatever the additional price of the ordinary articles of proviſion may be, or compel them to make uſe of more ſimple and leſs expenſive kinds of food, which were uſed by that claſs of men a century or two ago. As every perſon who ſtands in need of labourers, will adopt the firſt of theſe alternatives, it follows of courſe that the difference which has long taken place in the mode of maintaining a labourer's family in England, compared to that of ancient times, is now one cauſe for the advance in the rate of wages.

It is ſtated, that it has now become a general complaint among proprietors, merchants, manufacturers, and farmers, that the price of labour is become too high. That, owing to one or all of the cauſes before-mentioned, it has advanced in many diſtricts to a degree unknown in any former period of the hiſtory of theſe kingdoms, is a fact well known. Thoſe who regret that the price of labour is advanced, (provided it is kept within proper bounds, and does not ariſe from a national neglect of the ſituation of the peaſantry,) ought to comfort themſelves with the reflection, that this never happens in any ſtate which is not increaſing in wealth and proſperity. It is owing to that cauſe, and to no other, that the working-people in any nation are more liberally rewarded for their labour ; and in place of regret it ought to give pleaſure to every friend to his country, that the great body of the community are enabled, from the fruits of their honeſt labours, to procure themſelves a greater ſhare of the comforts of life. At the ſame time, let it be obſerved, that thoſe who have occaſion to employ labourers pay attention to the advice of the author of the Seaſons.

“ Be mindful of the rough, laborious hind
That ſinks you ſoft in elegance and eaſe.”

They ſhould alſo conſider, that there are bounds beyond which they ought not, in prudence, to paſs.

But the mode of maintaining farm-ſervants in many places of England is both abſurd, and, it is conceived, expenſive in the extreme, and calls as loudly for reform as any error in the whole range of Britiſh huſbandry. In Northamptonſhire, the breakfaſt conſiſts of cold meat, with cheeſe, bread, and beer; for dinner, roaſted or boiled meat, with pudding; and for ſupper, the ſame as at breakfaſt; and beſides ale, which is allowed on extraordinary occaſions, they have ſmall beer at command at all hours. And in the Rural Economy of the Midland Counties, after noticing that the beer and ale are brewed unreaſonably ſtrong, and that the quantity allowed to a man is unneceſſarily great, it is ſtated, that, in hay and corn harveſt, the cuſtomary allowance is a gallon (upwards of five bottles) of beer a man per day; and that, during winter, the quantity of ſmall beer uſed is not much leſs than in harveſt. And it is farther noticed, that the increaſed expence in the mode of maintaining farm-ſervants, as now too generally practiſed in England, is attributed to the following cauſes. Some few farmers in every county, either from a miſtaken idea, that the better their ſervants are fed the more work they will perform, or from pride, and from a deſire to gain popularity among that claſs of people, lead the way, while their more ſenſible neighbours, and even thoſe whoſe ſituations in life but ill accord with ſuch additional expence, are forced to follow the example, by which means extravagance in the maintenance of ſervants has arrived at its preſent height, and ſeems to be daily gaining ground.

It is ſuggeſted, that the wages paid for agricultural labour, either to ſervants by the year, or to labourers by the day, throughout the better cultivated parts of Great Britain, although conſiderably different, are, nevertheleſs, much leſs ſo than might have been expected, and appear by no means ſufficient to counterbalance the advantages which are derived from ſuperior climate, and more favourable ſituations in regard to markets. The expenſive manner in which the farm-ſervants are maintained in the greateſt part of England, when compared with that of the more improved parts of Scotland, creates a much greater addition to the expence of cultivation in the former kingdom, than that ariſing from the difference in the money-price of labour. In forming a juſt eſtimate of the difference which takes place in the expence of cultivation, in particular diſtricts, beyond that in others, it is neceſſary, it is ſaid, to conſider not only the ſum of money paid as wages, and the expence of maintaining ſervants, but alſo the quantity of work performed, and the number of men and horſes which, according to the practice of particular diſtricts, are conſidered as neceſſary to cultivate the ſame quantity of land. The following ſtatement will ſhew at one view the difference of keeping a team by the year, and of ploughing an acre of land, in Glouceſterſhire, in England, where five horſes are commonly uſed; and in the county of Angus, in Scotland, where only two are conſidered neceſſary.

The County of Angus.

	£.	s.	d.
Ploughman's wages	10	0	0
Board, generally under	8	0	0
Maintenance of two horſes at 15*l.* each	30	0	0
Tear and wear of ditto, and accidents, 2*l.* each *per annum*	4	0	0
	52	0	0

Glouceſterſhire.

	£.	s.	d.
Ploughman's wages	10	0	0
Board, 6*s.* *per* week	15	12	0
Boy's wages	5	0	0
Board, 4*s.* *per* week	10	8	0
Maintenance of five horſes at 15*l.* each	75	0	0
Tear and wear of ditto, and accidents, 2*l.* each *per annum*	10	0	0
	126	0	0
Annual expence of Angus farmer	52	0	0
Yearly difference againſt Glouceſterſhire farmer	74	0	0

It is ſtated, that if theſe men and horſes were employed in ploughing the whole year, and that they ploughed an acre a-day, they would each have ploughed 313 acres in the courſe of the year. The expence to the Glouceſterſhire farmer would be 8*s.* each acre, while the Angus farmer would have the ſame extent of labour performed at about 3*s.* 4*d.* *per* acre. There is alſo as great a difference in the expence of thraſhing grain. Since the introduction of thraſhing-machines in Scotland, the grain can be ſeparated from the ſtraw upwards of 50 *per cent.* cheaper, and to better purpoſe, than is to be done in England by manual labour. This compariſon might be made to include other operations, which are more or leſs expenſive to perform, in conſequence of the peculiar cuſtoms and practices of particular diſtricts. But all that is propoſed here is to give an idea of the proper mode of calculating the expence of agricultural labour, and an inſtance or two of the ſaving which every farmer has in his power to make, by uſing well-conſtructed implements of huſbandry, and performing the various operations with as few men and horſes as poſſible.

It is added, that the ſcarcity of farm-ſervants and day-labourers has of late been conſiderably felt in many parts of Great Britain, and ſeems to be gradually increaſing. The principal cauſes to which this evil is to be aſcribed are, in the opinion of the above writer, the incloſure bills in England, the enlarging or engroſſing farms in both kingdoms, and the general increaſe of commerce and manufactures. But a more ſerious and certain cauſe of this evil is probably to be found in the conſtant ſtate of warfare in which this country has been engaged for almoſt the whole of the laſt half century. The deficiency of labourers is an evil of ſo ſerious a nature, (from whatever cauſe it has originated,) as ought to induce proprietors and farmers of all deſcriptions to adopt ſuch meaſures as appear moſt proper for inſuring a future and more abundant ſupply. That which ſeems the moſt likely to effect this deſirable object with the greateſt certainty is the building of cottages on every farm, in numbers proportioned to the extent of hands neceſſary for its cultivation. Experience has proved that cottages are the beſt nurſeries for uſeful farm-ſervants and labourers; and while nothing would tend ſo ſpeedily or ſo effectually to ſupply this defect as affording the labouring claſs of the people the means of living comfortably in the country, it would alſo be the means, in a great degree, of ſilencing the riſing clamour againſt enlarging or engroſſing farms. In this view it is ſuggeſted, that a tax on every proprietor and farmer in Great Britain, who had not as many cottages erected and inhabited, in a limited time, as there were ploughmen required for the cultivation of the farm; or one cottage for every certain number of acres. Such a tax, if impoſed for the expreſs purpoſe of increaſing the population of the country, and thereby keeping the price of all kinds of labour moderate, could not fail in time, it is ſuppoſed, to have the wiſhed-for effect.

However, it is obſerved alſo, that the practice of joining two or three, ſometimes half a dozen, ſmall farms in one, and the conſequent demolition of the cottages, has had the effect of bringing about a great alteration, in many counties, in the deſcription of ſervants employed in huſbandry: as, inſtead of employing married men living in cottages contiguous to the farm, and paying them partly in neceſſaries of life, young men, brought up in towns or villages, are employed, and their wages paid wholly in money,—from which many bad conſequences proceed. From the advantages to be derived by employing married men, who have families reſiding on ſome detached part of the farm, as ploughmen, as well as from the acknowledged ſcarcity of labourers, may, it is ſuppoſed, be inferred the propriety and even neceſſity of improving, by every proper means, the ſituation of the peaſantry. The labourer's ſituation would be much improved, were his employers to revert to the old practice of paying him a great part of his wages in the neceſſary articles of proviſions: he would then be prevented from the neceſſity of having recourſe, for every article he requires, to thoſe worſe than pawn-brokers, the keepers of little paltry chandler's ſhops; a ſet of people who, without remorſe, appropriate to themſelves, under the name of a reaſonable profit, a great proportion of the hard-earned wages of the laborious peaſant. And next to getting the great article of proviſions on reaſonable terms, the allowing every cottager the means of keeping a cow, and of planting a reaſonable quantity of potatoes and other vegetables, would tend, more than any other circumſtance, in the writer's opinion, to his happineſs and comfort; as it would enable him to procure a conſiderable ſhare of the ſuſtenance of his family, without the expenditure of money, or the riſk of impoſition. It would alſo, it is imagined, be a great ſpring to the induſtry of the labourer, to ſet him all his labour by the great, or piece. He would be induced to labour with more ſtedfaſtneſs and perſeverance, when he was ſatisfied that it was in his power to apply the fruits of his extraordinary exertions to the benefit of his family. And, laſtly, to encourage, by every proper means, the eſtabliſhment of friendly ſocieties among the labouring claſs of people, as a means of proviſion againſt accidents, ſickneſs, and old age.

Farm labourers, Mr. Marſhall thinks, as being the moſt valuable claſs of men that a populous country poſſeſſes, ſhould have every comfort provided for them that is compatible with their ſituation, and conformable to the general intereſt of the community:—that their wages ought to be every where, and at all times, ſufficient for the maintenance of themſelves and families while in health, with a ſurplus to provide againſt the day of ſickneſs, without their being under the debaſing neceſſity of making application to their neighbours for relief. Perſons ſo eſſentially uſeful to ſociety ſhould not merely ſupport exiſtence, but have the comforts of wholeſome habitations, with ſufficient ſpaces of ground to furniſh them and their families with changes of proper vegetable food, without much expence. It is, after all, this claſs of men that conſtitutes the great baſis or prop of a country.

Labourers conſpiring together concerning their work or wages, ſhall forfeit 10*l.* for the firſt offence, 20*l.* for the ſecond, &c. and if not paid, to be ſet on the pillory. (Stat. 2 & 3 Edw. VI. cap. 15.) Juſtices of peace, and ſtewards of leets, &c. have power to hear and determine complaints relating to non-payment of labourers' wages. (4 Edw. IV. cap. 1. 20 Geo. II. c. 19. 31 Geo. II. c. 11.) And labourers taking work by the great, and leaving the ſame unfiniſhed, unleſs for non-payment of wages, or when they are employed in the king's ſervice, &c. are to ſuffer one month's impriſonment, and forfeit 5*l.* The wages of labourers are to be yearly aſſeſſed for every county, by the ſheriff and juſtices of peace, in the Eaſter ſeſſions; and in corporations by the head officers, under penalties. (5 Eliz. cap. 4.) And the ſheriff is to cauſe the ſaid rates and aſſeſſments of wages to be proclaimed. (1 Jac. I. cap. 6.) All perſons fit for labour ſhall be compelled to ſerve by the day, in the time of hay or corn harveſt; and labourers in harveſt time may go to other counties, having teſtimonials. From the middle of March to the middle of September, labourers are to work from five o'clock in the morning till ſeven or eight at night, being allowed two hours for breakfaſt and dinner, and half an hour for ſleeping in the three hot months; and all the reſt of the year from twilight to twilight, excepting an hour and a half for breakfaſt and dinner, on pain of forfeiting one penny for every hour's abſence. (5 Eliz. c. 4.) By ſtat. 6 Geo. III. c. 25. artificers, labourers, and other perſons, abſenting themſelves from the ſervice of their employers, before the expiration of the term contracted for, ſhall be puniſhed by impriſonment, for not leſs than one month, nor more than three. If any labourer ſhall make an aſſault upon his maſter, he ſhall ſuffer as a ſervant making ſuch aſſault. (5 Eliz. c. 4.) See MANUFACTURERS and SERVANTS.

LABOUREUR, JOHN LE, in *Biography*, was born, in 1623, at Montmorenci, near Paris. At the age of nineteen he diſplayed a turn for hiſtorical reſearches by publiſhing "An Account of the Tombs in the Church of the Celeſtines at Paris, with brief Memoirs of the Perſons entombed;" which was very well received. In 1644, he was at court, in the character of gentleman in waiting, when he was ſent into Poland, with the marſhalleſs of Guebriant, on a miſſion to Ladiſlaus IV. to whom the ducheſs of Nevers was contracted. After his return he publiſhed a narrative of this embaſſy. He next entered into the eccleſiaſtical profeſſion, and was made almoner to the king, and prior of Juvigné, and in 1664 he was created commander of the order of St. Michael, and appointed almoner to the king. He wrote the "Hiſtory of the Marſhal de Guebriant:" and he was editor of a new impreſſion of the "Memoirs of Michael de Caſtelnau," with ſeveral genealogical hiſtories, in three vols. folio, 1731: this performance is reckoned to throw much light upon ſeveral parts of French hiſtory; "Hiſtory of King Charles VI. tranſlated from the Latin of a MS. in the Library of de Thou," two vols. folio; "A Treatiſe on the Origin of Coats of Arms." He left many MSS. among which is "A Hiſtory of the Peerage." Moreri.

LABOURSOME, among *Seamen*, implies a violent rolling or pitching motion of a ſhip at ſea, by which the maſts and even the hull are in great danger. By pitching ſuddenly the maſts are likely to be carried away, and by the heavy rolling motion the maſts ſtrain upon the ſhrouds, and, conſequently, upon the ſides, with an effort which increaſes as the ſine of their obliquity, and the continued agitation of the veſſel gradually looſens her joints, and makes her extremely leaky.

LABRADOR, in *Geography*, an extenſive country of North America, ſo called by the Portugueſe, who firſt diſcovered its coaſt, comprehended in New Britain. It is bounded on the N. by Hudſon's ſtrait, on the S. by part of Lower Canada and the river St. Lawrence, on the W. by Hudſon's bay, on the N. E. by the ocean and Davis's ſtraits, and on the E. by the ſtraits of Belliſle and the gulf of St. Lawrence. The extent of this country has been but imperfectly aſcertained: for our knowledge of the eaſtern coaſt and of its inhabitants, we are chiefly indebted to lieutenant Roger Curtis, from whoſe papers extracts were made and communicated to the Royal Society, in 1774, by the honourable Daines Barrington (Phil. Tranſ. vol. 64. part 2.) and to Mr. Cartwright, who reſided, at different intervals, for ſixteen years, in this deſolate country, and whoſe account of it was publiſhed at Newark in 1792. But the knowledge thus obtained principally relates to the coaſt; for the inland territory remains ſtill unexplored. Theſe writers concur in repreſenting the face of the country, as far as they could diſcover it, not only hilly, but mountainous; ſome of the mountains being of a conſiderable elevation. From the ſea the ſouth coaſt ſeemed to be fertile and to be covered with a degree of verdure; but the ſoil, on examination, was poor, and the verdure was that of coarſe plants, which might ſerve for deer and goats, but was not proper for horſes, kine, or ſheep. To the improvement even of this part, the depredations of the bears and wolves furniſh a formidable impediment; and the cattle, on account of the ſeverity of the climate, muſt be houſed for nine months in the year. The whole of the eaſt coaſt exhibits a very barren appearance: the mountains riſing ſuddenly out of the ſea and being compoſed of rocks, which are thinly covered with black peat earth, that produce ſtunted ſpruces and a few other plants The adjacent ſea, however, the rivers and lakes, which are numerous, abound with fiſh, fowl, and amphibious animals. Springs are rare, and the water is chiefly ſupplied by melted ſnow; nevertheleſs, it is wholeſome, and thoſe ſwelled throats which frequently occur in the Alpine regions of Europe and Aſia, are unknown in this country. On the coaſt are ſeveral ſpacious and ſafe harbours; and at a ſmall diſtance, and within its capacious bays, there are thouſands of iſlands of different ſizes, on which eider-ducks breed in large flocks, and which are ſtocked with a multitude of ſea-fowl. On ſome of the larger iſles there are deer, foxes, and hares. All kinds of fiſh, belonging to the Arctic ſeas, abound on this coaſt; and the rivers are frequented by ſalmon and ſea-trout, pike, barbel, river-trout, eels, and other kinds. At a ſmall diſtance from the coaſt in the inland territory, the air is milder; the ſoil is more fertile, and trees, ſome of which are of a large ſize, are more numerous. The ground is covered with ſpruces and firs, with an intermixture of larches, birch, and aſpens, particularly near the ſhores of the bays, rivers, brooks, and ponds, where alone they arrive at any degree of perfection. Other trees are mere ſhrubs, and they are the alder, oſier, dogberry, pears, currants, raſpberries, and a few others. The fruits conſiſt of various kinds of berries, *viz.* currants, raſpberries, partridge-berries, cranberries, apples, pears, whortle-berries, and a ſmall berry, the plant of which reſembles the ſtrawberry, each producing only a ſingle fruit, of a bright pink colour, granulated like a mulberry, and having a delicate flavour. The vegetables fit for food are wild celery, ſcurvy graſs, the young leaves of the oſier and of the ground whortle-berry, Indian ſallad, red docks, and an Alpine plant, of which the rein-deer are very fond. The ſoil, though of a light kind, is not deſtitute of clay; no ores, except thoſe of iron, have been diſcovered; but theſe are plentiful. White ſpar is common, and ſeveral ſamples of that called Labrador ſpar, have been picked up by the Eſquimaux. The birds of the country are the white-tailed eagle, falcons, hawks, and owls of various kinds, the raven, white grouſe, ptarmigan, ſpruce game, whiſtling curlew, grey plover, various ſpecies of ſandpiper, and other waders, geeſe, ducks of various ſorts, ſhags, gulls, divers, ſwallows, martins, ſome few ſpecies of ſmall birds, ſnipes and doves, the two laſt being very ſcarce. The beaſts are white and black bears, rein-deer, wolves, wolverines, various ſpecies of foxes, martens, lynxes, otters, mink, beavers, muſquaſh, raccoons, hares, rabbits, and moles, and probably other kinds. The climate, though ſevere, is ſalubrious; there is little appearance of ſummer till about the middle of July, and in September winter indicates its approach, ſo that this latter ſeaſon is long and the cold is ſevere. In ſummer the heat is ſometimes unpleaſant, and in that ſeaſon the weather is very moderate, and remarkably ſerene, without thoſe fogs which are more prevalent in Newfoundland, and thoſe violent gales of wind, to which ſome other parts of the globe are ſubject. At this ſeaſon, the moſquitoes and ſand-flies, which are very numerous, are intolerably troubleſome. The winters are ſaid to be leſs ſevere than formerly. The greateſt heat obſerved at Nain (N. lat. 57°) in the year 1780, was 84°, and this was in July; the greateſt cold in 1779 was — 36°. On the ſea-coaſt it is much cooler than farther inland, more eſpecially when the wind blows from the ocean, on account of the immenſe quantities of ice that are contiguous to the coaſt; and which, together with the iſlands already mentioned, render the navigation dangerous. Theſe ſhoals of ice ſet in from the north in ſpring and ſummer. It is not an unknown phenomenon in theſe northern and colder climates, that ſeveral beaſts, and ſome of the birds, change their colour with the ſeaſons. In the winter, the prevalent colour is white; and againſt the rigour of the cold, moſt animals are furniſhed by the order of providence with a defence. The quadrupeds are clothed with a longer thicker hair, or fur; and the birds have a ſofter down and feathers of a cloſer contexture than thoſe of milder countries.

On the coaſt of this deſolate country there were only a few factories, till the Moravian clergy formed ſmall ſettlements, particularly at Nain, about the year 1764. Upon barren rocks, covered with ſnow for more than half the year, and where the winters are ſo rigorous, and of ſuch long continuance, we cannot expect to find that the inhabitants are very numerous. The native inhabitants of this country are mountaineers and Eſquimaux, between whom there ſubſiſts an invincible averſion. The mountaineers inhabit the interior parts of the country, towards the north, and with reſpect to colour reſemble our gypſies, which is probably acquired by their being expoſed to the weather, and to the ſmoke of their wigwams. They are of a robuſt conſtitution, though their limbs are ſmall, and their frame is well adapted to the rocky country, which they are continually traverſing. They have no hair except on the head; and for many years they have dreſſed their food, which they boil to a jelly, whereas the other Indians eat every thing raw. They chiefly ſubſiſt on rein-deer, which they are very dextrous in killing. They alſo kill foxes, martens, and beavers. As they live a wandering kind of life, they never build houſes; but they conſtruct a kind of tents, covered with deer-ſkins and birch, and called wigwams; the ſkins which they uſe for this purpoſe, as well as for clothes, are tainted in order to take off the hair, then waſhed in a lather of brains and water, and afterwards well dried and well rubbed; but for winter uſe they have jackets of beaver, or deer-ſkins, with the hair on. They traverſe the country by the aſſiſtance of canoes in the ſummer; and of rackets, or ſnow-ſhoes, in the winter. Their canoes are covered with the rind of birch; and though they are ſo light as to be eaſily carried, they are large enough to contain a whole family, and the materials of their traffic. By means of the numerous ponds which are found in this country, they thus convey themſelves to a great diſtance in a ſhort time; travelling by water or by land, as circumſtances require. They bear fatigue with incredible reſolution and patience; and will travel two days ſucceſſively, without taking any ſort of nouriſhment. They are eſteemed an induſtrious tribe; and for many years they had been known to the French traders. Their chief employment is to procure fur, and the neceſſaries of life; they are very illiterate, but generally good-natured, and ſaid to be leſs ferocious than other Indians; and this ſoftneſs of manners they have probably acquired by their long intercourſe with Europeans. They come every year to trade with the Canada merchants, who have ſeal fiſheries on the ſouthern part of the coaſt, and they bear the character of juſt dealers, ſays Curtis, though Cartwright charges them with a proneneſs to theft. They are, without doubt, immoderately fond of ſpirits, for which, blanketing, fire-arms, and ammunition, they truck the greateſt part of their furs. With regard to religion, they profeſs themſelves Roman Catholics; but know no more of it than merely to repeat a prayer or two, count their beads, and ſee a prieſt whenever they go to Quebec. It is their cuſtom, ſays Curtis, to deſtroy the aged and decrepid, when they become uſeleſs to the ſociety, and burthenſome to themſelves. This practice they vindicate from their mode of life; alleging that thoſe who are unable to procure neceſſaries, ſhould not live merely to conſume them.

The *Eſquimaux* (ſee that article) who inhabit the northern part of Labrador, are indiſputably Greenlanders. They are of a deep-tawny, or rather copper-coloured complexion; they are inferior in ſize to the generality of Europeans, and there are but few of them who are of a good ſtature. They are flat-viſaged, and have ſhort noſes; their hair is black and very coarſe; their hands and feet are remarkably ſmall. The women load their heads with large ſtrings of beads, which they faſten to their hair above their ears; and they are fond of a hoop of bright braſs, which they wear as a coronet. Their dreſs is entirely of ſkins; and conſiſts of a ſort of hooded cloſe ſhirt, breeches, ſtockings, and boots. The dreſs of the different ſexes is the ſame, except that the women wear very large boots, and their upper garment is ornamented with a tail. In the boots they occaſionally place their children; but the youngeſt is always carried at their back, in the hood of their jacket. They have no ſort of bread, but live chiefly on the fleſh of ſeal, deer, fiſh, and birds. In the winter they live in houſes, or rather caverns, which are ſunk in the earth. In the ſummer they occupy tents, made circular with poles, and covered with ſkins. They have no ſort of beverage among them except water, and are not fond of ſpirituous liquors. They ſeem to have no ſort of religion, nor to have any object of adoration among them. They have no kind of government; and no man is ſuperior to another, but as he excels in ſtrength or in courage, and in having the greateſt number of wives and children. They have no marriage ceremony; a wife is conſidered as property; and a huſband lends one of his wives to a friend. The women marry young. The men are extremely indolent, and the women are mere drudges, doing every thing except procuring food. They ſew with the ſinews of deer, and their needle-work is very neat. They have few diſeaſes, and are conſequently without phyſicians; but they imagine, that tying to their neck or wriſts the particular part of ſome fiſh or animal, according to the complaint, will effect a cure. They have never been viſited with the ſmall-pox. Theſe Indians cannot reckon numerically beyond ſix; and their compound numbers reach no farther than 21; every thing beyond this is a multitude. Their dread of the mountaineers makes them live always upon the ſea-ſhores. Their canoes are extremely long in proportion to their breadth, being upwards of 20 feet by two, and contain only one perſon; they are covered with ſkins, and extremely light, ſo that they are eaſily overſet, and yet there is not one among theſe people who can ſwim. They navigate their ſhallops without a compaſs, in the thickeſt fogs, and are very good coaſters. Their dogs, of which they have a great number, ſerve as a guard, and as food: their ſkins ſupply them with clothing; and in winter they draw their ſledges. They cannot bark, but make a moſt hideous howl; they are large, and have a head like a fox, whereas the dogs of the mountaineers are very ſmall. The weapons of theſe Indians are the dart, and the bow and arrow, but they are not very expert in the uſe of either. Their number cannot be accurately aſcertained; Mr. Curtis made ſome attempt for this purpoſe by counting the number belonging to each tribe, eſtimated by the number of boats, and by that of the men, women, and children belonging to each boat; eſtimating them in this way, he reckons their number to be 1623. Mr. Cartwright ſays, that theſe Eſquimaux were the beſt tempered people he ever met with, and the moſt docile; nor, as he ſays, is there a nation under the ſun with which he would truſt his perſon and property in preference to them; although till within theſe few years they were never known to have any intercourſe with Europeans, without committing theft or murder, and generally both.

The buſineſs carried on by the Engliſh with Labrador is the ſame with that on the iſland of Newfoundland. The exports are cod-fiſh, ſalmon, oil, whalebone, and furs; but the latter are much better than any of the ſame kind obtained upon that iſland, nor do few parts of the world produce better. N. lat. 50° 30′ to 62° 30′. W. long. 55° 30′ to 78° 30′.

Labrador *Lake.* See *St.* Peter's *Lake.*

Labrador *Spar*, in *Mineralogy.* See Feldspar.

Labrador *Stone.* See Feldspar.

Labrador *Tea*, in *Gardening*, the common name of an evergreen plant of the more hardy kind. See Ledum.

LABRISULCIUM, a term in *Surgery*, derived from *labrum*, or *labium*, a lip, and *ſulcus*, a deep ſore, and ſignifying ſometimes a chap of the lip; but frequently the diſeaſe well known under the appellation of the cancrum or gangræna oris. See Gangræna *Oris.*

LABRIT, in *Geography*, a town of France, in the department of the Landes, and chief place of a canton, in the diſtrict of Mont-de-Marſan. The place contains 584, and the canton 4401 inhabitants, on a territory of 497½ kiliometres, in nine communes.

LABRUS, in *Ichthyology*, a genus of the thoracic order. This tribe of fiſhes is extremely numerous, and comprehends many ſpecies of peculiar beauty and variety both in form and colours; their general aſpect is rather more diſtinguiſhed for elegance than ſingularity, but the diverſity of thoſe brilliant tints with which nature has embelliſhed them is almoſt endleſs. We are little acquainted with their manners of life; ſuch as have occurred to our own obſervation appear to be thoſe of the natural inhabitants of the marine element; ſome delight to reſide in the ſhallows and rocky bottoms of the ſea contiguous to the boldeſt ſhores, but the far greater portion of the ſpecies are ſo widely diſperſed through the immenſity of ſeas as to rarely occur to notice; and few, or indeed ſcarcely any, are known in the regular fiſheries in any part of the globe. The fleſh of thoſe occaſionally introduced for the table are of an agreeable and excellent flavour, ſuch as the "old wife," and ſome others. The ſmaller kinds are uſed chiefly by the fiſhermen as bait.

The confuſion prevalent among authors reſpecting this family of fiſhes is inconceivably great; a circumſtance the more remarkable in our ideas, ſince the obvious character of the genus does not appear ambiguous. The confuſion ariſes from that want of preciſion in the definition of the true character which is too perceptible in the writings of ichthyologiſts in the early part of the laſt century, and which led them to admit indiſcriminately with the Labri many kinds that ought not to have been included in the ſame genus. Some of theſe errors have been progreſſively detected and amended by referring the fiſhes improperly claſſed as Labri to other genera. But for others apparently not leſs exceptionable, we muſt place our truſt in their deſcriptions only, the objects deſcribed being unattainable; and while this uncertainty continues, it will be concluded the whole of the preſumed ſpecies of Labrus can never be reduced to very ſatisfactory order.

On a retroſpective view we need not perhaps refer beyond the 10th edition of the Linnæan "Syſtema Naturæ;" in this we find the genus Labrus with the following eſſential character. Teeth acute; gill membrane with ſix rays, and the covers ſcaly; and the dorſal fin with a filiform ſkin extending beyond the end of the poſterior rays. This is the Linnæan character in its lateſt ſtate of improvement, excepting only that it is added, with a laudable degree of caution, that the two genera Labrus and Sparus are ſo cloſely allied, as to render it difficult to diſtinguiſh them: "Labri et Spari genera ob affinitatem etiamnum difficilius diſtinguuntur." Linnæus deſcribes altogether about forty ſpecies, ſome of which had been deſcribed in his former works as of the Labrus, Sparus, and Sciæna genera, and for theſe, with the exception of a few new kinds in Muſ. Ad. Fr. he ſtood indebted to the labours of his friend Artedi, or to thoſe of Gronovius, Ray, and Cateſby, by whom ſome were called Labri and others Spari.

Gmelin endeavoured to amend the eſſential character of Labrus by rendering it more comprehenſive, and for this reaſon adds to the character before-mentioned that the lips are ſimple; the pectoral fins pointed, and the lateral line ſtraight. Still this was found inſufficient, and is, in our ideas, confeſſedly inferior to the very excellent and conciſe character by which Bloch diſtinguiſhes the genus, namely, the lips large, the upper one double and extenſile: the genus poſſeſſes other characters, but this is the moſt material. Another attentive obſerver of nature, Monſ. Commerſon, has offered ſome improvements in the inſtitution of the genus Labrus, and has added to the genus many new ſpecies. One of the lateſt and moſt copious writers on this ſubject however remains to be noticed, namely, count Lacepede, a naturaliſt who undertook the taſk of reforming the whole ſyſtem of claſſification, and one to whom ſcience is indebted in a great meaſure for the number of new ſpecies introduced of late years to the knowledge of the world.

To the Linnæan naturaliſt, the arrangement propoſed by Lacepede will rather, we apprehend, appear an innovation, than improvement. In this reſpect, conſidering the very conciſe view the limits of our article will allow us to take of this ſubject, we are not diſpoſed to exerciſe much critical remark, or we conceive it would not be impoſſible to aſcertain that it partakes of the character both of improvement and innovation. Our own opinion is, that the Linnæan definition, though extremely uſeful, is inadequate, and that the character aſſigned by Bloch, though ſtill more conciſe, is better. We allow, moreover, the neceſſity of reformation; many of the Linnæan Labri belong to other genera, and there are, beſides, ſpecies more recently referred to the genus Labrus which rather conſtitute new genera. Hence the neceſſity of forming a larger number of genera, by dividing the Labri, is admitted; but in allowing this, it ſtill remains a queſtion, whether Lacepede has not fallen into a greater error than that he endeavours to reform; for inſtead of permitting them to remain in a ſingle genus, he conſtitutes no leſs than ſeven new genera of the Labri, and their immediate dependencies. In extenuation, it may be indeed obſerved, in the language of one of his continental admirers, "this intelligent writer found the genus (Labre) ſo vitiated, that he was under the neceſſity of forming ſo many new genera. This increaſe of genera might ſeem to have diminiſhed the number of ſpecies in the Labres to a trifling amount, but, on the contrary, by the introduction of the new kinds very recently diſcovered, they are again advanced to the number of one hundred and thirty ſpecies."

The genera into which Lacepede divides the Labrus of Linnæus, and other authors, are LABRUS, HIATULA, OSPHRONEMUS, CHEILINUS, LUTJANUS, TRICHOPODUS, and CHEILODIPTERUS.

LABRUS, according to this writer, is characterized by having the upper lip extenſile; neither inciſive teeth nor grinders; gill-covers deſtitute of ſpines and denticulations; dorſal fin one, extending nearly from the nape almoſt to the tail, and compoſed of rays terminating in a filament. This genus (which Lacepede ſeparates, chiefly according to the furcated or rounded form of the tail, into three ſections) includes a great number of the Linnæan genus Sciæna, as the ſpecies capa, lepiſma, unimaculata, gibba, cineraſcens, armata, and fuſca, with many others; and, on the contrary, the number of Linnæan Labri is leſs extenſive than might be imagined; it includes his ſpecies lunaris, venoſus, and guttatus; but the genus conſiſts principally of new fiſhes.

HIATULA is a genus eſtabliſhed for one ſpecies (Labrus hiatula) of Linnæus, which, being deſtitute of any anal fin, cannot, ſays Lacepede, remain with the reſt. This he calls Hiatule gardenienne.

OSPHRONEMUS is a genus inſtituted by Commerſon, from whom it was adopted by Lacepede. Its character conſiſts in having five or ſix rays in each thoracic fin, the firſt of which is a ſpine, and the ſecond terminated by a long filament. This genus contains only the ſpecies Goramy and another.

CHEILINUS is a genus eſtabliſhed for the reception of the Linnæan Labrus ſcarus, and a new ſpecies obſerved by Commerſon, the ſpecies trilobé. The upper lip is extenſile; gill-covers deſtitute of ſpines or teeth, and a ſingle dorſal fin.

LUTJANUS was originally eſtabliſhed by Bloch, from whom it was adopted by Lacepede; this forms a moſt extenſive genus, and comprehends ſpecies from ſeveral of the Linnæan genera, as *Perca* ſtigma, ſtriata, argentea, and nobilis; *Sparus* virginicus, and *Chætodon* araunus, together with the *Labri* ſtriatus, ſcina, lapina, ramentoſus, ocellatus, adriaticus, &c. Its character is, that one or more plates of the gill-covers have a ſmall tooth; the back a ſingle dorſal fin, and ſometimes a beard to the jaws.

TRICHOPODUS includes part of the Linnæan Labri; the character conſiſts in having a ſingle ray longer than the body to each of the thoracic fins, and one dorſal fin.

CHEILODIPTERUS. The upper lip in this genus is extenſile; it has neither inciſive teeth, nor grinders; the gill-covers are deſtitute of ſpines or teeth, and the back is furniſhed with two fins. This laſt genus contains nine ſpecies.

Having thus far ſtated the moſt material alterations that have taken place in this extenſive genus, it only remains to enumerate the ſpecies, the order of which, in conformity with our original plan, will be reduced as nearly to the arrangement adopted in the Gmelinian ſyſtem, as the introduction of the more recently diſcovered kinds will permit.

Species.

* *Tail forked.*

Scarus. Tranſverſe appendages at the ſide of the tail. Linn *Scarus Auctorum*, Arted. *Cheiline ſcare*, Lacepede.

A native of the Mediterranean, where it appears in ſhoals, and feeds chiefly on fuci, and other marine plants. The length is about twelve inches, the ſcales large and thin, and the front teeth broad and blunt. The fleſh of this ſpecies was eſteemed a delicacy among the ancient Romans, and in their days of luxury, obtained, if we may credit Oppian, the moſt extravagant price. It ſeems to be moſt abundant near the ſhores of Greece.

Anthias. Body entirely reddiſh. Art.

Inhabits ſouthern Europe and America. Gmelin conceives, from the ſerrated operculum, it may be a perca. Bloch conſtitutes of it a diſtinct genus, under the name of Anthias.

Cretensis. Teeth four, body greeniſh. Art.

Inhabits Candia, and the adjacent places.

Hepatus. Lower jaw longer; body with tranſverſe black lines each ſide. Art.

An European ſpecies found in the Mediterranean ſea, and ſometimes in the rivers adjacent. The dorſal fin has ten ſpinous rays, and twenty-one ſoft ones, and behind the former a black ſpot.

Griseus. Tail ſub-bifid; body ſomewhat greyiſh. Gmel. *Turdus pinnis branchialibus carens*, Cateſby.

A native of America. Cateſby has figured this ſpecies without pectoral fins, ſays Gmelin, and diſtruſts his accuracy; from a reference to the preliminary obſervations, it will be however remarked, that Lacepede admits its correctneſs, and inſtitutes a new genus of this ſpecies only.

Lunaris. Tail-fin truncated in the middle; dorſal and anal with a purple line; lips folded. Gmel. *Labrus oblongus*, &c. Gronov. *Le croiſſant*, Bonnaterre.

An inhabitant of the South American and Indian ſeas. The body is oblong-violet, with bands of yellow diſpoſed tranſverſely; the dorſal and anal fin yellow, except the violet line.

Gallus. Caudal fin truncated in the middle; dorſal and anal with violet lines at the baſe; lower lip with a doubling each ſide. Gmel. *Scarus gallus*, Forſk.

Deſcribed by Forſkal among the fiſhes of Arabia: the body is duſky green, with violet lines all over the body, the belly with two blue ſtripes, and an intermediate one of green; ſcales lax, ſtriated, membranaceous at the edge, and marked with a tranſverſe purple band; eyes remote, with red pupil; teeth in one row; tail yellow in the middle, violet towards the ſides, and edged with blue. The fleſh of this kind is accounted poiſonous.

Purpureus. Caudal fin truncated in the middle; dorſal and anal with a longitudinal purple repandate ſtripe at the baſe. Gmel. *Scarus purpureus*, Forſk.

Inhabits the ſhores of Arabia; the length eighteen inches; body ſomewhat lance-ſhaped and truncated, colour duſky-green, with three purple ſtripes each ſide, beneath blue; ſcales broad, rhombic, ſtriated, and looſely imbricated; crown convex, naked and brown, with a purple triangle each ſide before the eyes; gill-covers naked, with a ſquare purple ſpot; lateral line ramoſe. The fleſh of this fiſh is eſteemed good.

Psittacus. Caudal fin truncated in the middle; edge of the fins, abdominal ſtripe, and marks on the head blue. Gmel. *Scarus pſittacus*, Forſk.

The body of this ſpecies is greeniſh, with yellowiſh lines; eyes ſmall and remote; jaws of two bones, the lower one with one tooth each ſide, the upper three; gill-cover with looſe ſcales; lateral line ſomewhat ramoſe, and double, the firſt near the back, the other in the middle; fins purple. A native of Arabia. Perhaps of the ſcarus genus?

Psittaculus. Green, with three longitudinal red ſtripes on each ſide; dorſal fin yellow, with longitudinal red band. *L. perruche*, Lacepede. *Parrakeet labrus*, Shaw.

Deſcribed from a drawing by Plumier. The ſpecies inhabits the American ſeas. Over each eye is a black ſtreak; tail yellow, with four or five curved bands of blue and red.

Niger. Tail truncated in the middle; down the chin a duſky green longitudinal ſtripe. Gmel. *Scarus niger*, Forſk.

An Arabian ſpecies found near the ſhores of the ſea. The jaws are bifid, the blotches on the head and outer margin of the fins blue-green; lips edged with red, and then greeniſh-brown; teeth in the upper jaw two, canine and white; fins violet-brown; pectoral obſcure, ferruginous and browniſh at the baſe; tail greeniſh, the angles lanceolate.

Chanus. Head with three blueiſh rivulets each ſide, under the eye a blue ſquare ſpot. Gmel.

Colour above brown, beneath white; lower jaw longer, between the eyes two furrows diverging behind; anterior gill-covers ſerrated at the back part, poſterior tridentate; pectoral, ventral, and anal fins yellow; dorſal and caudal ſpotted with red. Inhabits Turkey, near Conſtantinople.

Operculatus. Body with ten brown bands; gill-covers with a brown ſpot. Linn. Amoen. Acad.

A native of Aſia.

Pavo. Body varied with green, blue, ſanguineous red, and hoary. Gmel. *Labrus pulchre varius, pinnis pectoralibus rotundatis*, Art. *Labrus pavo*, Haſſelquiſt. *Peacock labrus*.

Length twelve inches. Inhabits the Mediterranean ſea, near Syria.

Auritus. Gill-covers fin-ſhaped. Gmel. *Perca fluviatilis gibboſa, ventre luteo*, Cateſby.

Native of the freſh waters of North America; the iris is yellow; gill-cover with a long, obtuſe, black membrane at the tip; the tail bilobate.

Trichopterus. Ventral fins with one ray. Pallas. *Sparus*, &c. Koelreuter.

Length four inches, the body carinated behind, ſlightly undulated with brown and pale, the middle of the ſides and baſe of the tail with a round brown black ſpot, ſurrounded by a paler circle. An Indian ſpecies of the marine kind.

Falcatus. Dorſal and anal fins falcated, the five firſt rays unarmed. Gmel.

Inhabits America, the colour ſilvery, and length of the bream; the teeth are acute, and the ventral fins ſmall.

Rufus. Tail lunate; body entirely tawny. Loefl. *Turdus flavus*, Cateſby.

An American ſpecies.

Zeylanicus. Tail lunate; body above green, beneath pale purple. Ind. Zool.

An edible fiſh. It inhabits Ceylon. The head is blue, the gill-covers green, with purple lines; pectoral fins with a purple ſpot in the middle, and edged with blue; ventral blue; dorſal and anal blueiſh-purple edged with green; tail in the middle yellow, each ſide ſtreaked with red, at the baſe blue.

Ayena. Body ſilvery; rays of the dorſal fin two—five, and nearly unarmed. Forſk.

Inhabits the ſandy ſhores of Arabia. The length ſix inches; body oblong; belly ſtraight, and ſometimes marked with interrupted ſtripes; the lips are equal, the upper protractile; teeth numerous and very ſhort; lateral line nearer the back, and almoſt parallel; tail bilobate, the lobes lanceolate, and the fins glaucous.

Catenula. Lower jaw longer; back elevated; on each ſide eight ſeries of very ſmall equal ſpots, and two tranſverſe bands upon the nape. *Le labre chapelet*, Lacepede.

Obſerved by Commerſon in the Indian ſeas. This and ſeveral of the following new ſpecies are probably ſpecies of the Linnæan Sciæna.

Longirostris. Snout much advanced; gill-covers of two pieces. *Le labre long-muſeau*, Lacepede.

Found with the preceding.

Melapterus. Fins black; head bare of ſcales. *Labrus melepterus*, Bloch. *Le labre à nageoires molles*, Buff.

A native of Japan.

Semi-ruber. Four teeth in the upper jaw larger; anterior half of the body red, the poſterior yellow. *Le labre demi-rouge*.

Obſerved by Commerſon in the Indian ſeas. The baſe of the poſterior part of the dorſal fins ſcaly.

Punctulatus. Upper lip large, thick, and pleated; three longitudinal rows of black dots on the dorſal fin, and one on the poſterior part of the anal fin. *Le labre tetracanthe*, Lacepede.

Native country unknown.

Semidiscus. Pale, with numerous black tranſverſe bands; tail terminated in a clear pale creſcent. *Le labre demi-diſque*, Lacepede.

The bands acroſs the body of this fiſh are about nineteen in number, and the dorſal fin feſtooned. A ſpecies found in the Indian ſeas.

Doliatus. Grey, with about twenty-three tranſverſe brown bands; caudal fin creſcent-ſhaped. *Le labre cerclé*, Lacepede.

A native of the Indian ſeas.

Hirsutus. Six larger teeth in the upper jaw; lateral line hirſute with ſmall ſpines; body with numerous longitudinal lines. *Le labre hériſſé*, Lacepede.

Inhabits the Indian ſeas.

Furcatus. Lower jaw longer; teeth ſmall; lobes of the caudal fin pointed and very long. *Le labre fourchu*, Lacepede.

Found in the ſame ſeas as the former.

Sex-fasciatus. Opening of the mouth very ſmall; lower jaw longer; body with ſix tranſverſe bands. *Le labre ſix bandes*, Lacepede.

Obſerved with the preceding by Commerſon.

Octo-vittatus. Teeth in the upper jaw much longer; on each ſide the body four ſomewhat oblique rays. *Le labre huit raies*, Lacepede-

Found in the Indian ſeas. The tail in this kind is creſcent formed.

Lævis. Lower jaw longer; teeth large, recurved, and equal; lateral line nearly ſtraight; body with five large tranſverſe ſpots or bands. *Le labre liſſe*, Lacepede.

A native of the Indian ſeas.

Gouanii. Each gill-cover compoſed of three plates, and terminating in a large rounded projection; lateral line obſolete; between the thoracic fins a pointed proceſs. *Le labre gouan*, Lacepede.

Country unknown.

Macropterus. A black ſpot on the poſterior angle of the gill-covers; nearly all the rays of the fins terminating in filaments. *Le labre macroptere*.

A ſpecies met with in the Indian ſeas by Commerſon, in his voyage round the world.

Plumieri. Head rayed with blue; body ſilvery, with ſpots of blue and golden-yellow, and curved tranſverſe band on the tail. *Le labre plumierien*, Lacepede.

Found in the American ſeas.

Enneacanthus. Lateral line interrupted; body with ſix tranſverſe bands, and two on the tail. *Le labre ennéacanthe*, Lacepede.

Each jaw is furniſhed with two or four large and very ſtrong teeth, and the ſcales are conſiderable in point of ſize. Its native place is unknown.

Kismira. Head with ſeven ſmall blue rays each ſide, and four larger of the ſame colour each ſide of the body; tail creſcent-ſhaped. *Le labre kiſmira*, Lacepede.

Native of the Red ſea.

Iris. Gill-covers compoſed of four plates, and ending in an angular projection; a large oval black ſpot with white annulation at the poſterior part of the dorſal fin.

Inhabits the freſh waters of Carolina, where it is very common, and is eſteemed as an edible fiſh.

** *With tail entire.*

Hiatula. Anal fin none; body with ſix or ſeven black bands. Linn.

Communicated to Linnæus by Dr. Garden. The ſpecies inhabits Carolina, and conſtitutes the genus hiatula of Lacepede. Whether L. griſeus before mentioned be really of this genus, or is defective only in the repreſentation, appears uncertain. Should it actually be deſtitute of the anal fin, as deſcribed, it muſt probably be placed in the ſame genus (hiatula) as this ſpecies, notwithſtanding the difference in the form of the tail.

The lip in the preſent fiſh is retractile, and wrinkled within; jaws beſet with ſharp teeth, thoſe in the palate orbicular; gill-covers punctured at the edge; ſpinous rays of the dorſal fin equal, on the poſterior part black.

Marginalis. Subfuſcous; edges of the dorſal and pectoral fins tawny. Loefl. it.

Inhabits the ocean.

Ferrugineus. Sides blueiſh, with a longitudinal, tawny, indented ſtripe each ſide. Gmel.

An Indian ſpecies.

Iulis. Body above fuſcous and green; beneath white, with a fulvous dentated ſtripe each ſide; two fore-teeth longeſt. Donov. Brit. Fiſhes. *Labrus iulis; ſupra fuſcus viridiſque ſubtus albus vitta fulva utrinque dentata, dentibus duobus primoribus ſupra longioribus*, Ibid. *Labrus iulis*, Linn. *Labrus iulis*, Bloch?

"Diſcovered on the coaſt of Cornwall in the year 1802. As a native of the Mediterranean ſea, this fiſh is mentioned by various writers; but as a Britiſh ſpecies it is perfectly new, not having been recorded as ſuch either by Willughby, Ray, Borlaſe, Pennant, or any other writer on the zoology of this country."—"This fiſh has arreſted the attention of many ichthyologiſts among the ancients as well as moderns, the former of whom pronounced it the moſt beautiful of European fiſhes. It may be collected from the works of Ælian, Ariſtotle, Salvian, Aldrovandus, and others, that this fiſh is common at certain ſeaſons in the Mediterranean. Ælian ſpeaks of it, however, as a poiſonous fiſh, and of ſuch a venomous nature that it would be unſafe to eat it, or even the fleſh of any other fiſh that had been touched by it. Galen mentions it, on the contrary, as wholeſome food. The male of this ſpecies is diſtinguiſhed,

guiſhed, according to ſome writers, by having the back of a black colour, inſtead of green, as in the female; but it appears in this and other reſpects to be an extremely variable ſpecies. Neither are its habits and manners correctly known. It is generally aſſerted that it ſwims in ſmall ſhoals: Ariſtotle ſpeaks to this effect; but this is contradicted by Salvian and others, who deſcribe it as a more ſolitary fiſh, &c." Vide Brit. Fiſhes.

The uſual length is about ſeven or eight inches.

Paroticus. Lateral line curved; fins rufous; gill-covers cærulean blue. Linn. Muſ. Ad. Fr.

Native of India.

Suillus. Dorſal fin filamentous; above the tail a black ſpot; dorſal ſpines nine. Linn. Fn. Suec. *Sparus berg ſbyltra*, It. Wg.

Inhabits the ſhores of Europe.

Striatus. Dorſal fin filamentous; body with white and brown lines. Linn.

Native of America.

Guaza. Fuſcous; tail rounded, the rays extending beyond the membrane. Loeſl.

Inhabits the ocean.

Ocellaris. Dorſal fin filamentous; an ocellate ſpot at the baſe of the tail. Linn.

Country unknown.

Punctatus. Dorſal fin filamentous; body with longitudinal lines ſpotted with brown. Gmel. *Sciæna*, &c. Linn. *Labrus*, Gronov.

Found in Surinam.

Melops. Dorſal fin filamentous, and with the anal variegated; behind the eyes a brown creſcent. Linn.

Inhabits the ſouth of Europe.

Niloticus. Dorſal, anal, and caudal fins clouded. Linn. *Labrus niloticus*, Haſſeiq.

Inhabits Egypt.

Ossifragus. Lips doubled; dorſal fin with thirty rays. Linn.

An European ſpecies.

Rupestris. Dorſal fin filamentous; tail with a brown ſpot at the upper edge. Gmel. *Sciæna*, &c. Linn. *Caradſe*, Ströem.

Found on the rocky ſhores of Norway.

Onitis. Dorſal fin filamentous; belly ſpotted with cinereous and brown. Linn.

Country unknown.

Viridis. Green, with a blue line each ſide. Art.

Inhabits the Mediterranean.

Lineatus. Fins greeniſh, the dorſal one ramentous; body green, with numerous yellowiſh longitudinal lines. Donov. Br. Fiſhes.

" A new and highly intereſting ſpecies, deſcribed on the authority of an example found by captain Bray on the coaſt of Cornwall. This ſpecimen, which is in our poſſeſſion, is ſeven inches in length; the prevailing colour greeniſh, with the belly yellowiſh," &c. Vide Br. Fiſhes.

Luscus. All the fins yellow; upper eye-lid black. Linn.

Country unknown.

Livens. Tail rounded; dorſal fin filamentous; body livid brown. Linn.

Exoletus. Dorſal fin filamentous; body lineated with blue; anal fin with five ſpines. Müll. Zool. Dan.

Inhabits the Atlantic and Norway ſeas, and alſo Greenland, though rarely.

Sinensis. Dorſal fin filamentous; body livid; crown retuſe. Gmel.

An Aſiatic ſpecies.

Japonicus. Fine yellow. Houttuyn.

Length ſix inches, and inhabits Japan.

Boóps. Lower jaw longer; dorſal fin two. Houttuyn.

Found in Japan with the latter.

Tinca. Dorſal fin ramentaceous; body yellowiſh, variegated with blue and red ſpots; fins red, with fuſcous margins, and dotted with white. Donov. Br. Fiſhes. *Pinna dorſali ramentacea, corpore flaveſcente cæruleo variegato rubroque maculato, pinnis rubris fuſco marginatis albo-guttatis*, Ibid. *Labrus tinca*, Linn. *Labrus vetula*, Bloch. *Turdus vulgatiſſimus*, Wil. *Vielle, poulle de mer, gallot*, Belon. *Wraſſe, or old wife*, Ray.

Moſt writers concur in admitting the labrus tinca as a fiſh almoſt, if not excluſively, peculiar to this country. " Habitat in maris Britannici profundis ſcopuloſis," ſays Gmelin; and this opinion is ſanctioned by the countenance of Lacepede and others. Hence it cannot be improper to regard it chiefly as a Britiſh production; and as ſuch, it will not be amiſs to repeat ſome obſervations that have been already delivered by us on this ſubject, in the volumes of Britiſh Fiſhes to which we have before adverted.—" This charming ſpecies of wraſſe cannot but be conſidered as one of the moſt beautiful of the fiſh tribe obſerved to this time on the coaſts of Britain," &c.—" We have obtained this ſpecies from Scarborough, and other eaſtern coaſts of England, more than once; we have received it alſo from Cornwall, from the Skerry iſlands, north of Angleſea, and from Scotland; but have been uniformly led to believe it a ſpecies not very common on either of theſe coaſts, except near Scarborough. The uſual length of this ſpecies is about fifteen or eighteen inches, and its form rather bulky in proportion to the length. The prevailing colour is yellowiſh, inclining to greeniſh or olivaceous on the back, and white towards the belly; the markings variable in form, and differing much in colour. The whole of the back and ſides are ſpotted with red, varying in different ſpecimens from a deep or purpliſh crimſon to a reddiſh-orange, and even in ſome varieties almoſt to fulvous, and curiouſly marked with irregular lines, dots, and ſpecklings of cærulean blue, eſpecially about the head; the fins are red, with a broad duſky border inclining more or leſs to purple, and elegantly marked with numerous roundiſh dots of white. Bloch conſiders the duſky border of the fins (which in the ſpecimen he delineates is black) as a ſufficient indication of the ſpecies. In his fiſh, the black border was diſtinct only in the ventral, anal, and caudal fins; to which may be added, that the dorſal fin is commonly duſky or purpliſh, as well as thoſe before mentioned.

" Bloch deſcribes this fiſh under the title of labrus vetula, and as a native of the coaſts of Britanny, Normandy, and the North ſea; from the laſt of which he received it through the medium of his friend, M. Spengler. Gmelin, as before remarked, ſpeaks of it as an inhabitant of the Britiſh coaſts, probably on the authority of Ray and Willughby. But the ſpecies is not confined to Europe: a ſpecimen of it, taken among a variety of other fiſhes by captain Cook in the South ſeas, is at this time in our collection.

" The haunts of this fiſh are deep waters on the boldeſt rocky ſhores, where it ſubſiſts on crabs and teſtaceous animals; for the maceration of which, the three tuberculated bony proceſſes of its throat are admirably conſtructed. This fiſh takes bait eagerly, and is more commonly caught with the hook and line than in the net, or by any other mode of capture.

" It appears Mr. Pennant had not conſidered the varieties of this fiſh attentively, or, we think, the ballan wraſſe would not have been deſcribed as a ſpecies diſtinct from the labrus tinca. The ballan wraſſe of that writer is certainly the ſame as our fiſh, from which it differs only in being of a paler colour, and in having the body marked with yellowiſh inſtead of orange or red. Such pale coloured varieties occur pretty frequently, and are indeed more common than thoſe of deeper or more lively colours. Dr. Turton ſuſpects the ballan wraſſe to be a variety only of the labrus tinca of Linnæus, though he deſcribes it as a ſpecies with this diſtinctive character: "Body yellow, ſpotted with orange; above the noſe a deep ſulcus; farther gill-cover with a deep depreſſion radiated from the centre." In theſe particulars Dr. Turton was miſled by the account given by Mr. Pennant, without reflecting that the ſame characters apply preciſely to labrus tinca. Mr. Pennant informs us, the ballan wraſſe "was the form of the common wraſſe, only between the dorſal fin and tail was a conſiderable ſinking; above the noſe was a deep ſulcus; on the fartheſt cover of the gills was a depreſſion radiated from the centre." It is already ſhewn that the ſpots on this fiſh vary conſiderably; to which may be added, that the ſinking between the dorſal fin and tail is conſpicuous in all the varieties of labrus tinca, and ſo alſo is the ſulcus above the noſe. With regard to the laſt characteriſtic, the radiated depreſſion on the gill-covers, one, two, or more ſuch depreſſions are apparent on thoſe parts, when diveſted of the large ſcales that adhere to them; every ſcale, of which there are ſeveral on the gill-covers, leaving ſuch a radiated depreſſion on the thin membranaceous ſkin, when taken off. Thoſe particulars inclined us to believe Mr. Pennant was in ſome meaſure deceived by the imperfect ſtate of the Scarborough ſpecimen he examined; and our opinion has been ſince confirmed by various circumſtances. Mr. Travis, the ſon of the medical gentleman who furniſhed Mr. Pennant with the ſpecimen he deſcribes, informs us the ballan wraſſe is the individual fiſh commonly known by the name of *old wife* among the fiſhermen on the Scarborough coaſts, where it appears in ſhoals during ſummer, and that there is only one ſort found in thoſe parts. This kind we have examined, and have no heſitation in ſtating it to be the ballan wraſſe of Pennant, and the labrus tinca of every other ichthyologiſt." Vide Brit. Fiſhes, vol. iv.

In the details above mentioned will be found ſome further arguments on this ſubject, which the limits of our article cannot permit us to repeat. For the length of the preſent digreſſion we muſt indeed offer an apology, and this will doubtleſs be accepted on the following grounds. The Ballan wraſſe of Mr. Pennant has been almoſt uniformly admitted as a ſpecies by the beſt writers; when the account from which the preceding extracts were taken was publiſhed, we were aware it was received as a ſpecies by ſeveral reſpectable writers, and ſince that period, we have obſerved it included as ſuch by a modern continental writer, Monſ. Boſc, under the name of le labre ballan; he ſpeaks of it on the authority of Engliſh authors, and as a native of this country only. To correct this error, it will be admitted, was deſirable, and it was certainly no leſs incumbent in declining to deſcribe the ballan wraſſe, to explain our motives for ſuch omiſſion.

Variegatus. Red, with about four irregular parallel olive ſtripes on the ſides, and an equal number of blue ones. Donov. Br. Fiſhes. *Labrus variegatus*, Gmel. *Striped wraſſe.*

A very elegant and local Britiſh fiſh. To Mr. Pennant we are indebted for an account of this ſpecies; he was ſo fortunate as to diſcover it ſome years ago; he found it on the coaſt of Angleſea, off the Skerry iſlands. The length of his ſpecimen was ten inches, but we procured both ſexes at the ſame place, and of a ſize rather larger, the female meaſuring fourteen inches in length, and the male twelve. Brit. Fiſhes, vol. i.

Cromis. Dorſal fin nearly united; ſecond ray of the anal fin very large, thick, and compreſſed. Linn. Brown, &c. *Coracinus braſilienſis*, Ray. *Guatucupa*, Marcg.

Native of Carolina.

Linearis. Oblong; all the rays of the dorſal fin ſpinous, except the laſt. Linn.

Inhabits South America and India.

Perdica. Tail even; back ſtraight; crown ſmooth; body with indented yellowiſh ſtripes each ſide. Forſk.

This and the two following ſpecies inhabits the ſea about Conſtantinople.

Scina. Body greeniſh, with white and yellow waves; between the eyes an impreſſed hollow, and before the hollow a groove. Forſk.

The middle teeth large; anterior gill-covers ſlightly ſerrated behind, poſterior unarmed; lateral line interrupted; pectoral fins yellowiſh and without ſpots, the reſt obſcure, yellow, ſpotted with blue.

Lapina. Pectoral fins yellow; ventral blue, the reſt violet ſpotted with blue. Forſk.

Body oblong-oval, above brown, beneath whitiſh, the ſides greeniſh-yellow, with three lines each ſide, each compoſed of a double row of red ſpots.

Ramentosus. Greeniſh-brown; filament of the firſt dorſal ſpines twice as long as the ray. Forſk.

Native of Arabia; the body lanceolate, ſpotted with violet on the fins, crown, and under the eyes; or ſometimes fine green; ſcales large, rounded, entire, and diſpoſed in nine rows from the belly to the back.

Ocellatus. Greeniſh, with a ſcarlet ocellate ſpot behind each eye. Forſk.

Inhabits the ſhores of Syria; the body ſuboval, back yellowiſh-brown, and the head marked with blue irregular lines.

Lunulatus. Greeniſh-brown with darker bands, ſcales with each a ferruginous band; breaſt ſpeckled with red. Forſk.

Length one foot; ſcales broad and entire. This ſpecies inhabits Arabia.

Trimaculatus. Red; on each ſide at the baſe of the dorſal fin two dark ſpots, and a third between the dorſal fin and tail. Donov. Br. Fiſhes. *Labrus trimaculatus*, Gmel. *Labrus carneus, le Paon rouge*, Bloch. *Trimaculated wraſſe.*

"The length of this ſpecies is about twelve inches; its form is graceful, and the colours, when recent, of peculiar elegance and delicacy. A fine orange varying to red upon the back, and becoming paler and whiter towards the belly, is the chief and moſt pervading colour. The dorſal fin and tail are fine orange, the former ſtrongly marked with dark purpliſh-black, and prettily edged with blue; and the reſt of the fins paler. The three dark ſpots at the poſterior extremity of the back, which principally conſtitutes the ſpecific diſtinction of this kind of wraſſe, are of a rich blackiſh purple. There are alſo four other ſpots of a delicate roſe colour, ſituated contiguous to theſe, and which do not appear to have been mentioned by any writer. Two of theſe ſpots are diſpoſed in the ſpace between the three darker ones before mentioned, and the third and fourth are placed one at each extremity of the outermoſt ones, ſo as to form together a ſeries of ſeven ſpots, which are alternately of a pale roſe colour and a very deep purple. This ſpecies is uncommonly rare. Our ſpecimen was caught on the coaſt of Cornwall in June 1801." Vide Brit. Fiſhes. v. iii.

Olivaceus. Body olive-green; gill-covers blue at the tip; tail with a black ſpot. Brunn.

Native of the Mediterranean; the length two inches; body oblong, compreſſed, beneath inclining to ſilvery.

Fuscus. Body brown, with blue lines and ſpots. Brunn.

Length three inches, compreſſed oblong, beneath whitiſh. The ſpecies inhabits the Mediterranean.

Unimaculatus. Body lineated with olive; dorſal fin behind with a black ſpot. Brunn.

Inhabits the Mediterranean, and a ſuppoſed variety of it, which is reticulated with duſky and greeniſh ſilvery, occurs in the Adriatic. The body is three inches long, oval, compreſſed, and marked with about ten pale blue longitudinal lines.

Venosus. Green, with anaſtomoſing veins; gill-covers and dorſal fin with a black ſpot. Bloch.

Native of the Mediterranean; body oval, and compreſſed; ſides of the head with a few longitudinal red lines; filaments and band on the dorſal fin red. Length three inches.

Griseus. Body grey, with darker ſpots; tail with a black ſpot at the baſe. Brunn.

Length three inches, oval; cheeks lineated with blue; fins reddiſh, with duſky yellow ſpots. Found in the Mediterranean.

Guttatus. Body reddiſh, variegated with black; tail with a ſpot on the middle of the baſe. Brunn.

Native of the Mediterranean.

Adriaticus. Body with four broad tranſverſe brown bands; dorſal fin on the anterior part ten-ſpined; on the poſterior part marked with ocellated black ſpots. Brunn.

Length three inches; body pale; head with oblique tawny lines.

Leopardus. Two teeth in the front of each jaw larger; body ſpeckled with brown; from the eyes to the gill-covers a dark line, and on the tail a black band. *Le labre leopard,* Lacepede.

A ſpecies found in the Indian ſeas, and called leopardus, from the colours and markings on the body, tail, the dorſal and anal fin, reſembling thoſe of the leopard. It was diſcovered by Commerſon.

Bivittatus. Back red, ſides yellow, with two longitudinal brown rays, the upper one of which extends from the eye, the lower from the pectoral fin. *Le labre a deux lignes, &c.* Bloch. *Le labre birayé,* Lacepede.

The country unknown.

Macrolepidotus. Yellow; ſcales large; nine ſpines in the dorſal fin; beneath the eyes two rows of pores. *Le labre a gandes ècailles, &c.* Bloch.

Suppoſed to be an inhabitant of the Indian ſeas.

Albo-radiatus. Lips very thick; body yellowiſh, with two very long white rays, and a third above ſhorter. Mem. Acad. Petr.

Country unknown.

Marmoratus. Marbled with brown and whitiſh. *Le labre marbré,* Lacepede.

A native of the Indian ſeas; diſcovered by Commerſon. The teeth are equal and diſtinct.

Bergylta. Scales large; the laſt rays of the anal and dorſal fin much larger than the others. Bloch, &c. *Le labre bergylte,* Lacepede.

Found in deep ſeas in the north of Europe: feeds on crabs and ſhells, and grows to the length of ten or twelve inches.

Hortulanus. Body and tail decuſſated with dark ſtripes, and a ſpot in each diviſion. *La labre parterre,* Lacepede.

Native of the Indian ſeas.

Calops. Scales large; lateral line ſtraight; near the pectoral fins a large brown ſpot. *Le labre calops,* Lacepede.

Inhabits the ſeas of Europe, and is known at Dieppe under the name of “brune.” The eyes are large and black; the back duſky.

Ascanii. Above red, varied with green ſpots and ſtreaks, and the under parts yellowiſh, ſpeckled with red. *Le rone aſcanius.*

Length ſeven inches; green ſtripes on the dorſal and anal fin about two or three in number; tail green, with the tip red.

Cyanopterus. Above varied with red, green, and yellow; beneath green and brown; fins blue. *Cheilodiptere cyanoptere,* Lacepede.

A beautiful ſpecies, found in the American ſeas.

Cingulum. Anterior parts livid, poſterior brown, with an intermediate white girdle; dorſal fin edged with white. Lacepede, &c.

Native of the Indian ſeas.

Diana. Four larger teeth in the upper jaw; in the lower two; centre of each ſcale marked with a brown creſcent. *Le labre diane,* Lacepede.

An Indian ſpecies.

Macrodon. Scales large; mouth furniſhed with four larger curved teeth. *Le labre macrodonte,* Lacepede.

Neustriæ. Back varied with brown, orange, and greeniſh, the ſides marbled with brown, orange, and white. *Le labre Neuſtrien,* Lacepede.

Found in the Seine, where the fiſhermen diſtinguiſh it by the title of “grande vieille,” and “bandouliere marbre.”

Cruentatus. Silvery, with large irregular ſpots of ſanguineous. *Le labre enſanglanté,* Lacepede.

Obſerved by Plumier in the American ſeas.

Karuta. Body blackiſh, with a yellow longitudinal ſtripe each ſide, and beneath yellowiſh with rufous fin. *Johnius karutta,* Bloch. *Le labre karut,* Lacepede.

An Indian ſpecies.

Cupreus. Somewhat ſilvery; head, back, and fins, tinged with coppery. *Johnius aneus,* Bloch.

Shape lanceolate. This ſpecies inhabits the Indian ſeas, and is called Anei kattalei by the natives of Malabar.

Annulatus. Body encircled by nine regular ſtraight bands or rings. *Le labre annelé,* Lacepede.

One of the ſpecies found by Commerſon in the Indian ſeas.

Brasiliensis. Two teeth in the upper jaw longer and recurved; dorſal and anal fin with two or three longitudinal lines. Bloch, &c.

Found on the coaſts of Brazil, where it is taken with the hook and line; the fleſh is excellent.

Tessellatus. Back violet, ſides ſilvery, and divided into compartments like a wainſcot. *Labrus teſſellatus,* Bloch. *Le labre boiſé,* Buff.

This kind inhabits the North ſeas. Some French authors call it “perroquet boiſe.”

Cornubius. Body variegated with green; near the tail a large fuſcous ſpot; anal fin yellow, obliquely banded with fuſcous. Donov. Brit. Fiſhes. *Labrus cornubius,* Gmel. *Goldfinny,* Ray.

This beautiful ſpecies is about a palm's length, the back browniſh, beneath which the green prevails, and below this the ſides and lower part are yellowiſh ſilvery; anal fin golden yellow, whence its name.

Comber. Back, fins, and tail red; belly yellow. *L. corpore miniato, cauda rotundata*, Gmel. *Comber*, Ray, &c.

A ſmall ſpecies of an oblong form, recorded by Ray as an inhabitant of the ſhores of Cornwall.

Coquus. Purple and dull blue, beneath yellow. Gmel.

Inhabits ſame place as the former, according to Ray.

Mixtus. Variegated with yellow and blue; anterior teeth larger. Arted.

Found on the ſhores of Dalmatia.

Fulvus. Body fulvous, Gmel. *Turdus cauda convexa*, Cateſby.

A native of America.

Varius. Varied with purple, green, blue, end black. Art.

Native of the Mediterranean.

Merula. Blackiſh blue. Art.

An European ſpecies.

Cynaedus. Pale yellow; back purple; dorſal fin reaching from head to tail. Art.

Found in the Mediterranean.

LABURNUM, in *Botany*. See Cytisus and Anagyris.

Laburnum, in *Gardening*, a common name applied to a beautiful, flowering, ornamental tree, for pleaſure and other grounds. There are two ſorts of this tree in uſe generally, which, while young, have much the ſame appearance in the wood and foliage, but are afterwards readily diſtinguiſhed by the ſmallneſs and fineneſs of the flowers, and of that of the branches. The fine flowered and more branchy ſort, is the moſt proper for ſituations where ornament is required, ſuch as ſhrubberies and pleaſure grounds; but the more coarſe ſtrong growing kind, ſucceeds beſt in poor, gravelly, and rocky ſituations.

LABY, in *Geography*, a town of Sweden, in the province of Upland; 12 miles N. of Upſal.

LABYRINTH, Λαϐυρινθος, among the *Ancients*, was a large and intricate edifice cut out into various iſles and meanders, running into each other, ſo as to render it difficult to get out of it.

There is mention made of four celebrated labyrinths among the ancients, ranked by Pliny in the number of the wonders of the world; *viz.* the Cretan, Egyptian, Lemnian, and Italian.

That of Crete is the moſt famed; it was built, as Diodorus Siculus conjectures, and Pliny poſitively aſſerts, by Dædalus, by command of king Minos, who kept the Minotaur ſhut up in it, on the model of that of Egypt, but on a leſs ſcale: but both affirm, that in their time it no longer exiſted, having been either deſtroyed by time, or purpoſely demoliſhed. It was hence that Theſeus is ſaid to have made his eſcape by means of Ariadne's clue.

Diodorus Siculus and Pliny repreſent this labyrinth as having been a large edifice; while others have conſidered it as merely a cavern hollowed in the rock, and full of winding paſſages. If the labyrinth of Crete, ſays the Abbé Barthelemi (Travels of Anacharſis, vol. iv. p. 441, &c.), had been conſtructed by Dædalus under the order of Minos, whence is it that we find no mention of it, either by Homer, who more than once ſpeaks of that prince, and of Crete, or by Herodotus, who deſcribes that of Egypt, after having ſaid that the monuments of the Egyptians are much ſuperior to thoſe of the Greeks; or by the more ancient geographers; or by any of the writers of the ages in which Greece flouriſhed? This work was attributed to Dædalus, whoſe name, ſays our author, is ſufficient to diſcredit a tradition. His name, like that of Hercules, had become the reſource of ignorance, whenever it turned its eyes on the early ages. All great labours, all works which required more ſtrength than ingenuity, were attributed to Hercules; and all thoſe which had relation to the arts, and required a certain degree of intelligence in the execution, were aſcribed to Dædalus. According to Diodorus and Pliny no traces of the labyrinth of Crete exiſted in their time, and the date of its deſtruction had been forgotten. Yet it is ſaid to have been viſited by the diſciples of Apollonius of Tyana, who was contemporary with thoſe two authors. (Philoſtrat. Vit. Apoll. l. iv. c. 34.) The Cretans, therefore, believed that they poſſeſſed the labyrinth. At Nauplia, near the ancient Argos, ſays Strabo (l. viii.), are ſtill to be ſeen vaſt caverns, in which are conſtructed labyrinths that are believed to be the work of the Cyclopes; the meaning of which, as Barthelemi underſtands him, is, that the labours of men had opened in the rock paſſages which croſſed and returned upon themſelves as in quarries. Such, he ſays, is the idea we ought to form of the labyrinth of Crete. He then ſuggeſts an enquiry, whether there were ſeveral labyrinths in that iſland? Ancient authors ſpeak only of one, which moſt of them place at Cnoſſus, and ſome few at Gortyna. Belon and Tournefort deſcribe a cavern ſituated at the foot of mount Ida, on the ſouth ſide of the mountain, at a ſmall diſtance from Gortyna: which, according to the former, was a quarry, and according to the latter, the ancient labyrinth. Beſides this another is ſuppoſed to have been ſituated at Cnoſſus, and in proof of the fact it is alleged, that the coins of that city repreſent the plan of it. The place where the labyrinth of Crete was ſituated, according to Tournefort, was, as Barthelemi ſuppoſes, one league diſtant from Gortyna; and, according to Strabo, it was diſtant from Cnoſſus ſix or ſeven leagues; with reſpect to which our author concludes, that the territory of the latter city extended to the vicinity of the former. In reply to the inquiry, what was the uſe of the caverns, denominated labyrinth, Barthelemi imagines, that they were firſt excavated in part by nature; that in ſome places ſtones were extracted from them for building cities, and that, in more ancient times, they ſerved for an habitation or aſylum to the inhabitants of a diſtrict expoſed to frequent incurſions. According to Diodorus Siculus, the moſt ancient Cretans dwelt in the caves of mount Ida. The people, when inquiries were made on the ſpot, ſaid, that their labyrinth was originally a priſon. It might indeed have been applied to this uſe; but it is ſcarcely credible that, for preventing the eſcape of a few unhappy wretches, ſuch immenſe labours would have been undertaken. See Crete.

The labyrinth of Egypt, according to Pliny, (N. H. v. ii. l. 36.) was the oldeſt of all; and was ſubſiſting in his time, after having ſtood, according to tradition, as he ſays, 4600 years. He ſays it was built by king Peteſucus, or Tithoës; but Herodotus makes it the work of ſeveral kings: it ſtood on the ſouthern bank of the lake Mœris, near the town of Crocodiles, or Arſinoe, and conſiſted of twelve large contiguous palaces, in which the twelve kings of Egypt aſſembled to tranſact affairs of ſtate and religion, containing 3000 apartments, 1500 of which were under ground.

This ſtructure ſeems to have been deſigned as a pantheon, or univerſal temple of all the Egyptian deities, which were ſeparately worſhipped in the provinces. It was alſo the place of the general aſſembly of the magiſtracy of the whole nation; for thoſe of all the provinces or nomes met here to feaſt and ſacrifice, and to judge cauſes of great conſequence. For this reaſon, every nome had a hall or palace appropriated to it; the whole edifice containing, according to Herodotus, twelve; Egypt being then divided into ſo many kingdoms.

Pliny makes the number of theſe palaces 16, and Strabo makes them 27. All the halls were vaulted, and had an equal number of doors oppoſite to one another, ſix opening to the north, and ſix to the ſouth, all encompaſſed by the ſame wall. The exits, by various paſſages and innumerable returns, afforded to Herodotus a thouſand occaſions of wonder. The roofs and walls within were incruſted with marble, and adorned with ſculptured figures. The halls were ſurrounded with pillars of white ſtone finely poliſhed; and at the angle, where the labyrinth ended, ſtood the pyramid, which Strabo aſſerts to be the ſepulchre of the prince who built the labyrinth. According to the deſcription of Pliny and Strabo, this edifice ſtood in the midſt of an immenſe ſquare, ſurrounded with buildings at a great diſtance. The porch was of Parian marble, and all the other pillars of marble of Syene; within were the temples of their ſeveral deities, and galleries, to which was an aſcent of 90 ſteps, adorned with many columns of porphyry, images of their gods, and ſtatues of their kings, of a coloſſal ſize: the whole edifice was conſtructed of ſtone, the floors being laid with vaſt flags, and the roof appearing like a canopy of ſtone: the paſſages met, and croſſed each other with ſuch intricacy, that it was impoſſible for a ſtranger to find his way, either in or out, without a guide; and ſeveral of the apartments were ſo contrived, that on opening of the doors, there was heard within a terrible noiſe of thunder. Although the Arabs, ſince the days of Pliny, helped to ruin this ſtructure, yet a conſiderable part of it is ſtill ſtanding. The people of the country call it the palace of Charon. See a plan and deſcription of this labyrinth, in the preſent ſtate of it, in Pococke's Hiſt. of the Eaſt, vol. i. p. 61, &c. See alſo Perry's View of the Levant, p. 381, &c.

Strabo, Diodorus Siculus, Pliny, and Mela ſpeak of this monument with the ſame admiration as Herodotus; but not one of them ſays that it was conſtructed to bewilder thoſe who attempted to paſs through it; though it is manifeſt, that, without a guide, they would have been in danger of loſing their way. The Abbé Barthelemi (ubi ſupra) ſuggeſts, that this danger introduced a new term into the Greek language. The word labyrinth, taken in the literal ſenſe, ſignifies a circumſcribed ſpace, interſected by a number of paſſages, ſome of which croſs each other in every direction, like thoſe in quarries and mines, and others make larger or ſmaller circuits round the place from which they depart, like the ſpiral lines that are viſible on certain ſhells. Hence it has been applied, in a figurative ſenſe, to obſcure and captious queſtions, to indirect and ambiguous anſwers, and to thoſe diſcuſſions, which, after long digreſſions, bring us back to the point from which we ſet out.

The labyrinth of Lemnos was ſupported by columns of wonderful beauty; there were ſome remains of it at the time when Pliny wrote. That of Italy was built by Porſenna, king of Etruria, for his tomb.

Labyrinth, in *Gardening*, a ſort of maze or wilderneſs plantation, abounding with hedges and walks, diſtributed into many windings and intricate turnings, leading to one common centre, extremely difficult to be found out, deſigned by way of amuſement. This is commonly formed with hedges, in double rows, leading in various twiſtings and turnings, or backward and forward, with intervening plantations and gravel-walks alternately between hedge and hedge. The great object is to have the walk contrived in ſo many mazy intricate windings, as to cauſe much labour and difficulty to find out the centre, or out again in the way a perſon came in. But they are now rarely introduced into modern garden deſigns; and ſcarcely to be ſeen, except in ſome old gardens.

The hedges for this uſe are uſually of hornbeam, but may be of beech, elm, or any other ſort of tree or ſhrub that can be kept in neat order by clipping. The walks ſhould be five feet wide at leaſt, laid with gravel, and neatly rolled; and the trees and ſhrubs to form the thicket of wood between the hedges of any of the hardy kinds of the deciduous tribe interſperſed with ſome evergreens. In the middle, a ſpace ſhould be left open as the centre. The labyrinth which is, we believe, ſtill in exiſtence at Hampton Court, is almoſt wholly formed of the common elm tree, cut in ſo as to keep it down to the proper height.

But ſmall labyrinths are occaſionally formed with box edgings, and borders for plants, and alleys for walking in, in imitation of the large ones, and which have good effect in ſmall garden-grounds.

Labyrinth, in *Geography*, a cluſter of ſmall iſlands in the Pacific ocean, diſcovered in 1722, by captain Roggewein, 75 miles W. from the Pernicious iſlands.—Alſo, a chain of ſhoals, rocks, and ſmall iſlands on the E. coaſt of New Holland, extending from Cape Tribulation to Cape York.

LABYRINTHUS, in *Anatomy*, a name given, on account of its apparently complicated ſtructure, to the internal organ of hearing; to the part, indeed, which, from its receiving the auditory nerve, is the true ſeat of the ſenſe. See Ear.

LAC, or Lacca, *Gum*, as it is commonly, though not very properly, denominated, becauſe it is neither a gum nor a reſin, is a kind of compound ſubſtance, prepared by the female of a minute inſect, called by ſome Coccus *Lacca*, and by others Chermes *Lacca*, which is found in ſeveral ſpecies of trees in the Eaſt Indies, and particularly on the banyan-tree (Ficus indica and religioſa of Linnæus), ſeveral ſpecies of Mimoſa, and the Biher on Rhamnus jujuba. Theſe inſects are nouriſhed by the trees on which they are produced, and fix themſelves upon the ſucculent extremities of the young branches; and around their edges they are environed with a ſpiſſid ſub-pellucid liquid, which ſeems to glue them to the branch. It is the gradual accumulation of this liquid, which forms a complete cell for each inſect, and is what is called Gum Lacca. When the cells are completely formed, the inſect is in appearance an oval, ſmooth, red bag, without life, about the ſize of a ſmall cochineal inſect, emarginated at the obtuſe end, full of a beautiful red liquid. When the eggs are hatched, the young inſects, or grubs, firſt feed upon the red liquid above-mentioned, and when this is expended, they pierce a hole through the coat that inveſts them, and move off one by one, leaving their exuviæ behind, which are the white membranous ſubſtance found in the empty cells of the Stick lac. The accumulation of lac appears in the economy of this inſect to be the ſubſtance that anſwers the double purpoſe of a nidus and covering to the egg or inſect in the firſt ſtage of its exiſtence, and of food for the maggot in its more advanced ſtate. The lac is formed into complete cells, finiſhed with as much regularity and art as the honey-comb, but differently arranged. The flies are invited to depoſit their eggs on the branches of the trees by beſmearing them with ſome of the freſh lac ſteeped in water, which attracts the fly, and gives a better and larger crop. For a particular deſcription of theſe inſects, and their cells, we refer to the papers of Mr. James Kerr, of Patna; Mr. Robert Saunders, ſurgeon, at Boglepoor, in Bengal; and Dr. Roxburgh, of Samulcotta, in the Philoſophical Tranſactions, vols. lxxi. lxxix. and lxxxi. Lac is a ſtaple article of commerce in Aſſam, a country bordering on, and much connected with, Thibet, which furniſhes the greateſt quantity of that in uſe; and it is alſo found upon the uncultivated mountains on both ſides of the Ganges. The only trouble in procuring it is that of breaking down the branches, and carrying them to market. The price in Dacca, in 1781, ſays Mr. Kerr, was about 12*s.* the hundred pounds weight, although it was brought from the diſtant country of Aſſam. The beſt lac is of a deep red colour. If it is pale, and pierced at top, it is depretiated in value, becauſe the inſects have left their cells, and conſequently they can be of no uſe as a dye or colour; though they may be probably better for varniſhers. Of lac there are four kinds known in commerce: *viz.* 1. *Stick* lac, which is the lac in its natural ſtate, from which all the others are formed. This is obtained in pretty conſiderable lumps, with much of the woody parts of the branches on which it is formed adhering to it. 2. *Seed* lac, which is the former broken into ſmall pieces, garbled, and appearing in a granulated form. 3. *Lump* lac, which is *ſeed* lac liquefied by fire, and formed into cakes. 4. *Shell* lac is the purified lac, or the cells liquefied, ſtrained, and formed into their tranſparent laminæ. Lac is brought into this ſtate, or purified, by the following proceſs. It is broken into ſmall pieces, and picked from the branches and ſticks, and then put into a ſort of canvas bag of about four feet long, and about ſix inches in circumference. Two of theſe bags are in conſtant uſe, and each of them held by two men. The bag is placed over a fire, and frequently turned till the lac is liquid enough to paſs through its pores, when it is taken off the fire, and ſqueezed by two men in different directions, dragging it along the convex part of a plantain tree (Muſa paradiſaica of Linnæus), prepared for the purpoſe: while this is doing, the other bag is heating, to be treated in the ſame manner. The mucilaginous and ſmooth ſurface of the plantain-tree ſeems peculiarly well adapted for preventing the adheſion of the heated lac, and giving it the form, which enhances its value ſo much. The degree of preſſure on the plantain-tree regulates the thickneſs of the ſhell, and the quality of the bag determines its fineneſs and tranſparency, upon which its value depends.

The lac is applied to various purpoſes by the natives in India. A great quantity of the *ſhell* lac is conſumed in making ornamental rings, painted and gilded in a variety of taſtes, to decorate the arms of the ladies; and it is formed into beads, ſpiral and linked chains for necklaces, and other female ornaments. It is alſo uſed for ſealing-wax. For this purpoſe, take a ſtick, and heat one end of it upon a charcoal fire; put upon it a few leaves of the ſhell lac ſoftened above the fire; keep alternately heating and adding more ſhell lac, until you obtain a maſs of three or four pounds of liquefied ſhell lac upon the end of your ſtick. Knead this upon a wetted board, with three ounces of levigated cinnabar, and form it into cylindrical pieces; and to give them a poliſh, rub them while hot with a cotton cloth.

For japanning, take a lump of ſhell lac, prepared in the manner of ſealing-wax, with whatever colour you pleaſe, fix it upon the end of a ſtick, heat the poliſhed wood over a charcoal fire, and rub it over with the half-melted lac, and poliſh by rubbing it even with a piece of folded plantain leaf held in the hand; heating the lacquer, and adding more lac as occaſion requires. Their figures are formed by lac, charged with various colours in the ſame manner. In ornamenting their images and religious houſes, &c. they make uſe of very thin beaten lead, which they cover with various varniſhes, made of lac charged with colours. The preparation of them is kept a ſecret. The leaf of lead is laid upon a ſmooth iron heated by fire below, while they ſpread the varniſh upon it.

For grindſtones, take of river ſand three parts, of ſeed lac waſhed one part, mix them over the fire in a pot, and form the maſs into the ſhape of a grindſtone, having a ſquare hole in the centre, fix it on an axis with liquefied lac, heat the ſtone moderately, and by turning the axis it may be eaſily formed into an exact orbicular ſhape. Poliſhing grindſtones are made only of ſuch ſand as will paſs eaſily through fine muſlin, in the proportion of two parts of ſand to one of lac. The ſand is compoſed of ſmall angular cryſtalline particles, tinged red with iron, two parts to one of black magnetic ſand. The ſtone-cutters, inſtead of ſand, uſe the powder of a very hard granate, called Corunde. Theſe grindſtones cut very faſt: when they want to increaſe their power, they throw ſand upon them, or let them occaſionally touch the edge of a vitrified brick. The ſame compoſition is formed upon ſticks; for cutting ſtones, ſhells, &c. by the hand.

For painting, take one gallon of the red liquid from the firſt working for ſhell lac, ſtrain it through a cloth, and let it boil for a ſhort time, then add half an ounce of foſſil alkali; boil an hour more, and add three ounces of powdered load (bark of a tree), boil a ſhort time, let it ſtand all night, and ſtrain next day. Evaporate three quarts of milk, without cream, to two quarts, upon a ſlow fire, curdle it with ſome milk, and let it ſtand for a day or two, then mix it with the red liquid above-mentioned; ſtrain them through a cloth, add to the mixture 1¼oz. of alum, and the juice of eight or ten lemons; mix the whole, and throw it into a cloth-bag ſtrainer. The blood of the inſect forms a coagulum with the caſeous part of the milk, and remains in the bag, while a limpid acid water drains from it. The coagulum is dried in the ſhade, and is uſed as a red colour in painting and colouring.

For dyeing, take one gallon of the red liquid prepared as before without milk, to which add three ounces of alum. Boil three or four ounces of tamarinds in a gallon of water, and ſtrain the liquor. Mix equal parts of the red liquid and tamarind water over a briſk fire. In this mixture dip and wring the ſilk alternately, until it has received a proper quantity of the dye. To increaſe the colour, increaſe the proportion of the red liquid, and let the ſilk boil a few minutes in the mixture. To make the ſilk hold the colour, they boil a handful of the bark called load in water; ſtrain the decoction, and add cold water to it; dip the dried ſilk into this liquor ſeveral times, and then dry it. Cotton cloths are dyed in this manner; but the dye is not ſo laſting as in ſilk. The lac colour is preſerved by the natives upon flakes of cotton dipped repeatedly into a ſtrong ſolution of the lac inſect in water, and then dried. The Hindoos, as Mr. Charles Wilkins informed Mr. Hatchett, diſſolve ſhell lac in water, by the mere addition of a little borax; and the ſolution, being then mixed with ivory-black, or lamp-black, is employed by them as an ink, which, when dry, is not eaſily acted upon by damp or water. Mr. Hatchett found this fact to be exactly as it was ſtated by Mr. Wilkins.

Beſides the lac above-mentioned, there is another ſort which is white or yellowiſh, brought from Madagaſcar, very much reſembling the pe-la of the Chineſe, which has been lately examined by Dr. Pearſon. See LACCIC *Acid.*

Mr. Hatchett (Phil. Tranſ. for 1804, part ii.), has detailed a number of experiments for the analyſis of the three common ſpecies of lac, with a view of aſcertaining its conſtituent parts and diſcriminating properties.

Lac, though long known in Europe, has not much attracted the attention of chemiſts. The firſt perſon who ſubjected it to a regular examination was the younger Geoffroy, the reſult of which is publiſhed in the Mem. de l'Acad. de Paris for 1714. He concluded that this ſubſtance is not, as ſome have ſuppoſed, a gum or reſin, which has exuded from vegetables ſimply punctured by inſects. Geoffroy and Lemery obtained from lac, by diſtillation, ſome acid liquor, and a butyraceous ſubſtance; and Geoffroy obſerves, that when ſtick-lac was thus treated, ſome ammonia was alſo obtained, but not when ſeed-lac was employed. Geoffroy conſidered lac as a kind of wax, very diſtinct from the nature of gum or reſin. Since his time it has been little examined, and therefore chemiſts have entertained various opinions concerning it. Chaptal, adopting Geoffroy's opinion, calls it a kind of wax; but Gren and Fourcroy regard it as a true reſin.

Mr. Hatchett found that when water is poured on ſtick lac, reduced to powder, it immediately began to be tinged with red, and by heat, a deep-coloured crimſon ſolution was formed. Repeated operations of this kind reduce ſtick-lac to a yellowiſh-brown ſubſtance, and the water no longer receives any colour. The portion ſeparated from the lac has, on an average, amounted to 10 *per cent.*; but as it cannot be completely ſeparated, conſiderable variations muſt be expected in different ſamples.

Fine ſeed-lac does not afford more than 2½ or 3 *per cent.* of the colouring ſubſtance; and ſhell-lac, when treated in the ſame manner, *i. e.* merely with water, did not yield more than ½ *per cent.* Alcohol diſſolves a conſiderable portion of each of the different kinds of lac; and when heat is not employed, the diſſolved part is reſin, combined with ſome of the colouring matter; but if the lac is digeſted with heated alcohol, the ſolution is more or leſs turbid, and it is difficult to obtain it in a ſtate of purity and tranſparency, either by repoſe or filtration. The ſolution obtained by digeſting ſtick-lac in alcohol, without heat, is of a dark browniſh-red colour; and the inſoluble part ſubſides, retaining the greater part of the colouring matter, moſt eaſily ſoluble in water. The proportion of reſin thus diſſolved, when ſtick-lac is treated with alcohol, amounted to 67 or 68 *per cent.* The ſeed-lac uſed by Mr. Hatchett was very pure, and yielded to alcohol about 88 *per cent.* of reſin, containing little of the colouring matter. Shell-lac, in ſmall fragments, by ſimple digeſtion with alcohol, afforded in the firſt inſtance nearly 81 *per cent.*; but part of the reſin required ſubſequent operations to ſeparate it, ſo that the total quantity of reſin might be eſtimated at 91 *per cent.* Sulphuric ether does not ſeem to act ſo powerfully upon the varieties of lac as alcohol; and, therefore, ether is not the beſt menſtruum for lac. Concentric ſulphuric acid acts firſt on the colouring matter of lac; and after a ſhort digeſtion in a ſand-bath, the whole is converted into a reddiſh-brown thick liquor, which ſoon becomes black; and the chief part of the lac is ſeparated in an inſoluble ſtate, reſembling coal. During the ſolution of lac in ſulphuric acid, a conſiderable quantity of ſulphureous acid gas is evolved. When lac is digeſted with nitric acid, nitrous gas is at firſt produced; the lac ſwells much, and is converted into a deep yellow opaque brittle ſubſtance, which, by a ſufficiency of nitric acid, and a continuance of the digeſtion for about 48 hours, is diſſolved.

This yellow nitric ſolution is converted by evaporation into a deep yellow ſubſtance, which burns like reſin, but is ſoluble in boiling water. Muriatic acid diſſolves the colouring matter and gluten of lac with a feeble action, unleſs the reſin has been previouſly ſeparated. Acetous acid much reſembles the muriatic in its effects. Stick-lac, ſeed lac, and ſhell-lac are partially diſſolved by acetic acid; and the diſſolved part conſiſts of the colouring extract of reſin, and of gluten; the wax being the only ingredient which is inſoluble in this menſtruum. A ſaturated ſolution of boracic acid in water diſſolves the colouring extract; but the lac is little, if at all, acted upon by this acid. Subborate of ſoda or borax has a powerful effect on lac, ſo as to render it ſoluble in water; and it is concluded from theſe facts, that the exceſs of ſoda in borax is the active ſubſtance, which concluſion is corroborated by experiments made with the alkalis. In order to render lac, eſpecially ſhell-lac, ſoluble in water, about one-fifth of borax is neceſſary. The beſt proportion of water to that of lac is 18 or 20 to 1; ſo that 20 grains of borax, and 4 oz. of water, are, upon an average, requiſite to diſſolve 100 grains of ſhell-lac. The general properties of the ſolution ſhew, that it is a ſaponaceous compound, which, being uſed as a varniſh, or vehicle for colours, becomes (when dry) difficultly ſoluble in water. The lixivia of pure ſoda, and of carbonat of ſoda, completely diſſolve the ſeveral kinds of lac; and the ſolutions reſemble thoſe formed by means of borax, excepting that they are deeper coloured. Lixivium of pure or cauſtic potaſh ſpeedily diſſolves the varieties of lac, and forms ſaponaceous ſolutions, ſimilar to that with borax, excluſive of the colour, which more approaches to purple. Lixivium of carburate of potaſh extracts a great part of the colouring matter, but leſs completely diſſolves the entire ſubſtance of lac than pure potaſh. Pure ammonia, and carbonate of ammonia, readily act upon the colouring matter of lac, but do not completely diſſolve the entire ſubſtance.

From a variety of other experiments, as well as thoſe, the reſults of which we have given, but which we cannot recite, it appears that the different kinds of lac conſiſt of four ſubſtances, namely, extract, reſin, gluten, and wax. The extract, when dry, is of a deep red colour, approaching to purpliſh-crimſon; emitting ſmoke when laid on a red-hot iron, with a ſmell like that of burned animal matter, and leaving a bulky porous coal; partially ſoluble in water, hot or cold; more ſlowly in alcohol, and with a leſs beautiful colour; inſoluble in ſulphuric ether; ſoluble in ſulphuric, nitric, and acetic acid; partially in muriatic acid; not very readily in acetous acid; almoſt perfectly ſoluble in the lixivia of potaſh, ſoda, and ammonia, with a beautiful deep purple colour. When pure alumine is put into the aqueous ſolution, it does not immediately produce any effect, but with the addition of a few drops of muriatic acid, the colouring matter ſpeedily combines with the alumine, and a beautiful lake is formed. A fine crimſon precipitate is alſo produced by muriate of tin, when added to the aqueous ſolution: a ſimilar coloured precipitate is alſo formed by the addition of ſolution of iſinglaſs. Theſe properties of the colouring ſubſtance of lac, eſpecially its partial ſolubility in water and in alcohol, and its inſolubility in ether, together with the precipitate formed by alumine and muriate of tin, indicate that this ſubſtance is vegetable extract, perhaps ſlightly animalized by the coccus.

The reſin of lac is of a browniſh-yellow colour, emitting on a red-hot iron much ſmoke, with a peculiar ſweet odour, and leaving a ſpongy coal; completely ſoluble in alcohol, ether, acetic acid, nitric acid, and the lixivia of potaſh and ſoda; precipitated by water from alcohol, ether, acetic acid, and partially from nitric acid; and poſſeſſing the other general characters of a true reſin.

The gluten is obtainable in two ways; if the pieces of lac, after digeſtion in alcohol, be digeſted with dilute acetic, or muriatic acid, moſt of the gluten is diſſolved, and may be precipitated by alkalies, added in due proportion; but is rediſſolved by an exceſs of them, and then is ſeparable by acids. It much reſembles the gluten of wheat.

The wax of lac is found floating like oil on the ſurface of a ſolution of lac, after long and repeated digeſtion in boiling nitric acid, and may be collected when cold; or it may be more eaſily obtained in a pure ſtate, by digeſting the reſidue left by alcohol in boiling nitric acid. The wax, thus obtained, when pure, is pale yellowiſh-white, and (unlike bees' wax) is devoid of tenacity, and extremely brittle: it melts at a much lower temperature than that of boiling water, and burns with a bright flame, and an odour reſembling that of ſpermaceti. It is inſoluble in water and cold alcohol; but the latter, when boiled, partially diſſolves it, and upon cooling, depoſits the greater part; ſoluble in heated ſulphuric ether, but upon cooling, nearly the whole is depoſited. Lixivium of potaſh, boiled with the wax, forms a milky ſolution; but moſt of the wax floats on the ſurface in the ſtate of white flocculi, and appears to be converted into a kind of ſoap of difficult ſolubility; it is no longer inflammable; and, with water, forms a turbid ſolution, from which, as well as from the ſolution in potaſh, the wax may be precipitated by acids. Ammonia, when heated, diſſolves a ſmall portion of the wax, and forms a ſolution ſimilar to the former; nitric and muriatic acids do not act upon the wax. When the properties of this ſubſtance are compared with thoſe of bees'-wax, a difference will be perceived; and on the contrary, the moſt ſtriking analogy is evident between the wax of lac and the myrtle wax which is obtained from the Myrica cerifera. The properties of myrtle wax, deſcribed by Dr. Boſtock in Nicholſon's Journal for March, 1803, coincide ſo perfectly with thoſe of the wax of lac, that Mr. Hatchett is led to conſider them as almoſt, if not altogether, the ſame ſubſtance.

Our author, from his analyſis of the three different ſpecies of lac infers, that the ſubſtances that compoſe them bear the following proportions: 100 parts of ſtick-lac gave 68 of reſin, 10 of colouring extract, 6 of wax, 5.5 of gluten, and 6.5 of extraneous ſubſtances: 100 parts of ſeed-lac gave 88.5 of reſin, 2.5 of colouring extract, 4.5 of wax, and 2 of gluten: 100 parts of ſhell-lac gave 90.9 of reſin, 0.5 of colouring extract, four of wax, and 2.8 of gluten.

We have already ſpecified ſeveral uſes to which lac is applied in India, and it is no leſs important, in a variety of reſpects in Europe. A ſolution of lac in water may be advantageouſly employed as a ſort of varniſh, which is equal in durability, and other qualities, to thoſe prepared with alcohol; and, of courſe, much cheaper. It will be found, likewiſe, of great uſe as a vehicle for colours; for, when dry, it is not eaſily affected by damp, or even by water. Mr. Hatchett ſays, that with a ſolution of this kind he has mixed various colours, ſuch as vermilion, fine lake, indigo, Pruſſian blue, ſap-green, and gamboge; and it is remarkable, that although the two laſt are of a gummy nature, and the others had been previouſly mixed with gum (being cakes of the patent water-colour), yet, when dried upon paper, they could not be removed with a moiſtened ſponge, until the ſurface of the paper itſelf was rubbed off. In many arts and manufactures, therefore, the ſolutions of lac may be found of great utility; for, like mucilage, they may be diluted with water, and yet, when dry, are little, if at all, affected by it.

The colour given by lac is leſs beautiful, but more durable than that given by cochineal. To render the colouring matter of the lac diffuſible in water, ſo as to be applied to the ſtuffs to be dyed, Mr. Hellot directs the following proceſs:—Let ſome powdered gum-lac be digeſted for two hours in a decoction of comfrey-root, by which a fine crimſon colour is given to the water, and the gum is rendered pale or ſtraw-coloured. To this tincture, poured off clear, let a ſolution of alum be added; and when the colouring matter has ſubſided, let it be ſeparated from the clear liquor, and dried. It will weigh about one-fifth of the quantity of lac employed. This dried fecula is to be diſſolved or diffuſed in warm water, and ſome ſolution of tin is to be added to it, by which it acquires a vivid ſcarlet colour. This liquor is to be added to a ſolution of tartar in boiling water; and thus the dye is prepared.

The method of obtaining the fine red lac uſed by painters from this ſubſtance, is by the following ſimple proceſs:—Boil the ſtick-lac in water, filtre the decoction, and evaporate the clear liquor to a dryneſs over a gentle fire. The occaſion of this eaſy ſeparation is, that the beautiful red colour, here ſeparated, adheres only ſlightly to the outſides of the ſticks, broken off the trees along with the gum-lac, and readily communicates itſelf to boiling water. Some of this ſticking matter alſo adhering to the gum itſelf, it is porper to boil the whole together; for the gum does not at all prejudice the colour, nor diſſolve in boiling water: ſo that after this operation the gum is as fit for making ſealing-wax as before, and for all other uſes which do not require its colour. See Lake.

A tincture of gum-lac may thus be prepared:—Take two ounces of gum-lac, reduce it to a fine powder, and make it into a ſtiff paſte with oil of tartar *per deliquium*; ſet this in an open glaſs to dry by a gentle heat, then remove it to the open air, that it may relent and grow ſoft; then dry it again, and repeat this two or three times, at the end of which the hard body of this reſin will be found reſolved into a purple colour. This may yet again be dried, and when dried muſt be reduced to powder, which powder will afford a fine ſtrong tincture to ſpirit of wine, being boiled in it in a tall glaſs in a ſand-heat for two or three hours. And by this proceſs ſtrong tinctures may be made from myrrh, amber, gum, juniper, &c. which will yield no tincture of ſtrength to ſpirit of wine alone, if treated in the uſual way.

A ſpirituous tincture of ſtick-lac was formerly ſometimes given as a mild reſtringent and corroborant in female weakneſſes, and in rheumatic and ſcorbutic diſorders. But the principal medicinal uſe of this concrete was as a topical corroborant and antiſeptic, in laxities and ſcorbutic bleedings, and exulcerations of the gums. Some employed for this purpoſe a tincture of the lac in alum water; others a tincture made in vinous ſpirits, impregnated with the pungent antiſcorbutics. The college of Edinburgh directed an ounce of the powdered lac, with half an ounce of powdered myrrh, to be digeſted in a ſand-heat, for ſix days, in a pint and a half of ſpirit of ſcurvy graſs.

The gum-lac has been lately uſed as an electric, inſtead of glaſs, for electrical machines. See Lacquer, Lake, and Varnish.

Lac, or Lacca, *Ammoniaci*, in the *Materia Medica*. See *Gum* Ammoniac.

Lac, or Lacca, *Artificial*, or Laque, is alſo a name given to a coloured ſubſtance, drawn from ſeveral flowers; as the yellow from the flower of the juniper, the red from the poppy, and the blue from the iris or violet.

The tinctures of theſe flowers are extracted by digeſting them ſeveral times in aqua vitæ, or by boiling them over a ſtove fire in a lixivium of pot-aſhes and alum.

An artificial lacca is alſo made of Brazil wood, boiled in a lixivium of the branches of the vine, adding a little cochineal, turmeric, calcined alum, and arſenic, incorporated with the bones of the cuttle-fiſh pulverized, and made up into little cakes, and dried.

If it be to be very red, they add the juice of lemon to it; to make it brown, they add oil of tartar.

Dove-coloured, or columbine lacca, is made with Brazil of Fernambuc, ſteeped in diſtilled vinegar for the ſpace of a month, and mixed with alum incorporated in cuttle-fiſh bone. For other proceſſes, ſee Lake and Madder.

Lac, *Acid of*. See Laccic *Acid*.

Lac, or *Gum Lac*. See Croton.

Lac *Lunæ*. Dr. Plott gives this foſſil as a mark of good lime-ſtone; but it has been obſerved, that two quarries in Ireland, where lac lunæ was found, were of building ſtone, but would not burn into lime. Phil. Tranſ. N° 477. § 9.

There are many varieties of this mineral, differing in their texture and colour. It is found in many parts of Europe, and alſo in Aſia and America. Many of the Engliſh quarries in Oxfordſhire, Glouceſterſhire, Northamptonſhire, and Derbyſhire, afford conſiderable quantities of it. It adheres to the roofs and walls of grottos and caverns, and is lodged in the fiſſures of ſtrata of ſtone, ſometimes in form of a farinaceous powder, and ſometimes concreted into maſſes. Its ſurface is rough and duſky; it colours the hands, adheres to the tongue, melts readily in the mouth, without grittineſs, yields an inſipid taſte, and raiſes an ebullition in water, which ſoon diſſolves it into a fine white powder. See *Mineral* Agaric.

Lac *Sulphuris*, in *Chemiſtry*, and the *Materia Medica*, denotes ſulphur ſeparated by acids from its alkaline ſolution, which in the proceſs changes its lemon-yellow colour for a grey or yellowiſh-white like cream. As a medicine it is thought to be ſomewhat milder. See Sulphur.

Lac *Virginale*. See *Virgin's* Milk.

Lac *Virginis*. See Virgin's *Milk*, and Benzoin.

LACA, in *Geography*, a town of Africa, in the country of the Foulis; 10 miles N.W. of Goun el.

LACABEN, a town of Aſiatic Turkey, in the province of Aladulia; 30 miles S.S.W. of Malatra.

LACANITIS, in *Ancient Geography*, a country of Aſia, in Cilicia, according to Ptolemy, who places in it one city, *viz*. Irenopolis.

LACARACOONDA, in *Geography*, a town of Bengal; 10 miles S. of Nagore. N. lat 23° 48′. E. long. 87 27′.

LACARIA, a ſmall town of Italy, in the eaſtern part of Lucania, S. of Heraclea, and near the gulf of Tarentum; founded by a colony of Phocæans, and celebrated for its good wine.

LACAS, Las, a town of the iſland of Cuba; 15 miles W. of Villa del Principe.

LACCA. See Lac.

LACCADIVE Islands, in *Geography*, a group of ſmall iſlands in the Indian ſea; the neareſt being about 15 miles from the coaſt of Malabar. They are ſuppoſed to be the iſlands called by Ptolemy "Inſulæ numero 19," though in reality they are 32. All of them are ſmall, rocky on their ſides, covered with trees, and ſeparated by deep channels. They are viſited by Engliſh ſhips in their paſſage from India to the Perſian gulf, or Red ſea. Their principal traffic conſiſts of the produce of the cocoa palm, ſuch as the oil, cables, and cordage, and alſo of fiſh, which, being dried, is ſent to the continent of India, whence rice is obtained in return. They alſo trade to Maſcat, in large boats, and for their commodities they bring back dates and coffee. Ambergris is often found floating near theſe iſlands. N. lat. 10° to 12° 40′. E. long. 71 15′ to 73° 30′.

LACCIA, in *Ichthyology*, a name given by Paulus Jovius to the ſhad, or, as we ſometimes call it, the mother of the pilchards. See Clupea *Aloſa*.

LACCIC Acid, in *Chemiſtry*, is a ſubſtance that was firſt introduced to the notice of chemiſts by Dr. Pearſon. It is obtained from a peculiar compound called *white lac*, which Dr. Anderſon of Madras diſcovered to be the product of ſome inſects of the *coccus* tribe. Small quantities of it were ſent to Europe about the year 1789; and, at the requeſt of ſir Joſeph Banks, an examination of it was undertaken by Dr. Pearſon, and the reſult of his inquiries appeared in the Philoſophical Tranſactions for 1794. The lac, in its natural ſtate, is of a grey colour; and occurs in pieces of from three to fifteen grains in weight. Many of its properties preſent conſiderable reſemblance to thoſe of bees' wax; and Dr. Pearſon is of opinion, that theſe ſubſtances are very nearly allied to each other, differing only in the proportion of their conſtituents. A curious circumſtance, connected with this point, is, that the inſect which ſecretes the lac alſo produces honey; but the phenomena attending the appearance of the latter product have not been examined with the attention which they merit. To procure the laccic acid, it is merely neceſſary to expoſe the lac, as afforded by the *coccus*, to a heat juſt ſufficient to liquefy it. A reddiſh watery fluid will ſeparate, having the ſmell of newly baked hot bread; and it is this ſubſtance which conſtitutes the acid under inquiry. The following are ſome of its properties. At the temperature of 60°, it has a ſpecific gravity of 1.025. Paper ſtained with litmus and turnſol is reddened by it. It poſſeſſes a ſaline taſte, and is ſomewhat bitter; but is not in the ſmalleſt degree ſour. By expoſure to the air it becomes muddy, and depoſits a ſmall quantity of ſediment. Dr. Pearſon diſtilled 250 grains of it, and afterwards evaporated the product until it grew turbid. On ſtanding ſome hours, acicular cryſtals were produced, having a bitteriſh taſte, which amounted to about $\frac{1}{400}$dth of the weight of the fluid employed. The acid diſſolves carbonat of ſoda with effervеſcence; and by evaporation yields cryſtals which are deliqueſcent. It produces a purpliſh tint on being mixed with lime-water, but no ſediment appears. Tincture of galls cauſes a green precipitate; and with acetat of lead a reddiſh powder is depoſited. This forms nearly the whole of the information that has been conveyed to us with reſpect to it; and as yet, therefore, nothing either very ſtriking, or very important, has been communicated by the diſcovery. It is to be lamented that Dr. Pearſon had ſo ſmall a quantity of matter to operate upon in his experiments, as it becomes difficult, from the want of a more complete examination, to aſcertain whether the ſubſtance is entirely new to us; or whether it is only the modified appearance of ſome compound with which we had been before acquainted.

LACCOS, Λακκος, among the Greeks, a ditch or trench uſed inſtead of an altar, when ſacrifices were to be offered to the ſubterranean or infernal gods. See Altar.

LACE, in the *Manufactures*, is formed of thread, cotton, or ſilk, woven into a net, the meſhes of which are varied in their figure, according to the deſign of the pattern, as octagons, hexagons, &c. &c. The lace is alſo ornamented by a thread, much thicker than the thread forming the net, which is woven in among the meſhes, in the figure of flowers, and other fantaſtic curves; upon the beauty and elegance of which, the value of the lace depends. This thick thread is called the *gimp*.

Lace is made upon a pillow or cuſhion, upon which a piece of ſtiff parchment is ſtretched, having a number of holes pricked through it, to form a pattern of the intended lace. Through theſe holes, pins are ſtuck into the pillow; and the threads, wound upon ſmall bobbins, are woven around the pins, and twiſted round each other in various ways, to form the required pattern. This proceſs is extremely tedious, particularly for the wide laces, with complicated patterns; and though it is extremely expenſive to the conſumer, the people (chiefly in Bedford and Buckinghamſhire) who manufacture it can only obtain ſufficient to ſupport a wretched exiſtence, by the moſt inceſſant exertion. Of late years, the manufacturers of Nottingham have directed their ingenuity to imitate this ſpecies of lace by machinery, in which they have ſucceeded moſt perfectly: but ſtill it is only an imitation, the knot or loop of the meſhes being eſſentially different. In the pillow lace, the net or meſhes may be deſcribed, by ſuppoſing a number of ropes, each formed of two or more threads twiſted round each other: theſe are extended parallel; but at every two or three ſpiral turns of theſe ropes, the ſtrands or threads compoſing one rope are twiſted around with thoſe of its neighbour, and then return to be twiſted with its own: and this reciprocally of the whole number forms a netting; the figure of the meſhes depending upon the number of turns which are made, before the twiſt is changed from one rope to the next. To form a lace of this deſcription, it is eſſential that the ends of each thread be detached, and capable of being twiſted over the adjacent threads. This is eaſily done by the hand upon the pillow, by twiſting the bobbins round each other; but has many difficulties which prevent its performance by machinery.

The Nottingham lace is only a modification of the ſtitch or loop of which ſtockings are made; all the meſhes being formed by a continuance of one thread, which is, by the machine, formed into loops a whole courſe (that is, length of the intended piece of lace) at once, by preſſing it down alternately over and under between a number of parallel needles; a ſecond courſe is then made of ſimilar loops on the ſame needles, and the loops of the firſt are drawn through thoſe of the ſecond, in ſuch a manner as to form meſhes by retaining the firſt loops; the ſecond are then retained by a third courſe, and this by a fourth, and ſo on. The machine is very nearly like a common ſtocking-frame, but provided with an additional apparatus, which can be readily applied. It conſiſts of a frame, containing a number of needles, which we will call points; theſe are introduced between the fixed needles of the ſtocking-frame, and a certain number (one half, for inſtance) of the loops in the thread are taken off the fixed needles upon theſe points, which are moved endways, the ſpace of two, three, or more fixed needles, and put down upon them again. Another ſet of loops is now taken upon the points, and moved in the oppoſite direction; by this means, croſſing the loops over each other, and forming meſhes, the figure of which will depend upon the number of needles it is thus carried over. But as this admits of no great variety of patterns, another machine has been invented, which is much more extended in its applications. Like the former, it has the parts of the ſtocking-frame, but differently made. The thread is, in this, rolled upon a cylinder, in the ſame manner as a weaver's beam; as many threads being wound round it as there are needles in the frame. Theſe threads paſs through eyes in the ends of ſmall points, called guides, which are oppoſite the needles; and theſe guides are fixed on two bars, each of which has half the guides faſtened in it, that is, one guide is faſt in one bar, and the next in the other, and ſo on alternately of the whole. Each of the guides preſents a thread to its needle, and are all at once moved by the hand to twiſt the threads two or three times round the needles which are oppoſite them: the loop is now made in a manner ſimilar to the other frame. The next time, the alternate guides are ſhifted endways, ſo as to apply themſelves to other needles than thoſe they were oppoſite before. This croſſes the thread, ſo as to make a net: but the quantity which is ſhifted endways is altered every time, by means of the machinery, ſo as to move a certain number of needles; which number is altered every time, to produce the pattern. All the parts of this machine, except the guides, are moved by means of treadles, inſtead of uſing the hands, as in the common ſtocking-frame. The net produced by theſe frames is woven in bands of the width of the intended lace, leaving a wider meſh than the others, through which the diviſion is to be made to ſeparate the lace into narrow ſtrips. Before cutting up in this manner, the lace is ſpread in a frame, and a common needle with a thick thread is worked in the meſhes, to imitate the gimp, according to the pattern for which the lace is intended.

The lace trade of Nottingham has been carried to a very great extent, but is at preſent in a ſtate of ſtagnation, being chiefly dependent on foreign trade, as it has never been in ſuch great repute with the Britiſh ladies.

Lace is alſo made of *gold* and *ſilver thread* (which ſee), much in the ſame manner as the bone or blond lace above deſcribed. The importation of gold and ſilver lace is prohibited. Great quantities of the fineſt blond laces have been imported from Flanders. By 3 Geo. III. c. 21. and 5 Geo. III. c. 48. if any perſon ſhall import any ribbands, laces, or girdles, not made in Great Britain, whether the ſame ſhall be wrought of ſilk alone, or mixed with other materials, the ſame ſhall be forfeited, and may be ſeized by any officer of the cuſtoms, in whatever importers', venders', or retailers' hands they may be found; and the importer, and every perſon aſſiſting therein, and the venders and retailers in whoſe cuſtody they ſhall be found, or who ſhall ſell or expoſe the ſame to ſale, or conceal with intent to prevent the forfeiture, ſhall forfeit reſpectively 200*l.* with coſts; half to the king, and half to the officer who ſhall inform and proſecute.

LACE is alſo uſed for a kind of chord made of ſilk or cotton, chiefly uſed in lacing women's ſtays.

LACE *Bark.* See DAPHNE.

LACEDÆMON, in *Ancient Geography*, a celebrated town of Greece, in the Peloponneſus, in a country which was originally called Laconia, and afterwards changed into Lacedæmon, or Sparta. See SPARTA. See alſo LACONIA.

LACEDÆMONIANS, the inhabitants of Laconia, are ſaid to have derived their name from Lacedæmon, heir and ſucceſſor of Eurotas, whoſe daughter he married. Their ancient name was *Icleocrates*, which has been found in ſome ancient inſcriptions. The commencement of their hiſtory is little known. But their firſt king, according to the chronology moſt generally received, was Lelex, ſurnamed Autochtos, becauſe he was ſuppoſed to have been one of the Aborigines; and from him his ſubjects bore the ancient name of Leleges. He began his reign in the year 1516 B.C., was ſucceeded by his eldeſt ſon Myles, and Myles was ſucceeded by his ſon Eurotas, who, having no male iſſue, appointed for his ſucceſſor Lacedæmon, the ſuppoſed ſon of Jupiter by Taygeta, to whom he gave his daughter Sparta in marriage. Lacedæmon was the firſt king of the Lacedæmonian line, which conſiſted of twelve ſovereigns, the laſt of whom was Tiſamenes, who terminated this line in 1104 B.C., upon the return of the Heraclidæ into the Peloponneſus. In 1102 B.C., upon the diviſion of the Peloponneſus by the Heraclidæ, the kingdom of Lacedæmon or Sparta commences under Procles and Euryſthenes, the two ſons of Ariſtodemus, the chief of the Heraclidæ. Euryſthenes was ſucceeded by his ſon Agis, from whom the deſcendants of that line had the appellation of Agidæ, or Agiadæ; and the firſt princes of the former line were denominated Proclidæ, till Eurytion, or Eurypon, the third of this line, exchanged it for Eurytionidæ, or Eurypontidæ. In the line of Agis ſucceeded Echeſtratus 1058 B.C., Labotas 1023 B.C., Doryſſus 986 B.C., Ageſilaus 957 B.C., and Archelaus 913 B.C. The ſucceſſors of Procles were Ivas 1060 B.C., Eurypon 1028 B.C., Prytanis 1021 B.C., Eunomus 986 B.C., and Polydectes 907 B.C. Lycurgus, the ſon of Eunomus, ſucceeded Polydectes, but he only retained the kingdom till his ſiſter was delivered of a ſon, to whom he immediately reſigned it; but his ſituation being rendered uneaſy, he ſet out for Crete about eight months after the birth of his nephew. During this voluntary exile of ten years, he meditated that new form of a commonwealth into which he afterwards modelled the government; and for this purpoſe he returned to Lacedæmon in the year 884 B.C.

The government of Lacedæmon was, as we have ſeen, originally monarchical; and though the kings had ſome ſubordinate magiſtrates, choſen by themſelves, of whoſe counſel they occaſionally availed themſelves, yet the will of the ſovereign was the ſupreme law. Thus the ſovereign power paſſed through a ſucceſſion of twelve princes, from Lacedæmon, the ſon-in-law of Eurotas, and founder of this monarchy. Under Euryſthenes and Procles the government took a new form, and inſtead of having one ſovereign, it became ſubject to two. Theſe two brothers governed jointly, and with equal power and authority, each bearing the title of king of Lacedæmon, and being acknowledged and obeyed as ſuch. In this bipartite condition the government continued under a ſucceſſion of thirty princes of the line of Euryſthenes, and twenty-ſeven of that of Procles, and it terminated in both about the ſame time. Diſcords, however, were unavoidable, and ſoon commenced. Two parties were formed, and they became turbulent and unmanageable. By the diviſions that were thus occaſioned, the regal dignity ſunk into ſuch contempt, that the government was upon the brink of falling into anarchy and confuſion, when Lycurgus, as we have ſaid, undertook the management of it, during ſome part of his nephew Charilaus's minority. During the period of his voluntary abſence, when he had travelled through Crete, Aſia, and Egypt, the government had become ſo corrupt, that not only his friends, but even thoſe who had been his moſt zealous enemies, were glad to repeat their embaſſies, entreating him to return and ſave his country from ruin. Theſe were the inevitable conſequences of that fatal diviſion of the regal authority between two competitors, which Lycurgus took a quite different method of remedying than by confining it again to either of the lines. The plan he adopted was that of reducing their authority, by conſtituting a ſenate, endowed with the ſupreme power in all civil matters, and leaving to the kings, beſides the title and honour, only the management of military and religious affairs. In order to qualify him for the important undertaking in which he now engaged, he had paid particular attention to the laws of Minos at Crete, and in Aſia he had obſerved the effects which are produced by different governments and manners, and he had alſo availed himſelf of the opportunities which Egypt had afforded him of gaining wiſdom. With a view of giving greater effect and ſtability to his new conſtitution, he had, like other legiſlators, taken care to ſecure the approbation of heaven. With this view, he conſulted the oracle at Delphi, and had received for anſwer: "the gods accept thy worſhip, and under their auſpices, thou ſhalt frame the moſt excellent of political conſtitutions." Nor did Lycurgus ever afterwards neglect to maintain a correſpondence with the Pythia, who ſucceſſively impreſſed on his laws the ſeal of divine authority. He alſo, before he commenced his operations, ſubmitted his plan to the examination of his friends and the moſt diſtinguiſhed citizens; and from theſe he ſelected thirty, who were to attend him completely armed in the general aſſembly, and to defend him from thoſe perſonal aſſaults which he had reaſon to apprehend in the promulgation of his laws. At length the new conſtitution was approved by all orders of the ſtate. Yet, notwithſtanding its excellence, it was not aſſured of duration. Lycurgus, therefore, when the people were aſſembled, thus addreſſed them: "It ſtill remains for me to lay before you the moſt important article of my legiſlation; but I wiſh firſt to conſult the oracle of Delphi. Promiſe me that, until my return, you will make no alteration in the laws already eſtabliſhed." They promiſed him. "Swear it," ſaid he. The kings, ſenators, and citizens, called the gods to be witneſſes to their words. This ſolemn engagement could not but be irrevocable, for it was his reſolution never more to return to his country. Accordingly he immediately repaired to Delphi, and enquired whether the new laws were ſufficient to enſure the happineſs of the Spartans. The Pythia, having anſwered, that Sparta would be the moſt flouriſhing of cities ſo long as ſhe ſhould continue to obſerve them, Lycurgus ſent that oracle to Lacedæmon, and condemned himſelf to voluntary baniſhment. He died far from the country of whoſe happineſs he had been the cauſe. See LYCURGUS.

In ſettling the government of Lacedæmon, Lycurgus was too wiſe to abandon the adminiſtration of public affairs to the caprices of the multitude, or to leave it entirely to the will of the two princes on the throne. He ſought, as we have already ſaid, a mean, by which he might reſtrain and temper power by wiſdom; and he thought that he had found it in Crete, where a ſupreme council moderated the authority of the ſovereign. Such an eſtabliſhment he introduced at Sparta, under the appellation of a ſenate. Twenty-eight aged men, of conſummate experience, were appointed to ſhare with the two kings the plenitude of power. In this auguſt ſenate the great intereſts of the ſtate were to be diſcuſſed; here the two kings preſided, and every queſtion was to be decided by the plurality of voices; and the determinations of this council were afterwards laid before the general aſſembly of the ſtate, which had the power of approving or rejecting, but not of altering them. For about 130 years the ſenate maintained a juſt equilibrium between the kings and the people; but the places of the ſenators, as well as the authority of the kings being held for life, it was to be feared that, in time, theſe might too cloſely unite, and no longer find any oppoſition to their will. It was therefore deemed adviſable, with the ſanction of the Delphian oracle, to transfer a part of their functions to five magiſtrates, called Ephori, or inſpectors appointed to defend the people in caſe of oppreſſion. This new intermediate body was inſtituted, with the conſent of the ſtate, by the king Theopompus; or, if it had been originally eſtabliſhed by Lycurgus himſelf, it was revived, with ſome additional powers and prerogatives, by Theopompus. (See EPHORI.) The conſtitution of Lycurgus contained a happy mixture of monarchy, ariſtocracy, and democracy. Theopompus added to theſe an oligarchy which afterwards became tyrannical. Although Lycurgus limited the authority of the kings, he left them honours and prerogatives which they enjoyed as the heads of religion, the adminiſtration, and the army. Beſides certain prieſthoods, which were exerciſed by themſelves, they regulated the public worſhip, and appeared at the head of the religious ceremonies. One of their prerogatives inveſted them with the right of maintaining a ſecret correſpondence with the prieſts of Delphi, the authors of thoſe oracles which often decided the fate of an empire; and this may be conſidered as one of the moſt important privileges in the poſſeſſion of royalty. As head of the ſtate, the king, upon aſcending the throne, might annul the debts which a citizen had contracted either with his predeceſſor, or with the republic; and he poſſeſſed certain portions of inheritances, aſſigned him by the people, which he might diſtribute during life in favour of his relations. The two kings preſided in the ſenate, and propoſed the ſubjects for deliberation. Each gave his ſuffrage in perſon or by proxy; and this ſingle ſuffrage was equivalent to two. When the two kings agreed in propoſing any project of manifeſt utility to the public, no perſon was permitted to oppoſe it. All cauſes relative to the maintenance of the highways, the formalities of adoption, or the choice of the kinſman who ſhould be obliged to marry an orphan heireſs, were ſubmitted to the deciſion of the kings. The kings were not allowed to be abſent during peace, nor both at once in time of war, unleſs there were two armies in the field. They had by right the command of the army, with ſuch appendages of ſplendour and authority that might enſure them reſpect and obedience. The ſtate provided for the maintenance of the general and his houſehold, with the neceſſary attendants. Accordingly, he had full leiſure to direct the operations of the campaign, to ſign truces with the enemy, and to give audience and anſwers to the embaſſadors of foreign powers. In time of peace the kings were conſidered merely as the firſt citizens of a free city; appearing in public without a retinue, and without oſtentation. As firſt citizens they occupied the firſt place, and every perſon roſe in their preſence: and in all repaſts, public and private, they were allowed a double portion, which they ſhared with their friends. When the kings died, they were honoured with various tokens of reſpect.

The ſenate, conſiſting of the two kings, and twenty-eight aged perſons, were the ſupreme council, in which were diſcuſſed, in the firſt inſtance, all queſtions relative to declaring war, concluding peace, entering into alliances, and other high and important affairs of ſtate. The dignity of a member of this council was never granted but to the citizen who, from his earlieſt youth, had been diſtinguiſhed for conſummate prudence and eminent virtues; nor could he arrive at it before the age of ſixty years, and he retained it till his death. The election took place in the forum, where the people were aſſembled with the kings, ſenators, and the different claſſes of magiſtrates; and it was attended with various ſolemnities and acclamations. When it was decided, it was honoured with a kind of triumphal proceſſion, and with ceremonies performed in the temples. Of the functions pertaining to the ſenator, ſome reſpected the ſtate, and others related to particular caſes, which were referred to the judgment of the members. On this tribunal depended not only the lives, but the honours of the citizens. When a king was accuſed of having violated the laws, or betrayed the intereſts of the ſtate, the tribunal which acquitted or condemned him was compoſed of the twenty-eight ſenators, the five ephori, and the king of the other family. However, he might appeal from them to the general aſſembly of the people.

The ephori were elected by the people from among the citizens of every rank; they were five in number, and changed every year, to prevent their abuſing their authority. (See EPHORI.) We ſhall here add, that the kings in their own name, and the ephori in the name of the people, engaged, by a ſolemn oath; the former to govern according to the laws, and the latter to defend the royal authority ſo long as it ſhall not violate the laws.

As the Spartans had intereſts peculiar to themſelves, they had alſo others in common to them with the deputies of the different cities of Laconia. Hence there were two kinds of aſſemblies, at which were always preſent the kings, the ſenate, and the different claſſes of the magiſtrates. When the ſucceſſion to the throne was to be regulated, when magiſtrates were to be choſen or depoſed, when ſentence was to be pronounced on public crimes, or the great objects of religion or legiſlature were to be decided upon, the aſſembly was only compoſed of Spartans, and was called the "leſſer aſſembly." The ordinary aſſembly of this kind was held every month; the extraordinary whenever circumſtances required. Every one had a right to give his opinion, provided that he had paſſed his 30th year, for before that age he was not allowed to ſpeak in public; and it was required alſo that his manners ſhould be irreproachable. The general aſſembly was convoked whenever the queſtion related to making war or peace, or contracting alliances. The deputies of the cities of Laconia were then admitted into it, as were alſo frequently thoſe of the allied ſtates, and of the nations who came to implore the ſuccour of Lacedæmon. On occaſions of this kind, the kings and ſenators frequently ſpoke, and their authority had great weight; but that of the ephori was greater. When the queſtion had been ſufficiently debated, one of the ephori aſked the opinion of the aſſembly; upon which a multitude of voices exclaimed for the affirmative or negative. In order to determine the majority, the ſame magiſtrate aſcertained it by numbering the two parties, which he cauſed to ſeparate.

As a general preliminary to the laws of Lycurgus, we ſhall here obſerve, that this legiſlator ordained, that the magiſtrates ſhould not be appointed by lot, but elected by ſuffrages. He deprived riches of the influence and reſpect annexed to them, and diveſted even love of jealouſy. And though he granted ſome diſtinctions, the government, having imbibed his ſpirit, never prodigally laviſhed them, and virtuous men dared not ſolicit them. Honour was the moſt valuable reward, and reproach the moſt cruel puniſhment. Death was ſometimes inflicted, but a ſentence of this kind followed a very careful and rigorous examination, for nothing was regarded ſo precious as the life of a citizen. Execution was performed in the priſon, and during the night, that the firmneſs of the criminal might not move the commiſeration of the people, and his life was taken away by the cord, that the ſufferings of the guilty might not be multiplied.

Of all the inſtitutions of Lycurgus, the diviſion of lands was that which required, on his part, the greateſt degree of firmneſs and reſolution, becauſe it was likely to be much oppoſed, and to occaſion various and violent conteſts. He thought it, however, neceſſary for eſtabliſhing peace and good order in the commonwealth. With a view of baniſhing from the community inſolence, envy, fraud, luxury, and at the ſame time, extreme poverty and exceſſive wealth, he perſuaded the citizens to ſurrender all their lands to the ſtate, and to allow a new diviſion of them, that they might live together in a perfect equality, and that virtue and merit ſhould eſtabliſh the only claim to pre-eminence and honours. This ſcheme was no ſooner propoſed than executed. The diſtrict of Sparta was divided into 9000 portions of land, and the reſt of Laconia into 30,000. Each portion aſſigned to a head of a family muſt have produced, beſides a certain quantity of wine and oil, 70 meaſures of barley for himſelf, and 12 for his wife. This is Plutarch's account. Others ſay, that he only beſtowed on the Spartans 6000 portions, to which king Polydorus is ſaid afterwards to have added 3000. And others again ſay, that the Spartans received one half of theſe 9000 portions from Lycurgus, and the other half from Polydorus. After Lycurgus had made this diſtribution, he thought it adviſeable to abſent himſelf, that the paſſions of the people might have leiſure to ſubſide and cool.

On his return, he found the fields of Laconia covered with cluſters of ſheaves, all of the ſame ſize, and placed at diſtances nearly equal. Accordingly he ſeemed to behold a large domain, the productions of which had been divided among brethren; while the Lacedæmonians believed they ſaw in him a father, who had manifeſted no more fondneſs for one than for the reſt of his children. After having divided their immoveables, he undertook likewiſe to make the ſame equal diviſion of all their moveable goods and chattels, that he might utterly baniſh from among them every kind of inequality. But apprehending invincible oppoſition to this meaſure, he endeavoured to accompliſh his object by ſapping the foundations of avarice. With this view he cried down all gold and ſilver money, and ordained that no other ſhould be current beſides that of iron; which he made ſo heavy, and fixed at ſo low a rate, that a cart and two oxen were neceſſary to carry home a ſum of 10 minas (equal to about 20*l.* ſterling), and a whole chamber to keep it in. He next baniſhed all uſeleſs and ſuperfluous arts from Sparta. But without doing this, moſt of them muſt have ſunk of themſelves, and diſappeared with the gold and ſilver money; becauſe the tradeſmen and artificers would have found no vent for their commodities; and this iron money had no currency among the other Grecian ſtates, which ſo far from eſteeming it, made it the ſubject of their banter and ridicule. The importation of all foreign money was prohibited, that corruption might not enter under the name of commerce. Barter or exchange of one commodity for another, was preſerved by law in Sparta, long after it had been diſcontinued in every other ſtate. Intereſt was alſo forbidden in the Spartan commonwealth. According to the laws of Lycurgus, the head of a family could neither buy nor ſell a portion of land; he could neither give it during his life, nor bequeath it by will to whom he pleaſed. He was not even permitted to divide it. The eldeſt of his children was entitled to the inheritance, in the ſame manner as in the royal family, the eldeſt ſon ſucceeded by right to the crown. In order to provide for the other children, he eſtabliſhed other regulations. The land, as well as the perſons of the Spartans, were free from all impoſitions. The ſtate had no treaſure. On certain occaſions the citizens contributed according to their abilities, and on others they had recourſe to means which evince their exceſſive poverty. The deputies of Samos once came to Lacedæmon to ſolicit the loan of a ſum of money. The aſſembly of the people, having no other reſource, ordered a general faſt to be obſerved by the free citizens, ſlaves, and domeſtic animals, and gave the ſum thus ſaved to the Samians.

Another regulation of Lycurgus, was that of public meals. That he might entirely ſuppreſs the magnificence and extravagance of public tables, he ordained that all the citizens ſhould eat together of the ſame common victuals, which the law preſcribed, and expreſsly forbade all private eating at their own houſes. By this ſettlement of public and common meals, and by this frugality and ſimplicity in eating, he depreciated the value of riches, and made them of no uſe as means of procuring the luxuries of life. This regulation, however, was very offenſive to the opulent. At theſe meals, each table accommodated about 15 perſons; and every perſon furniſhed every month a buſhel of flour, eight meaſures of wine, five pounds of cheeſe, 2½ pounds of figs, and a ſmall ſum of money for preparing and cooking the victuals. Every perſon, without diſcrimination, was obliged to attend at the common meal. At theſe public tables the children obtained inſtruction and improvement; they were likewiſe trained and accuſtomed to great ſecrecy; for as ſoon as a young man came into the room, the eldeſt perſon of the company uſed to ſay to him, pointing to the door, "Nothing ſpoken here, muſt ever go out there." The moſt exquiſite of all their eatables was that which they called their "black broth;" and the old men preferred it to every thing elſe upon the table. Dionyſius the tyrant, however, thought otherwiſe, and complained of it as inſipid; upon which he was told that the ſeaſoning was wanting. When the tyrant enquired, what ſeaſoning? he was told, running, ſweating, fatigue, hunger, and thirſt. Theſe, he was told, are the ingredients with which we ſeaſon all our food. As they were moderate in their eating, they were no leſs abſtemious in their drinking; the Lacedæmonians only drank to quench thirſt; drunkenneſs was reckoned infamous among them, and ſeverely puniſhed; and that young men might conceive the greater abhorrence of this ſpecies of debauchery, the ſlaves were compelled to drink to exceſs, that the beaſtlineſs of the vice might appear. When they retired from the public meal, they were not allowed any torches or lights, becauſe it was expected, that men who were perfectly ſober, ſhould be able to find their way in the dark; beſides, this practice gave them a facility of marching without light, a quality very uſeful to them in time of war.

As to dreſs, there was no diſtinction between the rich and poor. Their garments were made for uſe and not for ſhow; and they were taught betimes to diſtinguiſh themſelves by their virtue, rather than by their robes. Boys were always uſed to go without ſhoes, nor were they permitted to cut or trim their hair. Baths and anointing were not much in uſe among the Lacedæmonians; the river Eurotas ſupplied the former, and exerciſe the latter. Young women wore their veſts, or jerkins, only to their knees, or, as ſome ſay, not ſo low; a cuſtom which has been cenſured both by Greeks and Romans as indecent. Gold, precious ſtones, and coſtly ornaments were permitted only to common women; which permiſſion was the ſtrongeſt prohibition to women of virtue, or ſuch as valued their reputation. Virgins went abroad, without veils, with which, on the contrary, married women were always covered. In certain public exerciſes, to which girls were admitted, they, as well as the young men, were obliged to perform naked.

Lycurgus had very few written laws, becauſe he did not wiſh to ſet bounds to virtues, and left the people, imagining they had done all which their duty required, ſhould deſiſt and not do all which they are able to perform. But he did not conceal them; they were tranſmitted from mouth to mouth, cited on all occaſions, and known to all the citizens, the witneſſes and judges of each individual. They were taught and enforced by practice and example. Young perſons were not allowed to cenſure them, nor to ſubmit them to examination, ſince they had been received as the commands of heaven, and ſince the authority of the laws was founded only on the profound veneration they inſpired. Nor was it allowed to praiſe the laws and uſages of other nations; becauſe, unleſs the people were perſuaded that they lived under the beſt legiſlation, they would ſoon be led to deſire a new one. Indeed, obedience was, among the Spartans, the firſt of virtues.

Lycurgus conſidered the education of youth, in every ſtage of it, from the earlieſt infancy to maturity, as the moſt important object of a legiſlator's care. His grand principle was, that children belonged more to the ſtate than to their parents; and therefore he ordered the ſtate to be entruſted with the general care of their education, that they might be formed on conſtant and uniform principles, by which they might be inſpired with the love of their country, and of virtue. As ſoon as a boy was born, the elders of each tribe viſited him; and if they found him well made, ſtrong and vigorous, they ordered him to be brought up at the public charge; but if, on the contrary, they found him deformed, tender, and weakly, he was caſt into a gulf near mount Taygetus. This law, it has been ſaid, ſeems to have been calculated, in one reſpect, to render women very careful, when they were pregnant, of eating, drinking, or uſing exerciſe to exceſs; and it alſo ſeemed to make them excellent nurſes, for which employment they were celebrated throughout Greece. At his earlieſt age the child was accuſtomed to the moſt hardy treatment in his food, dreſs, reſt and general mode of life. He was to be uſed to ſolitude and darkneſs, and to be brought up a ſtranger to impreſſions of terror, uſeleſs reſtraints, and unjuſt reproaches. At the age of ſeven years his education according to the laws commenced, and he was trained up under the diſcipline appointed by the ſtate. Education, indeed, in the whole courſe of it, was, properly ſpeaking, an apprenticeſhip of obedience. While they were at table, the maſter inſtructed the boys by aſking them queſtions, to which they were to give a quick and conciſe, or laconic anſwer. Lycurgus, it is ſaid, was for having the money bulky and heavy, and of little value, but their language very pithy and ſhort, compriſing much ſenſe in few words. To literature they paid little attention; for all the ſciences were baniſhed from the country. The principal objects of their ſtudy were obedience, the patient enduring of hardſhip and fatigue, and victory in battle. The ſuperintendant of their education, was one of the moſt honourable men of the city, and of the firſt rank and erudition, or one of the ephori, who appointed over every claſs of boys, into which they were initiated, maſters of the moſt approved wiſdom and probity. Strict obedience, and great reſpect to their elders and ſuperiors, were matters ſedulouſly inculcated in the Spartan ſyſtem of education. To the old men the youth roſe up, whenever they came into any public place; when they met them in the ſtreets they gave way; and they were ſilent, whenever their elders ſpoke. All the old men were deemed to have the authority of parents and warranted in the exerciſe of it; and thus Lycurgus provided, that as youth are every where too apt to offend, they might be no where without a monitor. The laws went ſtill farther; for if an old man was preſent when any youth committed a fault, and did not reprove him, he was puniſhed equally with the delinquent. Amongſt the youths there was one of their own body, or, at moſt, two years older than the reſt, who was denominated "iren;" he had authority to queſtion all their actions, to watch their behaviour, and to puniſh them if they did amiſs; and their puniſhments were not ſlight, but ſevere. Silence was highly commended at Sparta, where modeſty, not only in words and actions, but in looks and geſtures, was held to be a moſt becoming virtue in young people. An inconſiderate perſon, who would not liſten to inſtruction, and who ſeemed to diſregard what the world might think or ſay of him, was treated by the Lacedæmonians as a diſgrace to human nature.

Occupations among the Spartans that were neceſſary for the benefit of the community, ſuch as agriculture and the like, were left to their ſlaves, the Helotes; but arts, ſubſervient to luxury, were wholly interdicted. Thus orators or rhetoricians, augurs, bankers, and dealers in money were excluded. The Spartans admitted no theatrical diverſions among them; but other kinds of poetry were allowed, provided the magiſtrates had the peruſal of pieces, before they were introduced to the public. Muſic was much encouraged, provided that it was ſuch as had been in favour with their anceſtors; and they would not permit their ſlaves to learn either the air or the words of their moſt admired pieces.

Among the effects of ancient muſic, in ſoftening the manners, promoting civilization, and humanizing men, naturally ſavage and barbarous, the moſt ſingular and ſtriking is related by Polybius, the hiſtorian, a grave, exact, and reſpectable writer, who, in ſpeaking of ſeveral acts of cruelty and injuſtice exerciſed by the Ætolians, againſt their neighbours the Cynætheans, has the following remarkable paſſage, which we ſhall give at full length, from Mr. Hampton's excellent tranſlation.

"With regard to the inhabitants of Cynætha, whoſe misfortunes we have juſt now mentioned, it is certain, that no people ever were eſteemed ſo juſtly to deſerve that cruel treatment to which they were expoſed. And ſince the Arcadians, in general, have been always celebrated for their virtue throughout all Greece; and have obtained the higheſt fame, as well by their humane and hoſpitable diſpoſition, as from their piety alſo towards the gods, and their veneration of all things ſacred; it may perhaps be uſeful to enquire from whence it could ariſe, that the people of this ſingle city, though confeſſed to be Arcadians, ſhould, on the contrary, be noted for the ſavage roughneſs of their lives and manners, and diſtinguiſhed by their wickedneſs and cruelty above all the Greeks. In my judgment then, this difference has happened from no other cauſe, than that the Cynætheans were the firſt and only people among the Arcadians, who threw away that inſtitution, which their anceſtors had eſtabliſhed with the greateſt wiſdom, and with a nice regard to the natural genius, and peculiar diſpoſition of the people of the country; I mean, the diſcipline and exerciſe of muſic: of that genuine and perfect muſic, which is uſeful indeed in every ſtate, but abſolutely neceſſary to the people of Arcadia. For we ought by no means to adopt the ſentiment that is thrown out by Ephorus in the preface to his hiſtory, and which indeed is very unworthy of that writer, that muſic was invented to deceive and delude mankind. Nor can it be ſuppoſed, that the Lacedæmonians, and the ancient Cretans, were not influenced by ſome good reaſon, when, in the place of trumpets, they introduced the ſound of flutes, and harmony of verſe, to animate their ſoldiers in the time of battle: or that the firſt Arcadians acted without ſtrong neceſſity, who, though their lives and manners, in all other points, were rigid and auſtere, incoporated this art into the very eſſence of their government; and obliged not their children only, but the young men likewiſe, till they had gained the age of thirty years, to perſiſt in the conſtant ſtudy and practice of it. For all men know, that Arcadia is almoſt the only country, in which the children, even from their moſt tender age, are taught to ſing in meaſure their ſongs and hymns, that are compoſed in honour of their gods and heroes: and that afterwards, when they have learned the muſic of Timotheus and Philoxenus, they aſſemble once in every year in the public theatres, at the feaſt of Bacchus; and there dance, with emulation, to the ſound of flutes, and celebrate, according to their proper age, the children thoſe that are called the puerile, and the young men, the manly games. And even in their private feaſts and meetings, they are never known to employ any hired bands of muſic for their entertainment; but each man is obliged himſelf to ſing in turn. For though they may, without ſhame or cenſure, diſown all knowledge of every other ſcience, they dare not on the one hand diſſemble or deny, that they are ſkilled in muſic, ſince the laws require, that every one ſhould be inſtructed in it; nor can they, on the other hand, refuſe to give ſome proofs of their ſkill when aſked, becauſe ſuch refuſal would be eſteemed diſhonourable. They are alſo taught to perform in order all the military ſteps and motions, to the ſound of inſtruments: and this is likewiſe practiſed every year in the theatres, at the public charge, and in ſight of all the citizens.

"Now to me it is clearly evident, that the ancients by no means introduced theſe cuſtoms, to be the inſtruments of luxury and idle pleaſure: but becauſe they had conſidered with attention, both the painful and laborious courſe of life, to which the Arcadians were accuſtomed; and the natural auſterity alſo of their manners, derived to them from that cold and heavy air, which covered the greateſt part of all their province. For men will be always found to be in ſome degree aſſimilated to the climate in which they live: nor can it be aſcribed to any other cauſe, that in the ſeveral nations of the world, diſtinct and ſeparated from each other, we behold ſo wide a difference, in complexion, features, manners, cuſtoms. The Arcadians, therefore, in order to ſmooth and ſoften that diſpoſition, which was by nature ſo rough and ſtubborn, beſides the cuſtoms above deſcribed, appointed frequent feſtivals and ſacrifices, which both ſexes were required to celebrate together; the men with women, and the boys with virgins; and, in general, eſtabliſhed every inſtitution, that could ſerve to render their rugged minds more gentle and compliant, and tame the fierceneſs of their manners. But the people of Cynætha, having ſlighted all theſe arts, though both their air and ſituation, the moſt inclement and unfavourable of any in Arcadia, made ſome ſuch remedy more requiſite to them than to the reſt, were afterwards engaged continually in inteſtine tumults and contentions; till they became at laſt ſo fierce and ſavage, that, among all the cities of Greece, there was none in which ſo many and ſo great enormities were ever known to be committed. To how deplorable a ſtate this conduct had at laſt reduced them, and how much their manners were deteſted by the Arcadians, may be fully underſtood from that which happened to them, when they ſent an embaſſy to Lacedæmon, after the time of a dreadful ſlaughter which had been made among them. For in every city of Arcadia, through which their deputies were obliged to paſs, they were commanded by the public crier inſtantly to be gone. The Mantineans alſo expreſſed even ſtill more ſtrongly their abhorrence of them: for as ſoon as they were departed, they made a ſolemn purification of the place; and carried their victims in proceſſion round the city, and through all their territory.

“This then may be ſufficient to exempt the general cuſtoms of Arcadia from all cenſure; and at the ſame time to remind the people of that province, that muſic was at firſt eſtabliſhed in their government, not for the ſake of vain pleaſure and amuſement, but for ſuch ſolid purpoſes, as ſhould engage them never to deſert the practice of it. The Cynætheans alſo may perhaps draw ſome advantage from theſe reflections; and, if the deity ſhould hereafter bleſs them with better ſentiments, may turn their minds towards ſuch diſcipline, as may ſoften and improve their manners, and eſpecially to muſic; by which means alone, they can ever hope to be diveſted of that brutal fierceneſs, for which they have been ſo long diſtinguiſhed.”

Though Polybius in this paſſage ſeems to attribute the happy change that was brought about in the manners of the Arcadians to muſic alone, it does not appear to merit all the honour, as a conſiderable part was doubtleſs due to the poetry that accompanied it; which being grave, majeſtic, and full of piety and reſpect for the gods and heroes, whoſe glorious actions and benefits were celebrated in it, muſt have had great influence upon the minds of young perſons, in whoſe education thoſe two arts had ſo conſiderable a ſhare.

Thucydides, as quoted by Aulus Gellius (lib. i. cap. 11.) ſays, when the Lacedæmonians went to battle, a Tibicen played ſoft and ſoothing muſic to temper their courage, leſt by an ardent temerity they ſhould have ruſhed on with too great impetuoſity; for, in general, they had more need of having their courage repreſſed than excited.

However, in an engagement with the Meſſenians, they were very near being diſcomfited, when the celebrated Tyrtæus, who performed the part of a Tibicen that day, finding the troops give way, immediately quitted the Lydian mode, and played in the Phrygian, which ſo reanimated their courage, repreſſed by the preceding mode, that they obtained a complete victory.

The Lacedæmonians, though a military people, of auſtere manners, appear at all times, notwithſtanding their inhoſpitable law againſt the admiſſion of ſtrangers, to have invited eminent muſicians into their country, and to have encouraged muſic; not only in order to regulate the ſteps, and animate the courage of their troops, but to grace their feſtivals, and fill their hours of leiſure in private life.

Athenæus tells us (lib. xiv.), that they had a flute painted on their enſigns and ſtandards.

There was one kind of theft to which the boys were accuſtomed, and which was even authoriſed by the law, and by the conſent of the citizens; and this was their ſtealing herbs or roots from the gardens and public baths; but if they were caught in the fact, they were puniſhed for want of dexterity. The deſign of the Spartan legiſlator in allowing this practice, was to inſpire the Spartan youth, who were all deſigned for war, with a view to ſelf-defence, and not to extent of dominion, with boldneſs, ſubtlety, and addreſs; to enure them betimes to the life of a ſoldier, to teach them to live upon a little, and to be able to ſhift for themſelves. The patience and conſtancy of the Spartan youth were ſignally exemplified in Diana's feſtival, called “Orthia,” which ſee. The moſt uſual occupation of the Lacedæmonians was hunting, and other bodily exerciſes, to which they devoted in private and public much of their time and attention.

Hunting was made a part of the education of the Lacedæmonians, becauſe it had a tendency to prevent corpulence, which incurred public contempt, if not baniſhment, and to ſtrengthen their limbs, and to render thoſe who practiſed it ſupple and fleet. They had a kind of public dances, in which they much delighted, common alike to virgins and young men. Indeed, in all their ſports, girls were allowed to divert themſelves with the other youths; inſomuch that, at darting, throwing the quoit, pitching the bar, and the like robuſt diverſions, the women were as dextrous as the men. For the manifeſt peculiarity of this cuſtom, Lycurgus aſſigned no other reaſon, than that he ſought to render women, as well as men, ſtrong and healthy, that their children might reſemble them. The laborious life ceaſed with the age of 30; and they then employed themſelves wholly either in affairs of ſtate, or of war.

As to the laws relating to religion, they preſcribed that the ſtatues of all the gods and goddeſſes worſhipped by the Spartans, ſhould be repreſented armed, even Venus herſelf; that the people might regard a military life the moſt noble and honourable, and not attribute, as other nations did, ſloth and luxury to the gods. Their ſacrifices conſiſted of things of ſmall value; that indigence might never hinder them from worſhipping the gods. They were forbidden to make long or raſh prayers to the heavenly powers, and were enjoined to aſk no more, than that they might live honeſtly, and diſcharge their duty. Graves were allowed in their city, and they buried cloſe to the temples, that all people might be familiar with death, and not conceive of it as a thing dreadful in itſelf, or that dead bodies defiled the living. Magnificent ſepulchres were forbidden, nor was the plaineſt or moſt modeſt inſcription permitted, except for ſuch as were ſlain in the wars, or for women who had devoted themſelves to a religious life. Tears, ſighs, and outcries were not permitted in public, becauſe they diſhonoured Spartans, who ought to bear all things with equanimity. Mournings were reſtricted to ſeven days.

Celibacy in men was regarded as infamous, and puniſhed by various tokens of contempt. If a man did not marry when at full age, he was liable to an action; as thoſe alſo were who married above or below themſelves. Such as had three children had certain immunities, and thoſe who had four were free from all taxes. Virgins were married without portions; huſbands were allowed to beat their wives; and there were ſome other laws which we ſhall not here recite. The men of Sparta are generally ſaid to have been diſtinguiſhed for their virtue; but the Spartan women have been as generally decried for their boldneſs, and contempt of decency.

No Spartan was admitted to any concern in their judicial proceedings under 30 years of age; and it was held indecent, and in ill repute, for a man to buſy himſelf at the tribunals, when he had no affairs there of his own. By theſe regulations, Lycurgus thought to prevent litigiouſneſs, and that multiplicity of ſuits which are always fatal in a ſtate. Perſons of abandoned character loſt all right of voting or ſpeaking publicly on public affairs; for it was a perſuaſion among the Spartans, that a man of a baſe character in private life could not ſerve his country from motives of true patriotiſm.

At Sparta, it has been ſaid, every thing tended to inſpire the love of virtue, and the hatred of vice; the actions of the citizens, their converſations and mutual intercourſe which frequently occurred, thier public monuments, and their inſcriptions. Accordingly Lycurgus would not allow all ſorts of perſons to travel, leſt they ſhould bring home foreign manners, and return infected with the licentious cuſtoms of other countries, and thus become averſe from the life and maxims of Lacedæmon. On the other hand, he would ſuffer no ſtranger to remain in the city, who did not come thither to ſome uſeful or profitable end, or out of mere curioſity, leſt they ſhould diſſeminate the vices of their own countries. A ſoldier was the only reputable profeſſion in Sparta; a mechanic or huſbandman was looked upon with contempt. War, indeed, was the trade and buſineſs of the Lacedæmonians, and the firſt law of war with them was never to fly, or turn their backs upon their enemies, however ſuperior in number; never to quit their poſt; never to deliver up their arms; in a word, either to conquer, or to die upon the ſpot. Hence it is, that a mother recommended to her ſon, who was going to make a campaign, that he ſhould return either with or upon his ſhield; and that another, hearing that her ſon was killed in fighting for his country, anſwered very coldly, "I brought him into the world for no other end." A Spartan lady, having heard that her ſon had fled from a battle, wrote him this ſhort letter, "Fame ſpeaks ill of you; efface it, or be no more." In all expeditions, they were careful in the performance of religious rites; and after their evening meal, the ſoldiers ſang together hymns to their gods. When they were about to engage, the king ſacrificed to the Muſes, that, by their aſſiſtance, they might be enabled to perform deeds worthy of being recorded to lateſt times. Then the army advanced in order to the ſound of flutes, which played the hymn of Caſtor. The king himſelf ſung the Pæan, which was the ſignal to charge. When their enemies began to fly they purſued no longer than till victory was aſcertained; becauſe they would ſeem to fight rather for the honour of conquering than of putting their enemies to death. After 40 years' ſervice, a man was, by law, no longer required to go into the field, and conſequently if the military age was 30, the Spartans were not held invalids till they were 70. It was one of the wiſeſt maxims in the political ſyſtem of Lycurgus, that he forbade the Spartans to fight often againſt the ſame enemy. They were forbidden to meddle with maritime affairs, though in proceſs of time they were forbidden to tranſgreſs this inſtitution.

It has been ſaid that Lycurgus was the author of that political expedient for leſſening the number of ſlaves, or Helotes, in Sparta, called "Cryptia," *i. e.* the ambuſcade, when the ſlaves were thought too numerous. Such as had the care of educating the Spartan youth, ſelected the ſtouteſt of them, and having armed them with daggers, ſent them out to deſtroy their unhappy ſlaves, either by ſurpriſing them in the night, or falling upon them in the day, when they were at their work and defenceleſs. Plato condemns this law; and Plutarch denies that it was made by Lycurgus, whereas Ariſtotle expreſsly lays it to his charge; but when or however it was made, it was undoubtedly a cruel unneceſſary expedient, in all reſpects unworthy of a virtuous people. The abbé Barthelemi (Trav. Anach. vol. iv. p. 481.) has, in our opinion, ſatiſfactorily vindicated Lycurgus from the charge of having inſtituted ſuch a practice. Plato himſelf recommends, that in a well governed ſtate, the youth, as ſoon as they are of ſufficient age, ſhould, during two years, range the country with arms in their hands, braving the rigours of ſummer and winter, leading a hardy life, and ſubjected to a ſtrict diſcipline. As the Cryptia was only practiſed among the Spartans, Plato has here deſcribed the nature of it. In this and another ſimilar paſſage the object of the Cryptia is deſcribed, but not a word is ſaid of the chace of the Helots; of which no mention occurs in any of the now remaining works of Ariſtotle, nor in thoſe of Thucydides, Xenophon, Iſocrates, and other writers of the ſame age, though they often ſpeak of the revolts and deſertions of the Helots, and occaſionally cenſure the laws of Lycurgus, and the cuſtoms of the Lacedæmonians. The Abbé concludes, that till about the time when Plato wrote his treatiſe on laws, the Cryptia was not employed to ſhed the blood of the Helots. Afterwards, *i. e.* a ſhort time after the death of Plato, the laws loſt their force, and the Spartan youth killed thoſe Helots who made too much reſiſtance, and perhaps gave occaſion to the decree of the ephori, which imported that the Helots might be murdered with impunity. The abuſe increaſing from day to day, the Cryptia was at length confounded with the chace of the Helots. According to Ariſtotle the Cryptia was inſtituted by Lycurgus. Plato explains its object and believes it to be extremely uſeful. When the manners of Sparta became corrupted, the youth of Lacedæmon, we are told, abuſed this exerciſe to perpetrate horrid cruelties, which cannot be juſtified, but which have been tranſmitted to us with exaggeration, and unjuſtly charged upon the inſtitution of Lycurgus.

The inſtitutions of Lycurgus have been much extolled both by ancients and moderns, but they are unqueſtionably liable to many objections. The legiſlator himſelf, when he framed them, muſt have been in a great degree devoid of that comprehenſion and ſenſibility of mind, which takes an enlarged view of the frame and condition of men, and which duly attends to the feelings of human nature; particularly thoſe of parents and children. The underſtanding was left in a great degree uncultivated; decency was proſcribed, barbarity rendered familiar; and all thoſe tender ſenſations that humanize ſociety were ſmothered, as it were, in the birth. The conſtitution was a moſt unnatural effect of ſpeculation, founded upon the miſery of the individuals that compoſed the community: for if the Spartans were free with reſpect to other nations, they were ſlaves to their own legiſlature. In a word, ſay the authors of the Univerſal Hiſtory, it was a diſcipline calculated, not for a free people who had a right to cultivate the powers of reaſon, and taſte the nobleſt enjoyments of life, but for the deſperate militia of a deſpotic tyrant, who wants to extinguiſh every ſentiment of humanity, and produce a contempt of life by ſtripping it of all its comforts.

Such an inſtitution as that of Lycurgus, with all its defects and failings, is a juſt object of admiration: but it would have been leſs wonderful, if it had ſubſiſted only during the life of the legiſlator; however, we know that it ſubſiſted many ages after his deceaſe in a greater or leſs degree of vigour and influence. Xenophon, in the encomium he has left us of Ageſilaus, and Cicero, in one of his orations (Pro Flacc.,) obſerves, Lacedæmon was the only city in the world that preſerved her diſcipline and laws for ſo conſiderable a term of years unaltered and inviolate. "Soli," (ſays Cicero, ſpeaking of the Lacedæmonians), "toto orbe terrarum ſeptingentos jam annos amplius unis moribus ad nunquam mutatis legibus vivunt." In Cicero's time, however, the diſcipline of Sparta, as well as her power, was very much relaxed and diminiſhed. But all hiſtorians agree that it was maintained in a very conſiderable degree of vigour till the reign of Agis, under whom Lyſander, though himſelf incapable of being blinded or corrupted with gold, filled his country with luxury and the love of riches, by bringing into it immenſe ſums of gold and ſilver, which were the fruits of his victories, and thereby ſubverting the laws of Lycurgus. But the introduction of gold and ſilver, ſays Rollin, was not the firſt wound given by the Lacedæmonians to the inſtitution of the legiſlator. It was the conſequence of a violation of another law ſtill more fundamental: ambition was the vice that preceded and made way for avarice. The deſire of conqueſts drew on that of riches, without which they could not have propoſed to extend their dominions. The main deſign of Lycurgus, in the eſtabliſhment of his laws, and eſpecially of that which prohibited the uſe of gold and ſilver, was, as Polybius and Plutarch have judiciouſly obſerved, to curb and reſtrain the ambition of his citizens, to diſable them from making conqueſts, and in a manner to force them to confine themſelves within the narrow bounds of their own country, without carrying their views and pretenſions any farther. Indeed the government which he eſtabliſhed was ſufficient to defend the frontiers of Sparta, but was not calculated for raiſing her to a dominion over other cities. That it was not his deſign to make the Spartans conquerors is evident from his having expreſsly forbidden them, though they lived in a country ſurrounded with the ſea, to meddle in maritime affairs; to have any fleets, or even to fight upon the ſea. Although he made them a nation of ſoldiers and warriors, it was only that, under the ſhadow of their arms, they might live in liberty, moderation, juſtice, union, and peace, by being content with their own territories, without uſurping thoſe of others, and by being perſuaded, that no city or ſtate, any more than a ſingle perſon, can ever hope for ſolid and laſting happineſs, but from virtue only. On this ſubject, ſee Anc. Un. Hiſt. vol. v. Rollin's Anc. Hiſt. vol. ii. Travels of Anacharſis, vol. iv.

The ſtability, as well as the glory, of the Lacedæmonian government, was derived from the wiſe inſtitutions of that celebrated lawgiver, of whoſe government we have given an account. After the death of Lycurgus, the Lacedæmonian hiſtory becomes perplexed, being ſupplied from ſcanty and ſcattered materials.

The following table ſhews the ſucceſſion of their kings, in both lines, with the duration of their reigns, from Lycurgus until the Achæan league.

TABLE of the Lacedæmonian Kings.

Agidæ, or Family of Agis.			Proclidæ, or Family of Procles; called alſo Eurypontidæ.		
	Reigns.			Reigns.	
	Beg.	Duration.		Beg.	Duration.
Archelaus	913 B. C.	60	Charilaus	873 B C.	64
Teleclus	853	40	Nicander	809	39
Alcamenes	813	37	Theopompus	770	47
Polydorus	776	52	Zeuxidamus	723	33
Eurycrates	724	37	Anaxidamus	690	39
Anaxander	687	43	Archidamus	651	46
Eurycrates II.	644	37	Agaſicles	605	41
Leon	607	44	Ariſton	564	38
Anaxandrides	563	33	Demaratus	526	35
Cleomenes	530	39	Leotychides	491	22
Leonidas	491	12	Archidamus II.	469	42
Pliſtarchus	479	14	Agis II.	427	30
Pliſtoanax	465	58	Ageſilaus II.	397	36
Pauſanias	407	14	Archidamus III.	361	23
Ageſipolis	393	14	Agis III.	338	9
Cleombrotus	379	9	Eudamidas I.	329	33
Ageſipolis II.	370	1			
Cleomenes II.	369	61	Archidamus.		
Aretus, or Areus	308	44	Eudamidas II.		
Acrotatus	264	1			
Areus II.	263	7'			
Leonidas II.	256	14	Agis IV.		
Cleombrotus	242	2			
Leonidas, reſtored	240	6	Archidamus.		
Cleomenes	234	16	Euclidas.		
Ageſipolis	228		Lycurgus.		

Machanidas the Tyrant.
Nabis ditto 14
Alexamenus the Ætolian.
Lacedæmon becomes a part of the Achæan league, 191 B. C.

It would far exceed our limits to detail minutely the hiſtory of the Lacedæmonians during the ſeries of reigns which we have above enumerated. We muſt content ourſelves with marking ſome of its principal events, and particularly thoſe in which their ambition led them to violate the conſtitution eſtabliſhed by Lycurgus. We ſhall find that inſtead of employing their arms and exerciſing their valour for maintaining their own independence, they were actuated by an ambition for making conqueſts and extending their territories, by methods directly contrary to the rules of conduct which Lycurgus had preſcribed. Charilaus, his nephew and pupil, began with an unſucceſsful war with the Argives, and with the Tageatæ, a people of Arcadia; and he then turned his arms againſt the Achæans, who had taken from the Lacedæmonians ſeveral frontier towns, which he and his colleague Teleclus recovered. But a more important event in the Lacedæmonian hiſtory was the Meſſenian war, the foundation of which was laid during the reign, or ſoon after, the death of Teleclus; but it was actually commenced by Alcamenes, king of Sparta, who made a ſudden irruption into the Meſſenian territory. In the proſecution of this war, the Lacedæmonians and their two kings took a ſolemn oath not to return till they had thoroughly reduced Meſſenia, by which oath they entered into an obligation to tranſgreſs two of the expreſs laws of Lycurgus; one of which forbade them to make conqueſts, and the other which prohibited them from prolonging their war againſt the ſame people. Polydorus and Theopompus continued the war which had been begun by Alcamenes and Nicander; and conſtrained the Meſſenians to fortify a city which was ſituated on the top of the mountain Ithome, that they might retire into it for ſafety and ſelf-defence, when they were driven from their other cities and villages, that were more expoſed. The Lacedæmonians, regardleſs of that clauſe in the laws of Lycurgus, which cautioned them againſt beſieging fortified places, laid ſiege to Ithome; and altogether deſtitute of experience in this branch of military tactics, they were under a neceſſity of continuing the ſiege for fourteen years before they reduced the place. It was during this expedition that Theopompus is ſaid to have created the ephori, thus altering the original conſtitution of the Spartan government. The attention of the Spartans was diverted from the Meſſenian war by a diſpute with the Argives, concerning the city of Thyrea, and its diſtrict, which, lying on the borders of Argolis and Laconia, occaſioned great contentions between thoſe ſtates.

The Argives were defeated with great ſlaughter; but when Polydorus was urged to purſue his victory, and to attack Argos itſelf, he declined it with this noble declaration, worthy of the inſtitution of Lycurgus, "that the Spartans ſent him to aſſert their rights, but not to rob others." The Spartans, after having provided for the adminiſtration of affairs at home, by the appointment of the ephori, renewed the Meſſenian war, and marched with a great army towards Ithome, but they were defeated with great loſs, and conſtrained to betake themſelves to flight. At length, after an obſtinate reſiſtance on the part of the Meſſenians, they were obliged to ſurrender Ithome to the Spartans, and they themſelves were treated with great rigour. The Spartans, during the Meſſenian war, having been ten years abſent from the city, on account of their oath, which obliged them not to return till they had entirely ſubdued that country, were reminded by a meſſage from the women, that, whilſt they were ſo careful to ſubdue their enemies, they neglected the city. In conſequence of this meſſage, they decreed that the young men among them who came out of Sparta under age, and on this account were not obliged by the oath, ſhould return, and aſſociating themſelves promiſcuouſly with the unmarried women, preſerve the city from falling into decay. This project being executed, thoſe who were born of ſuch young women were called "Partheniæ," that is, ſons of virgins. When the Lacedæmonians returned, after having reduced Meſſenia, they neglected theſe young men, who, finding themſelves involved in difficulties, for want of parents and an inheritance, intrigued with the Helotes, and formed a plot againſt the ſtate. The plot, however, was diſcovered, and they were ſent off to Italy, where they ſettled near Tarentum. In the reign of Anaxander and Anaxidamus, 685 years B. C., the ſecond Meſſenian war begun, and continued 14 years. It terminated with the capture of Ira or Era, after a ſiege of 11 years, and by the conqueſt of Meſſenia, the inhabitants were made ſlaves, and the whole country was divided by the Spartans among their own citizens, the diſtrict of Methone excepted, which they gave to the Argives. Nothing of any great importance occurred in the hiſtory of the Lacedæmonians until the Perſian war. When Miltiades, the Athenian, fought the famous battle of Marathon, and defeated the Perſians, in the 490th year B.C., the Spartans had promiſed an army, but ſent none; ſome time after the battle their troops arrived, contemplated the ſpot where it had been fought, and after having highly commended the Athenians, returned home again to Sparta. When this battle at Marathon excited the Perſians to attempt again the conqueſt of Greece, the Spartans, with a reſolution worthy of the diſciples of Lycurgus, determined to oppoſe them. The ſtates of Greece, apprized of the hoſtile intentions of Xerxes, unanimouſly joined in a general aſſembly to defend its liberty againſt the Perſians; but in the event, of all the confederates, the Spartans and Athenians were the only ſtates that ſeemed prepared to execute their purpoſe. A reſolution was formed to defend the ſtraits of Thermopylæ; and when 6000 foot were appointed for that ſervice, the command of them was given to Leonidas, who had ſucceeded Cleomenes in the kingdom of Lacedæmon. Of the 6000 foot, 300 only were Spartans. Leonidas himſelf conſidered it as a deſperate undertaking, but was determined either to ſucceed, or to die in the attempt. The iſſue of this conflict was the death of Leonidas with all his Spartans; but the victory on the part of the Perſians coſt them 20,000 men. The Grecian fleet, which lay at Artemiſium, was entruſted to the command of Eurybrides, a Spartan, poſſeſſed of great perſonal courage, but timorous as a commander, and unexperienced in maritime affairs. When Mardonius attempted the conqueſt of Greece, Pauſanias, the ſon of Cleombrotus, who aſſumed the character of tutor or protector to Pliſtarchus, the ſon of Leonidas, had the command in chief of the whole Grecian army, which amounted to 100,000 men. The Perſians were undoubtedly double this number. But both armies were afterwards greatly diminiſhed by deſertion. At length the Lacedæmonians and Tegetæans were forced to engage Mardonius's army without aſſiſtance. The Perſians, it is acknowledged, behaved well on this occaſion; but being neither ſo well armed, nor ſo well diſciplined as the Greeks, their valour was of no uſe but to expoſe them to ſlaughter. The Perſians were defeated and Mardonius killed. The Perſian camp was forced; the Lacedæmonians opened a paſſage; and then a mercileſs ſlaughter enſued. Of 300,000 men, whom Mardonius brought into the field, ſcarcely 3000 eſcaped. The number of Greeks that fell is uncertain; Plutarch reckons them at 1360, but Diodorus Siculus affirms poſitively, that they were very few leſs than 10,000. On the ſame day in which the battle of Platæa was fought, (479 B.C.) Leotychides, king of Sparta, with Xanthippus,

pus, the Athenian, gained a glorious victory at Mycale, where the laſt remains of the Perſian fleet, and of the Perſian armies, which had been drawn together for the deſtruction of Greece, were utterly defeated, and Pauſanias was afterwards ſent to take the command of the fleet, with ſtrict orders to free the Grecian cities from the Perſian garriſons. But he ſoon after intrigued with Artabazus, and engaged in a ſcandalous treaty with the Perſians; affecting, by the aſſiſtance of the great king, to make himſelf ſovereign of Greece. The allies took umbrage at his conduct, and privately ſent to accuſe him at Sparta. He was induced, however, by deluſion to return to Sparta; where he was ſeized by the ephori, but for want of ſufficient evidence, or dreading his influence, they releaſed him. He nevertheleſs purſued his negotiations with Artabazus, till his intrigues were diſcovered. Upon his retiring to the temple of Minerva Chalcidica, in order to take ſanctuary there, the Spartans blocked up the gate, and thus preventing his eſcape, reduced him to the neceſſity of ſtarving in the temple. At the end of the 77th olympiad (465 B.C.) a moſt dreadful earthquake happened at Sparta. Diodorus ſays, that 20,000 perſons loſt their lives, and Plutarch affirms, that only five houſes in the city eſcaped ruin. In this year, 465 B.C., the third Meſſenian war commenced, by the inſtigation of the Helotes, and laſted ten years. The next war which the Lacedæmonians undertook, was that ſtyled the "Sacred," by ſome the "Phocian" war; begun in the 448th year B.C. The deſign of it was to put the temple of Delphi into the hands of the inhabitants of the country, whereas it had before belonged to the Phocians; this deſign the Spartans effected; and they were recompenſed by a decree on the part of the Delphians, that they ſhould have a right of firſt conſulting the oracle; which decree was engraved on the forehead of a brazen wolf, conſecrated in the temple. The Athenians ſoon after, having reſtored the temple to the Phocians, obtained the ſame privilege, and the decree which granted it was engraven on the right ſide of the wolf. The Lacedæmonians having induced the Bœotians to revolt from the Athenians, and Eubœa at the ſame time ſhaking off the yoke, availed themſelves of this opportunity for giving a mortal blow to Athens; for which purpoſe Pliſtoanax was ordered to invade their territories, at the head of a great army. He was perſuaded, however, by his guardian Cleondrides, who accepted a bribe from Pericles, to return home, without effecting any thing, for which corruption the Spartans puniſhed Cleondrides with death, and ſentenced their king to exile. Soon after a peace was made between the Spartans and Athenians. This peace was of no long duration; for in the year 431 B.C. the Peloponneſian war began. Archidamus, the king of Lacedæmon, wiſhed to avoid this war, and ſent a meſſenger to Athens, with a commiſſion to this purpoſe; but he was ſent back unheard. After ſeveral incurſions into Attica, Archidamus died. He is ſaid to have been one of the beſt kings that ever reigned in Sparta. Being aſked, "who were governors of Sparta?" he replied, "the laws, and the magiſtrates according to theſe laws." During the reign of his ſon and ſucceſſor Agis, who invaded Attica, the Athenians took ſeveral towns; but at length they were routed with great ſlaughter by the Spartans under the command of Braſidas, one of the moſt celebrated men of Sparta. In the year 421 B.C. a peace was concluded, after the war had raged for ten years. But in order to prevent too intimate an union between Sparta and Athens, ſeveral of the Peloponneſian ſtates leagued themſelves with Argos, which was a very powerful republic, and hoſtile at this time to the Lacedæmonians. After ſome ſlights and affronts, the Spartans, much irritated, reſolved on a war againſt them and their allies; and entered the territory of Argos with a large army. The Argives, being ill prepared for a conflict, declined it, and obtained from Agis a truce of four months; which gave great offence to his allies, and for which he was ſeverely mulcted and opprobriouſly treated on his return to Sparta. The Athenians, having obtained a ſupply of troops, renounced the treaty made with Agis, and the two armies engaged at Mantinea. The Spartans under Agis, though inferior in number to the Argives and their allies, and very obſtinately reſiſted, gained a complete victory. This happened in the year 418 B.C. In the year 414 B.C. Agis entered the territories of Elis, in order to revenge the diſhonour that had been done ſome years before to the republic, by forbidding them to be preſent at the Olympic games. After repeated irruptions into the country, the Eleans treated with the Spartans, and a peace enſued. At this time the Peloponneſian war was renewed. The Athenians having ſent a great army into Sicily, the Lacedæmonians ſent Gylippus to aſſiſt the Syracuſans; among whom he gained great reputation at firſt, though it was afterwards ruined by his avarice. About this time Alcibiades repaired to Sparta, having been expelled his country by a prevailing faction. By adopting the Spartan mode of living, he became a great favourite, and was treated with particular reſpect by Agis, who received him into his houſe; but in return for the hoſpitality he experienced, he baſely debauched the wife of Agis, and was obliged to quit Laconia, and to ſeek among the barbarians a place of ſafety. Whilſt king Agis managed the war in Attica, the conduct of maritime affairs was committed to Lyſander, who proved the great hero of Sparta, and brought to a termination the Peloponneſian war. Lyſander was ſuppoſed to be of the royal family, and of the Herculean race; he paſſed his younger years under all the reſtrictions of the inſtitutes of Lycurgus, and was thus rendered bold, hardy, patient, and reſolute; his genius was extenſive, and in his diſpoſition and manners, he was affable, modeſt, vigilant, and indefatigable; but with theſe great qualities he cheriſhed the moſt dangerous ambition, in order to gratify which he ſtooped to every ſpecies of flattery and diſſimulation; ſo that to accompliſh his ends, he made no ſcruple to violate the moſt ſolemn oaths. When he entered on his command, he found the Athenians greatly ſuperior at ſea; but in a few years he deprived them of all power; but, above all things, he ſought to advance his own credit and authority. Lyſander ſoon perceived, that without the Barbarian gold, Sparta could not carry on the war; and he therefore inſinuated himſelf into the favour of Cyrus, who was then at Sardis, and obtained from him 10,000 pieces of ſilver, which he applied to the purpoſe of ſupporting his ſoldiers, and refitting his fleet. Whilſt he lay at Epheſus, repairing his ſhips and keeping his ſoldiers and mariners to their exerciſe, he projected a ſcheme for making himſelf, in a manner, ſovereign of Greece. After ſeveral previous manœuvres and changes of poſition, he attacked the Athenians, whoſe fleet was under the command of Conon, both by ſea and by land, and completely defeated and routed them; ſo that, in a ſingle hour, he put an end to the Peloponneſian war, and to the maritime power of Athens. After this victory (405 B.C.), and the power acquired by it, Lyſander acted rather as an univerſal monarch than a general from Sparta. He immediately viſited all the neighbouring cities, and changed their government, placing in each of them a Spartan magiſtrate, and with him ten of his friends from Epheſus, where he erected a kind of political univerſity. Theſe men conducted themſelves with haughtineſs and ſeverity, and the Lacedæmonian government was thus rendered ungrateful; ſo that the people were univerſally diſpoſed to ſhake it off as ſoon as they could. Lyſander collected the wealth which his victories had put into his power, and deſtined it to be ſent to Sparta, whither he had before ſent a meſſenger with the news of his victory over the Athenians, together with an aſſurance that he would ſoon be before Athens with a fleet of 200 ſail; upon which, Agis and Pauſanias, the two kings of Sparta, were ſent, with a very large land army, into Attica. Lyſander entered Athens in triumph, on the anniverſary of the great victory at Salamis, April 24, in the year 404 B.C., which completely finiſhed the Peloponneſian war. (See ATHENS.) Lyſander, having accompliſhed this object, ſent the immenſe treaſures which he had collected to Sparta, under the care of Gylippus, whoſe avarice and fraudulent diſpoſition led him to open the bags which contained them, and to take out what he thought proper. Upon his arrival at Lacedæmon, their contents were examined, and compared with a ticket which Lyſander had put into each ſealed bag. The deficiency was ſoon diſcovered; Gylippus was impeached by his ſervant, and his crime being proved, he was exiled under the ſcandalous imputation of being a detected cheat. This influx of wealth occaſioned great diſputes at Sparta: thoſe who were beſt acquainted with the nature of their conſtitution regarded the receipt of it as an open violation of the laws of Lycurgus, and they expreſſed their apprehenſion, that in proceſs of time they would have reaſon to repent this acceſſion of opulence. It was at laſt determined, as a compromiſe of the ſubſiſting diſputes, that the ſtate might make uſe of the gold and ſilver, but that private perſons ſhould poſſeſs neither, on pain of capital puniſhments. Lyſander, while he remained in Greece, amply evinced his imperious diſpoſition; ſetting up his own ſtatue, and thoſe of his commanders, who were his favourites, and dedicating two ſtars in honour of the deities Caſtor and Pollux, two ſtars which his ſycophants pretended had been ſeen in the rigging of his ſhip, at the battle of Ægos. The range of his ambition in Aſia was ſtill leſs reſtrained. At length the ephori and ſenate of Sparta diſpatched a *ſcytala* (which ſee) to recall him. After ſome tokens of diſpleaſure, the Spartans became reconciled to him, and in proceſs of time extolled him for a man of integrity and true public ſpirit, to the mortification of their king Pauſanias, who had endeavoured to humble his pride and reſtrain his influence. Before Ageſilaus was well ſettled on the throne (397 B.C.), the king of Perſia declared war againſt the Spartans: the king was, not without reaſon, jealous of the power of Lyſander; and a miſunderſtanding between them taking place, Lyſander reſolved to overturn the government of his country. But new diſturbances occurring in Greece, he perſuaded the ephori and ſenate once more to entruſt him with an army. An army was ſoon raiſed, to the command of which he was appointed; and another army was put under the command of king Pauſanias. Lyſander, haſtening by quick marches to Haliartus, and unſupported by Pauſanias, who was more dilatory in his progreſs, was attacked by the Thebans and Haliartans, and killed on the ſpot, and the Spartans were defeated. A treaty was concluded with Pauſanias, on condition of his retiring out of Bœotia. But on his return to Sparta, ſuch a ſpirit of reſentment appeared againſt him, that he was afraid to undergo his trial, and therefore retired to Tegæa, where he led a private life. The memory of Lyſander was held in great veneration, not only for the ſervices which he had rendered his country, but on account of his dying poor, notwithſtanding the opportunities he had of enriching himſelf.

Ageſilaus, having ſubjected the greateſt part of the coaſt, determined to march into Perſia, and revenge the cruelties perpetrated by Xerxes, when he invaded Greece; but being recalled, he returned without heſitation; preferring his duty towards the conſtitution of his country to the proſpect of ſubduing the whole Perſian empire. During the reign and military exploits of Ageſilaus (B.C. 393), Conon, the Athenian, threatened the Spartans with the loſs of their ſovereignty by ſea; upon which it was reſolved at Sparta to ſend Antalcidas into Perſia, to appeaſe the great king, and to detach him from the intereſts of their rivals. The negociations of Antalcidas prevailed, ſo that a peace was concluded (387 B.C.), called the peace of Antalcidas, by which the ſovereignty of Greece was, in a manner, guaranteed to Sparta, but upon very diſhonourable terms, the Greek cities in Aſia being entirely abandoned to the Perſians, notwithſtanding all the promiſes which had been made to them, and although Ageſilaus himſelf had fought in their quarrel. The Lacedæmonians became haughty and inſolent, and reſolved to puniſh all who had injured them. They began with the Mantineans, who had been their confederates, and had done them great ſervices. They next extended their arbitrary power to the Phliaſians, and then to the Olynthians, who were reduced to ſuch diſtreſs, that they made a treaty with the Spartans, by which they engaged to have the ſame friends and enemies with them, and to follow them as aſſociates in their wars, whitherſoever they ſhould lead them. Sparta exerciſed a government that was arbitrary and cruel over all whom ſhe had brought moſt unjuſtly under her dominion; for, by the peace of Antalcidas, ſhe had engaged that all the cities ſhould be left free. The Perſian king perſiſted in his deſign to bring about a ſettled tranquillity, which, in the beginning of the 102d olympiad, (372 B.C.) ſeemed to be nearly effected; the Athenians heartily concurring with the Lacedæmonians, and giving no countenance to the Thebans, who refuſed to hear of peace, becauſe the Spartans inſiſted they ſhould ſet the cities of Bœotia at liberty. In this oppoſition they were encouraged by Epaminondas, who demanded that, before the Lacedæmonians gave laws to others, they ſhould ſhew a proper regard to thoſe maxims of equity themſelves, by giving up Meſſenia to its ancient proprietors, and ſetting Laconia free. This obſtinacy violently incenſed Sparta, and offended Athens. Cleombrotus, with an army of 12,000 men, penetrated into Bœotia, and advanced towards Leuctra. A truce, however, was concluded by the mediation of Jaſon, a powerful prince of Theſſaly. But as Cleombrotus was retiring, he met Archidamus, the ſon of Ageſilaus, with a reinforcement from Sparta; and theſe princes, notwithſtanding the truce, marched back to Leuctra, in order to fall on the Bœotians, where they found Epaminondas ready to receive them. The Spartans, in the battle of Leuctra, (fought July 8th, 371 B.C.) were defeated with great ſlaughter; and thus they loſt the empire of Greece, which they had held near 500 years. Epaminondas afterwards entered Laconia, and appeared before Sparta; but Ageſilaus compelled him to retire, though not without deſolating the country in his retreat. Epaminondas, when he quitted the territories of Sparta, rebuilt the city of Meſſene, and recalled the ancient inhabitants of Meſſenia from the ſeveral countries where they had taken refuge, and reſtored them to the poſſeſſion of their ancient patrimony, after they had loſt it 300 years. Having accompliſhed this object, he offered the Lacedæmonians peace, on condition that they ſurrendered all pretenſions to Meſſenia, and left Laconia free; terms which they rejected with diſdain. At length the Perſian king diſpoſed almoſt all Greece to think of peace; and this was effected, after the Laconian or Bœotic war had laſted about five years. In the ſecond year of the 104th olympiad (363 B. C.) new commotions aroſe in Peloponneſus. Epaminondas made an unſucceſsful attempt to ſurpriſe Sparta, and afterwards Mantinæa; mortified by theſe diſappointments, he determined to attack Ageſilaus, who was at the head of the Lacedæmonians and Arcadians, with the reſt of their allies; but in his charge againſt the Lacedæmonians, he expoſed his perſon too much, and fell under a cloud of darts, and was at length killed by a Spartan javelin. Pyrrhus of Macedon, interfering in a diſpute about the ſucceſſion to the throne of Sparta, made ſeveral attempts againſt the city, but was as often repulſed; and before he quitted Greece he was killed in a battle with Areus the Spartan king. Cleonidas II., who ſucceeded Areus II. in the year 257 B. C. had long lived in the court of Seleucus, and acquired a taſte for pomp and grandeur. At Sparta he had an opportunity of indulging this taſte, for the maxims of Lycurgus had ſunk not only into diſuſe, but into contempt. One of the ephori, who had gained influence, and who had conceived a prejudice againſt his own ſon, procured a law, by which all men were left at liberty to diſpoſe of their lands by gift or ſale, or by teſtament at the time of their deceaſe. In conſequence of this law, which ſubverted the original conſtitution, moſt of the lands were, by degrees, transferred from the ancient Spartan families; and thus the credit and glory of the Spartan ſtate declined. Agis, the colleague of Leonidas, and a perfect counterpart to him in diſpoſition and character, attempted to counteract his conduct, and to reſtore the conſtitution of Sparta. Cleombrotus, who ſucceeded Leonidas, after he had been ſet aſide, concurred with Agis in all his deſigns; but when Agis was obliged to go with a body of Spartan troops to the aſſiſtance of the Achæans, his colleague abuſed his power to ſuch a degree, that Leonidas was reſtored; upon which Agis, when he returned, fled to the temple of Minerva, and could not be drawn out of his ſanctuary by any methods which Leonidas could practiſe. He was at length treacherouſly ſeized, tried, and condemned by the ephori, and at laſt put to death. On the death of Leonidas, Cleomenes aſcended the Spartan throne; and reſolved to ſuppreſs the ephori, and to reſtore the ancient conſtitution of Sparta. In the courſe of his reign he invaded Achæa, and took ſeveral cities. Being informed that Aretus and the Achæans were preparing to give him diſturbance, he marched a body of troops into their territories, and gained many advantages over them. At length the Achæans, diſheartened by their ill ſucceſs, offered to ſubmit to any terms which Cleomenes propoſed. He acted like a generous victor, declaring that he merely ſought to be acknowledged general of the Greeks, and that he was ready to deliver up the priſoners without ranſom, and to reſtore the cities he had taken. But being ſeized with a diſorder, which induced for a time a diſability for ſervice, Aretus ſuffered jealouſy, envy, and ſelf-conceit to triumph over his virtue and love for his country; and he, who in his youth had expelled the Macedonians out of Peloponneſus, merely from the love of freedom, now privately recalled them, fearing that Cleomenes, the moſt worthy of the Spartan kings, ſhould be raiſed to that dignity which he ſo highly merited. When Cleomenes recovered from his diſorder, he advanced towards Argos, where the Achæans held their aſſembly; but when he drew near, Aretus ſent to inform him, that he muſt either enter the city alone, or be content to treat without the place. Cleomenes, in conſequence of this treatment, invaded Achæa, and took ſeveral cities. He ſoon after ſurpriſed Argos, and advanced himſelf to greater power than any of his predeceſſors had poſſeſſed; and his city to greater pre-eminence than ſhe had ever held in Greece. At a ſubſequent period, *viz.* in the year 222 B. C. he gave battle to Antigonus at Sallaſia, where, from the ſuperiority of the Macedonian troops, and the treachery of Damoteles, the Lacedæmonians were defeated with a great ſlaughter of their mercenary troops, and an almoſt total deſtruction of their own. After this diſaſtrous defeat, Cleomenes fled to Egypt, where he put an end to his life. With him terminated the Herculean race of Spartan kings, if we except the ſhort reign of Ageſipolis. After the fatal battle of Sallaſia, Sparta fell into the hands of king Antigonus, who treated the inhabitants with great kindneſs, and they for a time behaved very quietly. Lycurgus, the Spartan king, invaded Meſſenia, and defeated the Meſſenians. After he had obliged Philip of Macedon to retire from Laconia, the ephori, pretending to have received information that he wanted to make himſelf abſolute, attempted to ſurpriſe and murder him; but he withdrew into Ætolia, and when the iniquity of the ephori was diſcovered by the people, he was recalled. Machanidas, the ſucceſſor of Lycurgus, ejected the ephori, averſe from having any either equal to, or greater than, himſelf in Sparta. Abroad, he made all Peloponneſus tremble, and would probably have ſubdued it, if Philopœmen, the chief of the Achæans, had not oppoſed his deſigns. This leader engaged all the cities in that league to furniſh troops for reducing the power of Machanidas; an engagement took place between the contending parties at Mantinæa, in which the Spartans were defeated, and Machanidas was killed. Nabis, a cruel tyrant, ſucceeded Machanidas; and upon his death, by the hand of violence, the chief of the Ætolians broke into his palace at Sparta, and rifled all his treaſures. The ſoldiers followed his example, ſo that the Lacedæmonians, who had ſuffered ſo much from the wanton and ſavage tyranny of Nabis, looked upon his murder as their misfortune; and a multitude of them aſſembled, and put many of the Ætolians to death without mercy. In the midſt of their confuſion, Philopœmen arrived, and having convinced the Lacedæmonians of the madneſs of their act, engaged them, ſince they had ſo happily recovered their freedom, to unite themſelves to the Achæans, B. C. 191. (See ACHÆANS.) In the year 188 B. C. upon a quarrel between the Lacedæmonians and Achæans, Philopœmen deſtroyed the walls of Lacedæmon, abrogated the laws of Lycurgus, and compelled the Spartans to adopt thoſe of the Achæans. Upon their preferring a complaint to the ſenate of Rome, Callicrates ordered the walls of their city to be re-built; and according to the opinion of Meurſius, which is the moſt probable, the laws of Lycurgus were not reſtored till after the Romans had vanquiſhed Perſeus, and Achaia was joined to their empire. Lacedæmon was placed under the protection of the Romans. During the civil wars of the Roman empire, the Lacedæmonians attached themſelves to the party of Cæſar and Auguſtus, to whom they conſecrated temples. Nero, in his expedition into Greece, durſt not enter Sparta, by reaſon of the ſeverity of its laws. Pliny the elder ſpeaks of Lacedæmon as a free city under Veſpaſian. Apollonius Tyaneus, if we may credit Philoſtratus, found the laws of Lycurgus in full vigour in the time of Domitian; but it is probable, that this emperor diminiſhed the liberty of the Lacedæmonians, for Pliny the younger, writing under the reign of Trajan, ſays, that there only remained the ſhadow of liberty. From that time no veſtige remains of the inſtitutions of Lycurgus; at leaſt Meurſius could not diſcover any. When Chriſtianity became the religion of the empire, the reſidue, if any, of theſe inſtitutions muſt have been aboliſhed. Meurſius cites a paſſage from Theodoret, which proves that they were entirely aboliſhed by the Romans before his time, that is, before the 5th century.

Although, in the preceding article, we have uſed the appellations Lacedæmonians and Spartans as ſynonymous; yet when they are diſtinguiſhed, the Spartans denote the citizens of Sparta, and the Lacedæmonians are the inhabitants of the province. The number of the former anciently amounted to 10,000. In the time of Xerxes their number was 8000; but by their continued wars they were ſo much reduced, that very few ancient families were found at Sparta. The new families were deſcended from the Helots, or ſlaves, who, being firſt rewarded with their liberty, afterwards acquired the title of citizens. Theſe were not called Spartans, but were differently denominated according to the various privileges they had obtained, and their ſeveral names bore ſome reference to their former condition. The Lacedæmonians, properly ſo called, formed a confederation, the object of which was to unite their forces in war, and to maintain their rights in time of peace. When the intereſts of the whole ſtate were to be diſcuſſed, they ſent their deputies to the general aſſembly, which was always held at Sparta. There were ſettled the contributions which each city ſhould pay, and the number of troops it ſhould furniſh. The inhabitants of the cities of Laconia did not receive the ſame education with thoſe of the capital. Their manners were more rude, and their courage leſs brilliant; and hence Sparta obtained an aſcendancy over the other cities. Anc. Univ. Hiſt. vol. v. Rollin's Anc. Hiſt. vol. ii. Trav. of Anacharſis, vol. iv.

LACEDÆMONIUM Marmor, in the *Natural Hiſtory of the Ancients,* the name of a ſpecies of marble very hard, and of a beautiful green colour; it is a very cloſe, even, and compact marble; of a fine ſtrong and bright green, and when poliſhed, is the brighteſt of all the green marbles, and is remarkable for this, that the colour is not regularly and equally diffuſed through the whole maſs, but leaves in it many ſpots and lines very bright and pale, and ſome much deeper than the general colour, though there is no colour but green in the whole, only in different ſhades and degrees, ſome parts approaching to black, and others to whiteneſs.

It was originally found only in Egypt, and there not in entire ſtrata, but in large pieces waſhed off from the ſtrata, and ſometimes left on the ſurface, ſometimes buried in the earth, and was greatly valued. It has been ſince found in Italy and Germany, and in England. About five miles from the Hot-Wells at Briſtol there is a ſtratum of it, whence it might be had in conſiderable quantities. Its beauty would ſoon recommend it, if it were once known; and though hard to cut, it would make amends for that by the high poliſh it would take.

LACERATED Wounds. See Wounds.

LACERNA, a thick coarſe ſort of military garment worn by the ancients.

The lacerna was a kind of cloak of woollen, only uſed by the men; who wore it over the toga, and, when that was not on, over the tunica. It was at firſt very ſhort, but growing popular in the Roman army, it was ſoon lengthened.

The lacerna was ſcarcely known in Rome till the time of the civil wars, and the triumvirate; then indeed it came into faſhion; for the ſoldiers being then frequently in the city, or at the city gates the ſight became familiar to the citizens, and they fell into the uſe of it; inſomuch that it became the common dreſs of the knights and ſenators, till the time of Valentinian and Theodoſius, when the ſenators were prohibited the wearing of it in the city.

The lacerna appears to have been much the ſame with the *chlamys* and *birrus*.

Martial mentions lacernæ of ten thouſand ſeſterces price.

LACERTA, Lizard, in *Aſtronomy*, a conſtellation of the northern hemiſphere, including, according to Hevelius, ten ſtars, and in the Britiſh Catalogue ſixteen. See Constellation.

Lacerta, in *Zoology*. See Lizard.

LACERTI, a diviſion of the reptiles, comprehended under the genus of *Lacerta.*

LACERTUS, and Lacertulus, in *Anatomy*, names ſometimes applied to the bundles of fibres, of which the muſcular organs are compoſed.

Lacertus, in *Zoology*. See Manis.

Lacertus, in *Ichthyography*, the *lizard-fiſh*, a name given by ſome writers to a fiſh of the cuculus kind, much reſembling the common mackarel in ſhape and in taſte, and more uſually called trachurus.

Lacertus is alſo uſed for a fiſh of the gar-fiſh kind, or *acus Oppiani*, but larger than the common ſpecies, and called by the Italian fiſhermen *aguglia imperiale*, or the imperial gar-fiſh, and by the fiſhermen of England, particularly in Cornwall, the *girrock*, in diſtinction from the common kind which they call *ſkipper*. It is thicker in proportion to its length than the common gar-fiſh, and has a ſhorter and ſharper ſnout, and inſtead of teeth, has only its jaws ſerrated like a file. It is a ſcarce fiſh, but is more firm in its fleſh than the common gar-fiſh. See Esox.

LACERUM, in *Anatomy*, an epithet applied, from their irregular figures, to two foramina of the ſkull; one in the orbit, the other in the baſis cranii. See Cranium.

Lacerum *Folium*, among *Botaniſts*. See Leaf.

LACHAS, in *Geography*, a town of South America, in the audience of Quito; 60 miles N. of Quito.

LACHELA, a town of Sweden, in Eaſt Bothnia; 13 miles S.S.E. of Waſa.

LACHELLO, a town of France, in the department of the Seſia; nine miles W.S.W. of Vercelli.

LACHEN, a town of Switzerland, in the canton of Schweitz, on the S. ſide of the lake of Zurich. Near it are ſome mineral ſprings, and alſo cryſtals and petrifactions; eight miles W. of Utznach.

LACHENALIA, in *Botany*, ſo named by profeſſor Jacquin, jun. in honour of Werner de Lachenal, profeſſor of botany and anatomy at Baſil, a diſtinguiſhed pupil of Haller and friend of Linnæus, eminent for his knowledge of European plants, and ſtill more eſtimable for his candour and liberality. Several of his diſſertations occur in the *Acta Helvetica*, which throw great light upon the botany of Switzerland, and were intended as preparatory to a *Flora* of that country, diſpoſed according to the Linnæan ſyſtem; but this work has never yet appeared. Whether its author be ſtill living, we have not lately heard. He was born in 1736.—Jacq. fil. in Act. Nov. Helvet. v. 1. 38. t. 2. f. 3. Murr. in Linn. Syſt. Veg. ed. 14. 314. Schreb. 799. Willd. Sp. Pl. v. 2. 171. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 284. Lamarck. Dict. v. 3. 372. Illuſtr. f. 1. t. 237. (Phormium; Juſſ. 52.)

Gen. Ch. *Cal.* none. *Cor.* of ſix oblong unequal petals, approximated into the form of a tube, united at their baſe; the three outer ones ſhorteſt, and often callous at the tip. *Stam.* Filaments ſix, erect, awl-ſhaped, attached to the baſe of the petals, various in length; anthers erect, oblong. *Piſt.* Germen ſuperior, nearly ovate; ſtyle awl-ſhaped, as long as the ſtamens; ſtigma ſimple, obtuſe. *Peric.* Capſule nearly ovate, with three wings, and three cells. *Seeds* ſeveral, globoſe, attached to the central column.

Eſſ. Ch. Corolla inferior, regular, of ſix petals; the three inner ones longeſt. Stamens erect. Capſule ſomewhat ovate, with three wings. Seeds globoſe.

Obs. Juſſieu and Lamarck, following the younger Linnæus in his *Supplementum*, confound this genus with the

Phormium of Forſter, or New Zealand flax, the former retaining this name, while the latter adopts that given by Jacquin as above; but theſe genera are no leſs diſtinct in habit than in their eſſential characters. See PHORMIUM.

The ſpecies of *Lachenalia* are beautiful bulbous plants, with the habit of a Hyacinth, having all radical oblong leaves, a ſimple racemoſe flower-ſtalk, and variouſly-coloured, more or leſs ſpreading or drooping flowers. Willdenow has 24 ſpecies; the 2d edition of *Hort. Kew.* enumerates 17 as cultivated in that noble collection; but we would preſume to remove two ſpecies from both theſe liſts. *L. ſerotina,* which is *Hyacinthus ſerotinus* of Linnæus, a native of Spain, figured in Curt. Mag. t. 859 and t. 1185, is referred by Mr. Ker, in the laſt-mentioned work, to *Scilla,* a meaſure to which we cannot but readily accede; and *L. viridis* may as well, in our opinion, continue in *Hyacinthus,* where Linnæus has placed it; at leaſt it cannot well be made to agree with *Lachenalia;* ſee *Jacq. Ic. Rar.* t. 66. The remaining ſpecies are all natives of the Cape of Good Hope, and, as far as we know, of no other part of the world. Such as we have in gardens are cultivated in the green-houſe, being treated like other Cape bulbs, and flowering chiefly in the early ſpring, a few of them in autumn. Good examples of this genus are,

L. *orchioides.* Orchis-like Lachenalia. Jacq. Ic. Rar. t. 390. Curt. Mag. t. 854. 1269.—Flowers bell-ſhaped, ſeſſile. Inner petals obtuſe, expanding. Style the length of the ſtamens. Leaves oblong-lanceolate, with a crenate cartilaginous edge.—This is the oldeſt inhabitant of the Engliſh gardens among the whole genus, having been cultivated by Miller in 1752. It appears to be a very variable ſpecies, at leaſt if more than one be not confounded under this name. The *leaves* are more or leſs ſpeckled, like the ſtalk. *Flowers* numerous, varying with pale yellow or purple mingling into ſhades of brown.

L. *contaminata.* Mixed-coloured Lachenalia. Curt. Mag. t. 1401. (L. hyacinthoides; Jacq. Ic. Rar. t. 382. Willd. n. 4. L. orchioides; Jacq. Hort. Vind. v. 2. 83. t. 178.)—Flowers bell-ſhaped, ſomewhat cylindrical, on ſhort ſtalks, erect. Inner petals lanceolate, obtuſe, erect. Leaves linear-awl-ſhaped, channelled, lax, longer than the ſtalk.—This has long been at Kew, having been ſent from the Cape, by Mr. Maſſon, in 1774. The long taper-pointed *leaves,* deeply-ſpotted *ſtalk,* and ſpeckled *flowers,* in which white, browniſh purple, and tints of green, contend for the ſuperiority, but the two former generally prevail, characteriſe this ſpecies.—Nearly akin to it is L. *anguſtifolia,* Jacq. Ic. Rar. t. 381. Curt. Mag. t. 735. Redout. Liliac. t. 162; chiefly diſtinguiſhed, according to Mr. Ker, by the broader proportion and ſpreading poſture of the inner *petals.* The *leaves* alſo are narrower, but the whole habit and colours of the plant are very ſimilar.

L. *orthopetala.* Straight-petalled Lachenalia. Jacq. Coll. v. 3. 240. Ic. Rar. t. 383.—Flowers cylindrical, ſlightly funnel-ſhaped, on ſhort ſtalks, erect. Petals all lanceolate, ſtraight. Bracteas cup-ſhaped. Leaves linear-awl-ſhaped, channelled, lax, longer than the ſtalk.—Of this we have ſeen no ſpecimen, but Jacquin's figure proves it abundantly diſtinct from the *contaminata,* with which, as Mr. Ker obſerves, it has been confounded by Willdenow and in the *Hortus Kewenſis.* The *petals* are white, with a green ſpot at the back, near the point of each. The above character expreſſes their form and poſition.

L. *puſtulata.* Bliſtered Lachenalia. Jacq. Coll. v. 3. 244. v. 4. 220. t. 2. f. 5. Ic. Rar. t. 386. Curt. Mag. t. 817.—Flowers bell-ſhaped, ſomewhat cylindrical, on very ſhort ſtalks. Inner petals dilated and obtuſe. Stalk triangular, reclining. Leaves two, lanceolate, bliſtered.—The *leaves* are remarkable for their bliſtered upper ſurface. The *flowers* are pallid and unornamental; their inner petals, at firſt cream-coloured and ſpreading, become twiſted together and yellowiſh in decay.

L. *purpuro-cærulea.* Purple-blue Lachenalia.—Jacq. Ic. Rar. t. 388. Curt. Mag. t. 745. Andr. Repoſ. t. 251.—Flowers bell-ſhaped, ſtalked. Inner petals obtuſe, revolute. Stamens prominent. Stalk angular above. Leaves two, lanceolate, bliſtered.—One of the more handſome kinds, conſpicuous for its copious *flowers,* which are variegated with blue and purple, and ſmell like hawthorn. Their colours and expanded form give them a reſemblance to ſome ſpecies of *Scilla.* The *leaves* are ſhort and broadiſh, occaſionally deſtitute of bliſters.

L. *lanceæfolia.* Spotted copperas-leaved Lachenalia.—Jacq. Ic. Rar. t. 402. Curt. Mag. t. 643. Redout. Liliac. t. 59.—Flowers ſomewhat bell-ſhaped, ſpreading, on ſtalks thrice their own length. Petals linear, blunt, nearly equal. Leaves numerous, ovate, pointed.—Chiefly remarkable for its numerous, broad, taper-pointed *leaves,* ſpreading in the form of a ſtar, of a glaucous hue, more or leſs ſpeckled with a darker green. The *flowers* are numerous, pendulous, variegated with dull purple and green.

L. *tricolor.* Broad-leaved three-coloured Lachenalia.—Murray in Linn. Syſt. Veg. ed. 14. 314. Redout. Liliac. t. 2. Curt. Mag. t. 82. (L. luteola; Jacq. Ic. Rar. t. 395. Phormium aloides; Linn. Suppl. 205.)

β. luteola; Curt. Mag. t. 1020. (L. flava; Andr. Repoſ. t. 456.)

γ. quadricolor; (L. quadricolor; Curt. Mag. t. 588 and 1097. Jacq. Ic. Rar. t. 396. Andr. Repoſ. t. 148. L. tricolor; Jacq. Ic. Rar. t. 61. L. pendula β; Willd. Sp. Pl. v. 2. 181.)

Flowers cylindrical, pendulous, ſtalked. Inner petals twice the length of the outer, dilated, ſlightly ſpreading, ſomewhat emarginate. Bracteas taper-pointed. Leaves two, lanceolate.—This is one of the moſt common and generally cultivated ſpecies. We are ſo well ſatisfied of the truth of Mr. Ker's remark, that the *quadricolor* of the above authors, referred by ſome to the *pendula,* is moſt akin to *tricolor,* that we cannot conſider it otherwiſe than as a variety, certainly not more ſpecifically diſtinct than the *luteola.* We conceive therefore that either theſe three plants muſt conſtitute one ſpecies, or they ought all to be conſidered as alike diſtinct. Cultivation by ſeed muſt in time decide this queſtion. The *leaves* in all of them are in pairs, and recurved; thoſe of the firſt are broad and ſpotted; the others longer and narrower, generally without ſpots. *Spike* in all ſomewhat comoſe, many of the uppermoſt flowers being abortive, and their pointed bracteas crowded into a tuft. The outer *petals* of all are tipped with green; thoſe of the firſt and third varieties more or leſs tinged with red, thoſe of the ſecond plain yellow. The inner petals of the firſt are variegated with green and pale yellow; thoſe of the ſecond are of a plain full yellow, being moreover rather broader and more expanded; thoſe of the third are lemon-coloured, elegantly tipped with deep crimſon or purple.

L. *rubida.* Dotted-flowered Lachenalia. Jacq. Ic. Rar. t. 398. Curt. Mag. t. 993.

β. tigrina; Jacq. Ic. Rar. t. 399.

γ. punctata; ibid. t. 397.

Flowers cylindrical, drooping, on ſhort ſtalks. Inner petals one-fourth longer than the outer, ſpatulate, ſomewhat unequal, obtuſe. Bracteas ſcarcely pointed. Leaves two, elliptic-oblong.—This is ſaid to be rather rare in our collections,

tions. The *leaves* and *ſtalk* are ſpeckled with purple, and the *flowers* dotted with red, in all the three varieties, which have no pretenſions to be reckoned ſpecies. They differ only in luxuriance, *tigrina* being the ſtrongeſt plant, *punctata* the weakeſt and moſt ſlender.

L. *pendula*. Four-coloured Pendulous Lachenalia.—Ait. Hort. Kew. ed. 1. v. 1. 461. Jacq. Coll. v. 3. 239. Ic. Rar. t. 400. Curt. Mag. t. 590. Andr. Repoſ. t. 41. Redout. Liliac. t. 52.

Flowers cylindrical, pendulous, on very ſhort ſtalks. Inner petals nearly one-fourth longer than the outer, wedge-ſhaped, obtuſe. Bracteas ſcarcely pointed. Leaves two, ovato-lanceolate.—One of the moſt commonly cultivated and moſt beautiful ſpecies, flowering in the green-houſe or frame in February. The *leaves* are broad. *Flowers* numerous, drooping and ſomewhat curved, of a fine red at their baſe, their ſegments tipped with various degrees of purple and green, the middle part yellow. The main *ſtalk* is ſtout and ſtraight, ſpeckled; the partial ones very ſhort.—Willdenow makes the *quadricolor* a variety of this, in which he is inadvertently copied by the editors of the ſecond edition of *Hort. Kew.*; an error corrected by Mr. Ker in Curt. Mag. v. 26. p. 1020. See alſo v. 16. p. 588, of the ſame work.

Lachenalia, in *Gardening*, compriſes plants of the bulbous-rooted kinds, of which the ſpecies moſtly cultivated are the ſpotted-leaved lachenalia, L. orchioides, the pale-flowered lachenalia, L. pallida, the three-coloured lachenalia, L. tricolor.

The third ſort varies with yellow, ſaffron-coloured, blood-red purple at the tip, and greeniſh-yellow corollas; alſo in the proportion between the inner and outer petals; and in the breadth of the leaves.

Method of Culture.—All theſe plants may be increaſed by offsets from the bulbs, and by ſeeds, when they are produced in perfection.

The offsets ſhould be planted out in pots of light freſh earth, when the bulbs are in a ſtate of inactivity of growth, placing them in a warm border to be covered with hand-glaſſes, or, what is better, in a dry ſtove or green-houſe.

Theſe plants bear forcing tolerably, and their flowering is much promoted by being preſerved in the warmth of the ſtove.

They all afford variety among collections of potted bulbous-rooted flowering plants.

LACHES, from the French *laſcher*, i. e. *laxare*, or *laſche*, *ignavus*, in our *Laws*, ſignifies ſlackneſs or negligence; as it appears in Littleton, where laches of entry is a neglect in the heir to enter, and probably it may be an old Engliſh word: for when we ſay there is laches of entry, it is the ſame as if it were ſaid, there is lack of entry; and in this ſignification it is uſed. (Litt. 136.) No laches ſhall be adjudged in the heir within the age; and regularly laches ſhall not bar either infants or femes covert for not entry or claim to avoid deſcents: but laches ſhall be accounted in them, for non-performance of a condition annexed to the ſtate of the land. (Co. Litt. 146.) The law alſo determines, that in the king there can be no negligence, or laches; and therefore no delay will bar his right. Co. Litt. 90.

LACHESIS, in *Zoology*. See Coluber.

LACHEZE, in *Geography*. See *La* Chaise.

LACHISH, in *Scripture Geography*, a town of Paleſtine, in the tribe of Dan, S.W. of that of Judah, on the frontiers of this tribe, to which Senacherib laid ſiege, when he ſent his haughty meſſage to Hezekiah. It was a ſmall town, or village, about 7 miles S. from Eleutheropolis, in the time of Euſebius and Jerom. Joſh. x. 23. xv. 39. 2 Kings, xviii. 17. xix. 8, 2 Chron. xxxii. 9.

LACHNÆA, in *Botany*, from λαχνη, ſoft hair or down, alluding to the fine hairy clothing of the corolla. The name ſeems to have been given by the elder Van Royen.—Linn. Gen. 194. Schreb. 261. Willd. Sp. Pl. v. 2. 434. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2, v. 2. 415. Juſſ. 77. Lamarck. Illuſtr. t. 292. Claſs and order, *Octandria Monogynia*. Nat. Ord. *Vepreculæ*, Linn. *Thymelææ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coloured, permanent; tube long and ſlender; limb in four deep unequal ſegments, the uppermoſt of which is much the ſmalleſt and erect, the other three reflexed, the middle one largeſt. *Cor.* none. *Stam.* Filaments eight, briſtle-ſhaped, erect, inſerted into the upper part of the tube, and nearly as long as the limb, a little unequal; anthers ſimple, roundiſh. *Piſt.* Germen ſuperior, ovate; ſtyle thread-ſhaped, longer than the tube, attached laterally to the germen; ſtigma capitate, hiſpid. *Peric.* none, except the permanent baſe of the calyx. *Seed* ſolitary, coated, ovate, with an oblique point.

Eſſ. Ch. Calyx tubular, coloured, with a four-cleft unequal limb. Stamens inſerted into the mouth of the tube, prominent. Seed one, coated.

Obſ. This genus differs from *Paſſerina* in having an irregular flower only. We follow Linnæus in his *Gen. Pl.* as to the denomination of the parts of the flower, though in his *Syſt. Veg.* he ſubſequently termed corolla what he had before called calyx; but the analogy of *Daphne* compared with *Gnidia*, (ſee thoſe articles), confirms his original phraſeology.

1. L. *eriocephala*. Woolly-headed Lachnæa. Linn. Sp. Pl. 514. Andr. Repoſ. t. 104. Curt. Mag. t. 1295. (Paſſerina eriocephala and cephalophora; Thunb. Prod. 75.)—Leaves oppoſite, imbricated in four rows, pointleſs, keeled underneath. Flowers woolly; ſegments acute.—Native of the Cape of Good Hope, like all the other ſpecies. This is ſaid in the *Hortus Kewenſis* to have been introduced into England in 1793, by Meſſrs. Lee and Kennedy. It is a green-houſe ſhrub, flowering all ſummer long. The ſhort ſlender ſmooth *leaves*, ſtanding in four rows, reſemble thoſe of ſome kinds of heath. The *flowers* are large and white, in terminal ſolitary heads, ſubtended by bracteas broader than the leaves, of an elliptical figure, and tinged with red. The ſtalk and baſe of each flower, as well as the outſide of its limb, are all very woolly. Nothing is recorded reſpecting the ſcent of theſe flowers, nor have we had an opportunity of examining them ſufficiently to aſcertain this point; but we ſhould expect them, from analogy, to be fragrant at ſome time of the day or night. An authentic ſpecimen ſhews this to be *Paſſerina cephalophora* of Thunberg, and we preſume it muſt be his *eriocephala*.

2. L. *purpurea*. Purple-flowered Lachnæa. Andr. Repoſ. t. 293.—Leaves oppoſite, imbricated, in four rows, obtuſe, keeled underneath. Segments of the calyx ſmooth. This elegant ſpecies, diſtinguiſhed by its larger ſize, and roſe-coloured or light purple *flowers*, whoſe outſide is ſmooth and naked, except a ſhort pubeſcence on the tube, was gathered at the Cape by Mr. James Niven, an indefatigable collector ſent out by Geo. Hibbert, eſq. M. P. It flowers in June and July, and is ſheltered in the green-houſe in winter, where it is liable to periſh from damps. The tube of each flower is white, with a woolly tuft at its baſe, like the former. The *bracteas* are broad and almoſt round.

3. L. *glauca*. Glaucous-leaved Lachnæa. Saliſb. Parad.

t. 109. (L. buxifolia; Lamarck. Dict. v. 3. 373. Andr. Repoſ. t. 524. Gnidia filamentoſa; Linn. Suppl. 224.) Leaves ſcattered, elliptical, glaucous. Segments of the calyx downy on both ſides.—This beautiful ſpecies was communicated to Linnæus by his friend Bæck. Mr. Niven ſent it to Mr. Hibbert about the year 1800. Its broad elliptical glaucous *leaves* at once diſtinguiſh it. The *flowers* are white, fragrant, exceſſively copious in each round terminal head, their ſegments downy on both ſides, pointed, and not very unequal. Minute glands alternate with the ſtamens, are found in the orifice of the tube, as in *Gnidia*, but ſmaller.

Some excellent remarks are given by Mr. Saliſbury, in his *Paradiſus*, in favour of the latter opinion of Linnæus concerning the calyx of this genus, which he therefore terms corolla, but the point ſeems to us ſtill doubtful, at leaſt, and we therefore adhere to what we have always maintained.

4. L. *conglomerata*. Crowded Lachnæa. Linn. Sp. Pl. 514. (Paſſerina glomerata; Thunb. Prodr. 75.)—Leaves oppoſite, imbricated in four rows, abrupt. Flowers oppoſite, crowded about the ends of the branches. Bracteas elliptical, three ribbed.—Gathered by Sparmann and Thunberg at the Cape, but as yet unknown to our cultivators. It is a ſmall branching *ſhrub*, very cloſely reſembling *Paſſerina filiformis*, but the *leaves* are ſhorter, and much more remarkably abrupt or retuſe, nor are they at all incurved. The upper ones inſenſibly become *bracteas*, being dilated, elliptical, concave, with three, ſometimes five, ſtrong projecting ribs; their inner ſide is clothed with denſe prominent wool. Theſe bracteas continue, in three or four oppoſite pairs, to the end of each little branch, every one of them being accompanied by an axillary, ſolitary, ſmall *flower*, whoſe tube, longer than the bractea, is woolly, its limb nearly or quite ſmooth and naked. The colour of the flowers is apparently purpliſh; their ſegments are ſufficiently unequal to make the plant a *Lachnæa*, though they and every other part are ſo very like *Paſſerina filiformis*, in whoſe ſegments likewiſe we think we perceive an inequality, that we are certain theſe two plants ought to be placed in one genus. They differ, however, ſpecifically in their *bracteas*, which in P. *filiformis* are ovate, pointed, ſtrongly keeled, with numerous ſmaller lateral ribs. We recommend this laſt to the notice of botaniſts who publiſh figures of plants. Of L. *conglomerata* we can find no repreſentation in books. The ſynonyms quoted by Linnæus and copied by Willdenow, belong to a very diſſimilar ſhrub, from which nevertheleſs the ſpecific character ſeems to be taken, and which appears to be the following.

5. L. *phylicoides*. Phylica-leaved Lachnæa. Lamarck. Dict. v. 3. 374. (Sanamundæ tertiæ Cluſii affinis, ſoliis polii, capitis bonæ ſpei; Breyn. Cent. 18. t. 7?)—"Leaves linear-awlſhaped, ſmooth, looſely imbricated. Heads ſmall, cluſtered, white and downy." Lamarck deſcribes this as "very cloſely reſembling a *Phylica*, in which genus he had placed it, till an examination of the *flowers* ſet him right. Theſe he found quadrifid and octandrous, with ſo ſlight an inequality in the limb, that he doubts whether that character be ſufficient to keep the plant diſtinct from *Paſſerina*. It is a branching *ſhrub*, the *branches* ſtraight, ſlender, leafy, ſmooth, except the youngeſt ſhoots. *Leaves* numerous, ſeſſile, linear-awlſhaped, nearly triangular, quite ſmooth, ſtraight, looſely imbricated, ſomewhat reſembling *Dioſma rubra*. The *flowers* are collected, from five to eight together, into cottony white heads, the ſize of a pea, terminating the numerous, very ſhort, crowded little branches, which form a ſort of corymb at the end of the principal ones. The *calyx* is white, downy; its tube a line and half long, its limb in four oval, concave, unequal ſegments, nearly as long as the tube." The author received it dried from M. Thouin, as a native of the Cape. He objects to the ſynonym of Breynius, which we have, with great doubts, transferred hither from the preceding ſpecies. To this plate, in his own copy, Linnæus has written the name of *Phylica imberbis*, a plant adopted in his *Mantiſſa*, p. 209. from Bergius, without having ſeen a ſpecimen himſelf; and he there copies this very ſynonym of Breynius, without recollecting that he had cited it already as *Lachnæa conglomerata*. Lamarck thinks it belongs to *Phylica ſtipularis*. The plant of Bergius is certainly, by his deſcription, a *Phylica*, and if that of Breynius be the ſame, it muſt be eraſed from *Lachnæa*. We have one more error to correct concerning *L. conglomerata*, which is, that Thunberg thinks it the ſame with *Paſſerina ericoides*, though nothing can be more diſtinct than the latter in the Linnæan herbarium, with the ovate tube and ſmall regular limb of its flower, ſo exactly reſembling ſome ſpecies of *Erica*. This *Paſſerina* is, therefore, it ſeems, erroneouſly omitted in Thunberg's *Prodromus*.—The author laſt named, regardleſs of the irregularity of the flower, unites *Lachnæa* altogether with *Paſſerina*, a meaſure we are very unwilling to adopt. It is an opinion of the ingenious Correa de Serra, that, in every natural order, there are one or more genera, differing from the reſt in the regularity or irregularity of the flower. *Lachnæa* then is the only genus of the *Thymeleæ*, or Mezereon tribe, with an unequal or irregular flower. S.

LACHNIS, in *Natural Hiſtory*, the name which ſome have given to a genus of foſſils, attributed to the claſs of the *fibrariæ*; the characters of which are, that they are fibroſe bodies, not elaſtic, and compoſed of ſhort and abrupt fibres, or filaments.

The word is derived from the Greek λαχνη, a hair or ſhort capillament or fibre.

The bodies of this genus have been divided into thoſe which are compoſed of larger and broader, and thoſe which are compoſed of ſmaller and narrower filaments. Hill's Foſſils. See FIBRARIÆ.

LACHNOSPERMUM, in *Botany*, a genus ſo called by profeſſor Willdenow, from λαχνη, *wool*, and σπερμα, *ſeed*; indeed that author diſtinguiſhes this plant from *Stachelina*, on account of the woollineſs which inveſts its ſeed.—Willd. Sp. Pl. v. 3. 1787. (Staehelinæ ſpecies; Thunb. Prod. 143.) Claſs and order, *Syngeneſia Polygamia-Æqualis*. Nat. Ord. *Compoſitæ Diſcoideæ*, Linn. *Cinarocephalæ*, Juſſ.

Eſſ. Ch. Receptacle hairy. Seeds inveſted with hairs. Calyx cylindrical, imbricated.

1. *L. ericifolium*. Willd. (Staehelina faſciculata; Thunb. Prod. 143.)—A native of the Cape of Good Hope.—The *branches* of this *ſhrub* are divaricated, rigid, and downy. *Leaves* very ſmall, about half a line in length, faſciculated, round, obtuſe, inveſted with down. *Flowers* ſolitary, at the tops of the little branches, on ſhort footſtalks, ſometimes in pairs, the ſize of *Staehelina fruticoſa*. *Calyx* cylindrical, downy; ſcales ovate, acute, with a naked, elongated, ſpreading point. *Seeds* without a proper crown, enfolded with hairs. *Receptacle* hairy, the hairs as long as the florets.

LACHOW, in *Geography*, a town of Poland, in Volhynia; 28 miles N.W. of Conſtantinow.

LACHOWICZE, a town of Lithuania, in the palatinate of Brzeſc; 28 miles S.W. of Pinſk.

LACHRYMA JOBI, in *Botany*. See COIX.

LACHRYMÆ BATAVICÆ. See RUPERT'S *Drops*.

LACHRYMAL. See LACRYMALIS.

Lachrymal *Ducts*, *Puncta*, and *Sac*, *Diſeaſe of.* See Epiphora, and Fistula *Lachrymalis.*

Lachrymal *Fiſtula.* See Fistula *Lachrymalis.*

Lachrymal *Gland*, *Diſeaſe of.* The lachrymal gland, lodged in the foſſula of the anterior and external part of the roof of the orbit, and enveloped in the fat which ſurrounds the globe of the eye, is not frequently met with in a ſtate of diſeaſe. Doubtleſs, it is often involved in the general inflammation, which affects all the contents of the orbit in caſes of ophthalmy; but inſtances of this individual gland ſuffering inflammation by itſelf, muſt be regarded as extremely uncommon.

The lachrymal gland, however, is ſubject to ſcirrhous induration, which is more frequently noticed in diſſections, than practice. We allude to caſes, in which the gland is the only part thus diſeaſed; for it is well known by all experienced ſurgeons, that when the eye-ball is affected with carcinoma, the lachrymal gland is very liable to participate in the diſtemper, and for the ſake of ſecurity, ought generally to be extirpated together with the eye.

A remarkable caſe is related by M. Guérin, where he extirpated a ſcirrhous lachrymal gland, which was ſo much enlarged, that it covered the whole of the eye-ball. The latter part, indeed, was entirely concealed, and might have been ſuppoſed to be confounded with the ſwelling, had not circumſtances exiſted, which tended to ſhew, that the organ in queſtion was ſound and ſituated under the tumour. M. Guérin ſucceſsfully detached the ſwelling from the eye and eye-lids without injuring the rectus externus muſcle.

If this can be received as really and unqueſtionably an example of a ſcirrhous lachrymal gland being found diſeaſed quite alone, and extirpated by itſelf, it is a caſe which, perhaps, has not its fellow in the records of ſurgery. Poſſibly, the ſwelling might be nothing more than an encyſted tumour.

LACHRYMATORIES, in *Antiquity*, ſmall glaſs or earthen phials, with a long neck, found in the ſepulchres of the ancients. Many antiquaries have ſuppoſed that theſe veſſels ſerved to collect the tears of the weeping friends that ſurvived, or of perſons hired for that purpoſe. This belief was grounded on the appearance of the opening of thoſe phials, which is generally furniſhed with a round concave part well adapted for embracing the convexity of the eye-ball. On ſome lachrymatories are even found impreſſions of an eye, and ſometimes of a pair of eyes. But here, as in many other caſes, the eye appears to be merely emblematical. It may alſo be ſaid that the opinion of tears being preſerved in thoſe veſſels is unſupported by any ancient cuſtom we are acquainted with, or by any well-interpreted paſſage in ancient authors. This opinion was firſt broached by Chiflet; it ſoon ſpread over Europe, and was, in ſpite of its improbability, adopted and ſupported by Kirchmann, Kipping, and many other antiquaries. At laſt it was combated by Schoepflin and Paciaudi; ſo that at preſent it appears to be agreed on all ſides that the lachrymatories did never contain any thing but balms deſtined to moiſten the funeral pile or the aſhes of the dead, or elſe the blood of martyrs. There is in the Capitol a bas relief which is much in favour of this idea: on this marble, which repreſents the funeral rites at the death of Meleager, a woman approaches the pile, holding in one hand a large bellied veſſel, and in the other a long ſlender phial with elongated neck and bottom, and in every reſpect ſimilar to ſeveral earthen lachrymatories preſerved in collections. This woman is in the act of pouring out of the large into the ſmall veſſel what may be ſuppoſed to be balms or odoriferous oil for the purpoſe of perfuming the funeral pile of Meleager. If we may believe Dumolinet, there have ſmall ſpoons been found in lachrymatories, which may have ſerved for diſtributing into ſeveral ſmall phials the contents of a veſſel of greater dimenſions. Millin Dict.

LACHSA, denominated alſo *Hadsjar*, and ſometimes *Bahhrein*, in *Geography*, a province in Arabia, bounded towards the E. by the Perſian gulf, towards the S. by Oman, towards the W. by the province of Nedsjed, and towards the N. by the territories of the wandering Arabs in the vicinity of Baſſora. This province affords no great variety of productions. Its aſſes and camels are eſteemed to be of an excellent breed; and of the latter ſome thouſands are annually ſold into Syria. In the interior parts the inhabitants ſubſiſt very much upon dates. Upon the coaſts pearl-fiſhing is purſued with advantage; and there is a conſiderable trade in foreign commodities. The inhabitants of Lachſa are very much divided with regard to religion. Thoſe who live in the towns are Shiites; but the peaſants are, like the Bedouins, Sunnites. Here are alſo ſome Jews, and many Sabæans, or Chriſtians of St. John.

Lachſa was once a province of the empire; but the Arabs have long ſince ſhaken off the Ottoman yoke. Many Turks, deſcended from the ancient Pachas, ſtill remain in the province, and poſſeſs conſiderable eſtates, but have no ſhare in the government. At preſent the ſovereignty of this province belongs to the ſchiech of the Arabian tribe of Beni Khaled, which is one of the moſt powerful tribes in Arabia. The greater part of Lachſa is inhabited by Bedouins, and other petty tribes; but they all acknowledge the dominion of the ſchiech of Beni Khaled. The cities in the interior parts of this province are little known. Niebuhr. —Alſo, a town of Arabia, capital of this province, where the ſchiech reſides, ſituated on the river Aftan, near the Perſian gulf. N. lat. 26° 56′. E. long. 48° 34′.

LACHWA, a town of Lithuania, in the palatinate of Brzeſc; 50 miles E. of Pinſk.

LACING, in *Ship Building*, the name of one of the pieces compoſing the knee of the head, which is continued up to the top of the hair-bracket, and to which the figure and the ends of the head-rails are ſecured.

LACINIATED Leaf, in *Botany.* See Leaf.

LACINIUM Promontorium, in *Ancient Geography*, *Capo delle Colone*, a promontory of Italy, at the eaſtern part of Brutium, and bounding on the ſouth the gulf of Tarentum. This cape was much celebrated on account of a temple of the Lucinian Juno, which was an object of great veneration, and which received many rich offerings from various parts. Authors report that here might be ſeen a large column of maſſive gold. The Romans report, that Hannibal, when he was forced to quit Italy by an order of the ſenate of Carthage, aſſembled in this place all his Italian allies, and maſſacred all who would not accompany him into Africa.

LACIPPO, or Lacippus, a town of Spain, in Bœtica.

LACIS, in *Botany*, ſo named by Schreber, and derived from λακιζω, *to tear*, or *lacerate*, becauſe the herbage of this genus exhibits a ſingularly jagged or lacerated appearance. Schreb. 366. Willd. Sp. Pl. v. 2. 1225. Mart. Mill. Dict. v. 3. (Mourera; Aubl. Guian. v. 1. 582. Juſſ. 441. Lamarck Illuſtr. t. 480.)—Claſs and order, *Polyandria Digynia.* Nat. Ord. uncertain.

Gen. Ch. *Cal.* Perianth none. *Cor.* none. *Stam.* Filaments numerous, about 40, capillary, winged on each ſide at the lower part, inſerted into the receptacle which is ſurrounded by 12 ſpines; anthers oblong, cloven at the baſe, acute, incumbent. *Piſt.* Germen ſuperior, oblong, angularly ſtriated; ſtyles two, incurved; ſtigmas obtuſe. *Peric.* Capſule ovate, with eight furrows, of one cell and two valves. *Seeds* numerous, very ſmall, affixed to an ovate, unconnected receptacle.

Eſſ. Ch. Calyx none. Corolla none. Capſule of one cell, two valves and many ſeeds.

1. L. *fluviatilis*. Willd. (Mourera fluviatilis; Aubl. Guian. t. 233) A native of rivers in Guiana, flowering and bearing fruit in November. Its Caribæan name is *Mourerou*.—*Root* creeping. *Stems* herbaceous, ſimple, rough. *Leaves* alternate, divided into numerous, repeatedly jagged, lobes, dark green, curled and veined at the margin, rough, with minute points. *Flowers* in ſpikes, terminal, each one, before expanſion, inveſted with three ſmall deciduous leaves. *Filaments* violet-coloured; anthers yellow.

We know not how Willdenow came to deſcribe the leaves as ſmooth, for in Aublet's own ſpecimens we ſind them extremely rough with minute points.

LACISTEMA, ſo denominated by Dr. Swartz, from λακις, *a cleft*, or *fiſſure*, and ϛημα, *a ſtamen*, alluding to the diviſion in the filament. Swartz. Prodr. 1. Fl. Ind. Occ. v. 2. 1091. Schreb. 783. Willd. Sp. Pl. v. 1. 27. Mart. Mill. Dict. v. 3.—Claſs and order, *Monadelphia Diandria*. Nat. Ord. *Amentaceæ*, Linn. Juſſ.

Gen. Ch. *Cal.* a common Catkin, cylindrical, imbricated on all ſides; ſcales ſingle-flowered, ovate, concave, with two ſmaller, linear, lateral, internal ſcales under the corolla. *Cor.* of one petal, in four deep, nearly equal, lanceolate, acute, aſcending ſegments, ſhorter than the internal ſcales, without any tube. Nectary of one orbicular, concave, entire, central leaf, leſs than the petal. *Stam.* Filament ſolitary, from the centre of the nectary near the germen, erect, cloven in the upper part and incurved over the piſtil; anthers ſolitary on each branch of the filament, minute, roundiſh. *Piſt.* Germen ſuperior, globoſe; ſtyles two, very ſhort, recurved; ſtigmas ſimple. *Peri.* Berry ſtalked, obovate, of one cell. *Seed* ſolitary, oblong.

1. L. *myricoides*. Swartz. Prodr. 12. Fl. Ind. Occ. v. 2. 1093. Ic. Plant. 5. t. 1. (Piper aggregatum; Berg. in Act. Helvet. v. 7. 131. t. 10.)—Received by Bergius from Surinam. Swartz found it in buſhy parts of mountains, on the weſtern ſide of Jamaica, but ſparingly, flowering in ſpring, and ripening fruit in ſummer. This is a *ſhrub*, or ſmall *tree*, with a ſmooth bark. The principal *branches* are round, lax, and ſmooth, with a few alternate zig-zag ſubdiviſions. *Leaves* alternate, ſtalked, two or three inches long, elliptical, pointed, entire, very ſmooth, browniſh-green, with one rib and ſeveral tranſverſe veins. *Stipulas* none. *Catkins* axillary, ſeveral together, ſeſſile, looſely ſpreading, a little curved, about half an inch long, whitiſh, many-flowered, hairy at the baſe. The *flowers* are extremely minute; the *corolla* white. *Berry* black and ſoft, the ſize of a red currant, with a ſweetiſh inſipid taſte. There is ſome difficulty in deſcribing the parts of the flower, eſpecially the inner ſcales, which Swartz incautiouſly named *bracteas*, though ſituated within each proper ſcale of the catkin. *Nematoſpermum* of Richard in the Actes de la Societé d'Hiſt. Nat. de Paris, v. 1. 105, is juſtly indicated as nearly allied in deſcription to this plant, except that it is ſaid to have three ſtigmas (or rather ſtyles), and a capſule with three ſeeds, ſuſpended from its valves by threads. We preſume therefore they cannot be the ſame genus. See NEMATOSPERMUM.

LACK, in *Geography*, a townſhip of America, in Mifflin county, Pennſylvania, containing 1071 inhabitants.

LACK *of Rupees*. See RUPEE.

LACKAH, in *Geography*, a ſmall river of Ireland, in the county of Donegal, which flows into Sheephaven.

LACKANWADDY, a town of Hindooſtan, in the circar of Aurungabad; 45 miles E. of Jaffierabad.

LACKAR, an iſland in the Eaſt Indian ſea, about 30 miles long and ſix broad. S. lat. 8° 18′. E. long. 128° 14′.

LACKARAGO, a town of Africa, in the kingdom of Kaſſon.

LACKARI, a town of Perſia, in the province of Irak; 129 miles W.N.W. of Iſpahan.

LACKER. See LACQUER.

LACKERGAUT, in *Geography*, a town of Thibet; 45 miles S. of Deuprag.

LACKI, a town of Hindooſtan, in Bengal; 56 miles N. of Dacca.

LACKIPOLE, a town of Bengal; 16 miles N.E. of Calcutta.

LACKRICOTTA, a town of Hindooſtan, in the circar of Cicacole; 24 miles S.W. of Vizianagram.—Alſo, a town of Hindooſtan, in Coimbetore; 13 miles S.W. of Coimbetore.

LACKRITAPILLA, a town of Hindooſtan, in the circar of Cuddapa; 20 miles S.W. of Cuddapa.

LACMUS. See LITMUS.

LACOBENA, in *Ancient Geography*, a town of Aſia, ſituated between the mountains N. of Comagene, on a ſmall river, which ran into the Euphrates, S.E. of this town.

LACOBRIGA, a town of Spain, upon the Piſoraca, S. of Juliobriga and N.E. of Pallantia, belonging to the Vaccei.

LACOCK'S BAY, in *Geography*, a bay on the N.E. coaſt of Barbadoes; one mile N.W. of Cuckold's Point.

LACONCAVAN, a town of Upper Siam, on the Mecon; 80 miles S. of Porcelon.

LACONDY ISLES, two ſmall iſlands among the Laccadives, about three miles apart. N. lat. 10° 33′. E. long. 71° 40′.

LACONIA, in *Ancient Geography*, a country afterwards called Sparta and Lacedæmon, was ſituated on the S.E. point of Peloponneſus, and bounded on the N. by Argos and Arcadia, on the W. by Meſſenia, on the E. by the bay of Argos, and by the Mediterranean on the S. On the W. were the mountains named Taygetus, from ſome of the ſummits of which, which are ſaid to have riſen above the clouds, the eye might ſurvey the whole of Peloponneſus. The ſides of theſe mountains were every where covered with woods, which were the aſylum of a great number of goats, bears, wild boars, and ſtags. The extent of Laconia from E. to W. where it reached fartheſt was 1° 45′, but it became narrower towards the north, and its extent from N. to S. was about 50 miles. As the ſouth part of this kingdom was encompaſſed by the ſea, and the eaſt and north-eaſt part by the Argolic bay, it had a great number of promontories, the chief of which were thoſe of Melea and Tanara, now capo Malio and capo Matapan. Theſe two being ſituated on the Mediterranean form the large Laconian gulf, which lies between them, and is now called the Golfo di Colochina, into which the famed river Eurotas, better known by the name of Baſilipotamo, or Royal river, diſcharged its waters with an eaſy and gentle courſe. The ſea-coaſts of Laconia were furniſhed with a conſiderable number of ſea-ports, towns, and commodious harbours, of which the largeſt and moſt convenient were thoſe of Trinaſſus and Acria, ſituated one on each ſide the mouth of the Eurotas, and Gythium, at a ſmall diſtance from Trinaſſus; which laſt is ſaid to have been built by Apollo and Hercules; but the moſt noted was Epidaurus, now Malveſia, ſeated on the gulf of Argos, now Golfo di Napoli, a well-built town, famous for its excellent wine called Malveſy, or Malmeſy, which was produced from grapes that grew round it. There were about 12 more ſea-port towns along the Laconian coaſts; and they were rendered particularly famous on account of a ſhell fiſh caught in the neighbourhood, which yielded a purple dye, inferior to none but that which was brought from the Red ſea. Inland towns likewiſe abounded in this kingdom, the moſt conſiderable of which was the metropolis *Sparta*, which ſee. Other cities of note were Amyclæ, Helve, Thulana, and Leuctrum. The mountains of Laconia were numerous. Its moſt conſiderable rivers, beſides the Eurotas, were the Smenus, the Thiaſus, and the Scyras. The ſoil was very rich, eſpecially in the low and flat grounds, and being well watered, it was excellent for paſture; but the number of its mountains and hills prevented its being ſo well tilled, as it might otherwiſe have been. It was much better ſituated for trade and navigation, by having the ſea round above half the kingdom, and ſo many good havens about it. How well the inhabitants improved theſe advantages, how powerful they became, what fleets they maintained, and brave experienced admirals they bred, may be ſeen in their hiſtory. We ſhall here only obſerve, that the Lacedæmonians were a courageous people, hardy, and inured to war both by ſea and land, averſe from ſloth and luxury, jealous of their honour and liberty, as well as the power of their neighbours; nor were they wanting in any military diſcipline, in order to ſecure the one, and curb the other. By theſe means they became ſo powerful, and made ſo conſiderable a figure in Greece, that the kings of Egypt and Phœnicia did not diſdain to pay a kind of homage to them, and own their ſuperiority by ſolemn embaſſies. See Lacedæmonians.

Laconia, in *Geography*, a tract of land, extending from the river Merrimack to Sagadahock, and from the ocean to the lakes and rivers of Canada, ſo called in the grant of lands, in 1622, from the council of Plymouth to Capt. Maſon, and ſir Ferdinand Gorges. See Iroquois.

LACONIC Style. See Style.

LACONICA Scytala. See Scytala.

LACONISM, Λακωνισμος, a ſhort, pithy, ſententious ſpeech, in the manner of the Lacedæmonians, who were remarkable for the cloſeneſs and conciſeneſs of their way of delivering themſelves.

LACOVIA, in *Geography*, a town of Jamaica; 55 miles W. of Kingſton.

LACQUER, or Lacker, is a varniſh applied upon tin, braſs, and other metals, to preſerve them from tarniſhing, and to improve their colour. The baſis of lacquers is a ſolution of the reſinous ſubſtance called ſeed-lac, or rather ſhell-lac, in ſpirit of wine. This ſpirit ought to be very much dephlegmated in order to diſſolve much of the lac. For this purpoſe, ſome authors direct dry pot-aſh to be thrown into the ſpirit. This alkali attracts the water, with which it forms a liquid that ſubſides diſtinctly from the ſpirit at the bottom of the veſſel. From this liquid the ſpirit may be ſeparated by decantation. By this method the ſpirit is much dephlegmated: but at the ſame time it becomes impregnated with part of the alkali, which depraves its colour, and communicates a property to the lacquer of imbibing moiſture from the air. Theſe inconveniences may be prevented by diſtilling the ſpirit; or, if the artiſt has not an opportunity of performing that proceſs, he may cleanſe the ſpirit in a great meaſure from the alkali, by adding to it ſome calcined alum, the acid of which uniting with the alkali remaining in the ſpirit, forms with it a vitriolated tartar, which, not being ſoluble in ſpirit of wine, falls to the bottom together with the earth of the decompoſed alum. To a pint of the dephlegmated and purified ſpirit, about three ounces of powdered ſhell-lac are to be added; and the mixture to be digeſted during ſome days with a moderate heat. The liquor ought then to be poured off, ſtrained, and cleared by ſettling. This clear liquor is now fit to receive the required colour, from certain reſinous colouring ſubſtances, the principal of which are gamboge and anotto, the former of which gives a yellow, and the latter an orange colour. In order to give a golden colour, two parts of gamboge are added to one of anotto; but theſe colouring ſubſtances may be ſeparately diſſolved in the tincture of lac, and the colour required may be adjuſted by mixing the two ſolutions in different proportions. When ſilver-leaf, or tin, are to be lacquered, a larger quantity of the colouring materials is requiſite than when the lacquer is intended to be laid on braſs.

There are ſundry other materials, from a due mixture of which a like colour may be produced, as turmeric, ſaffron, dragon's blood, &c. See *Gold Coloured* Varnish, and *Japanner's* Gilding.

Inſtead of ſhell-lac, uſed in the compoſition of varniſhes for lacquering, reſin or turpentine is ſubſtituted for the coarſer uſes. The following compoſition for braſs-work, deſigned to reſemble gilding, has been much recommended: take of turmeric ground, as it may be had at the dry-ſalters, one ounce, and of ſaffron and Spaniſh anotto each two drams: put them into a bottle with a pint of highly rectified ſpirit of wine, and place the bottle in a moderate heat, occaſionally ſhaking it, for ſeveral days; then ſtrain off the yellow tincture thus obtained, through a coarſe linen cloth, and putting it back into the bottle, add three ounces of good ſeed-lac groſsly powdered; place the bottle again in a moderate heat and ſhake it, till the ſeed-lac be diſſolved. The lacquer ſtrained as before will be fit for uſe, and muſt be kept in a bottle carefully ſtopped. By increaſing or diminiſhing the proportion of anotto, the lacquer will be rendered warmer and redder, or cooler and nearer a true yellow. A cheaper compoſition little inferior to the former, may be formed of one ounce of turmeric root ground, half a dram of the beſt dragon's blood, and a pint of ſpirit of wine, managed as the former.

The varniſh for tin may be made of one ounce of turmeric-root, two drams of dragon's blood, and one pint of ſpirit of wine, prepared in the ſame manner with the other. The dragon's blood may be increaſed or diminiſhed, as the red or yellow is to be the moſt prevalent; and for a coarſer lacquer the quantity of ſhell-lac may be leſſened, and the deficiency ſupplied by the ſame proportion of reſin. The lacquer for locks, nails, &c. where little or no colour is deſired, may be either ſhell-lac varniſh alone, or with a little dragon's blood; or a compound varniſh of equal parts of ſhell-lac and reſin, with or without the dragon's blood. The manner of laying on the lacquer is as follows: the pieces to be lacquered muſt firſt be made thoroughly clean; and if they be new founded, aquafortis muſt be uſed for this purpoſe. When they are afterwards heated by a ſmall charcoal fire, the lacquer is laid on with a proper bruſh, like other varniſhes, and the pieces reſtored to the heat. After the lacquer is thoroughly dry and firm, the ſame operation muſt be renewed for four or five times, or till the work appears of the required colour and brightneſs.

The lacquering of leather, improperly called gilding, is performed by means of leaf-ſilver, coloured by a yellow varniſh. (See *Japanner's* Gilding.) For this purpoſe calf or goat-ſkins are procured in a dry ſtate, after the common dreſſing and tanning. They are ſoftened by being immerſed and ſtirred about for ſome hours in a tub of water; and afterwards beaten againſt a flat ſtone and ſmoothed, by ſpreading them on the ſtone and rubbing them over with an iron inſtrument: the ſkins, thus prepared, are joined together in pieces of the dimenſions required; and then ſized on the grain of the leather with a kind of ſoft glue, or ſtiff ſize, that anſwers to the gold-ſize uſed in other kinds of gilding or ſilvering, prepared from parchment or glover's cuttings. The workman next proceeds to cover the whole ſurface of the ſized ſkin, before it be quite dry, with leaf ſilver, and with a fox's tail, made into the form of a ball at the end, ſettles the leaves, by preſſing and ſtriking them; and cloſes this operation with gently rubbing the whole ſurface with the tail. When the ſkins are ſilvered, they are hung to dry firſt on cords, and the drying is completed by putting them over a board joined together, with the ſilvered ſide next the boards, where they muſt be kept ſtretched out by means of ſome nails. They are then burniſhed with a flint burniſher, which operation is performed by ſpreading the ſkin even on a ſmooth ſtone, and ſliding the burniſher backwards and forwards over every part of the ſkin, with a conſiderable degree of preſſure. In ſome manufactures the burniſhing is performed, by paſſing the ſilvered ſkins betwixt two cylindrical rollers of ſteel, with poliſhed faces. The ſkins are now prepared for receiving the yellow lacquer or varniſh, which gives the appearance of gilding. Different artiſts have different receipes for compounding this lacquer. The following is ſaid to be equal to any hitherto uſed: take of fine white reſin, 4½ pounds; the ſame quantity of common reſin; of gum ſandarac, 2½ pounds; and of aloes, two pounds: bruiſe and mix them; and put them into an earthen pot over a good fire of charcoal, or over any other fire which has no flame: when all the ingredients are perfectly melted and mixed, add gradually to them ſeven pints of linſeed oil, and ſtir the whole well together with a ſpatula: let the whole boil, ſtirring all the time, to prevent a kind of ſediment, that will form, from ſticking to the bottom of the veſſel. When the varniſh is almoſt ſufficiently boiled, which will generally require ſeven or eight hours, add gradually half an ounce of litharge, or half an ounce of red lead; and when this is diſſolved, paſs the varniſh through a linen cloth, or flannel bag. A pint of oil, and a correſponding proportion of fine reſin and aloes, have produced a very good varniſh in an hour and a half. This lacquer or varniſh is laid on the ſilvered leather in the open air; and is beſt done in ſummer, when it is hot and dry. For this purpoſe, the ſkins are ſtretched and faſtened with nails to the boards, on which the drying was finiſhed, with the ſilvered ſide outwards. And when theſe boards are properly diſpoſed on treſſels, the workman generally ſpreads ſome white of eggs over each ſkin; and when this is dry, the varniſh, which is nearly of the conſiſtence of a thick ſyrup, is repeatedly ſpread with the four fingers of one hand, moved ſo that each finger paints a kind of S with the varniſh, from one end of the ſkin to the other: and it is then diffuſed evenly over every part with the flat of the hand: after this it is to be immediately beaten by ſtrokes of the palms of the hands, and principally where the varniſh is obſerved to lie thickeſt. When this coat of varniſh is ſufficiently dry, which may be known by the fingers making no impreſſion upon it, another coat is laid on in the ſame manner. When this coat is dry, the varniſhing for producing the appearance of gilding is completed; and if it has been well performed, the leather will have a very fine gold colour, with a conſiderable degree of poliſh or brightneſs. When there is an intention to have one part of the leather ſilver, and the other gold, a pattern is formed on the ſurface, by printing, calking or ſtamping, a deſign on the ſurface after the ſilvering. The ſkin is then to be varniſhed, as if the whole were intended to be gold; but after the laſt coat, inſtead of drying the varniſh, it is to be immediately taken off that part, which is intended to be ſilver, according to the deſign printed or calked upon it, by a knife; with which the workman ſcrapes off all that he can without injuring the ſilver, and afterwards by a linen cloth, with which all that remains is to be wiped or rubbed off. The ſkins thus ſilvered and varniſhed, are made the ground of various deſigns for emboſſed work and painting. The emboſſed work or relief is raiſed by means of printing with a rolling preſs, ſuch as is uſed for copper plates; but the deſign is here to be engraved on wood. The painting may be of any kind; but oil is principally uſed, as being durable and more eaſily performed. Doſſie's Handmaid to the Arts, vol. i. p. 454, &c.

LACRIMOSO, *Ital.* a muſical term, ſeldom uſed now, which implies a plaintive movement, in a ſtyle as if *weeping*.

LACRYMA Cervina, in *Natural Hiſtory*, a little round and hard bone, ſaid to grow in the great corner of a ſtag's eye after a certain age. Some alſo preſerve under this name a thickened excretion from the inner angle of that creature's eye, in colour and conſiſtence reſembling myrrh, or ear-wax, long hardened in the ear. This is of a ſtrong and very diſagreeable ſmell, like the ſweat of the ſame animal, and is affirmed to be ſudorific and alexipharmic.

LACRYMÆ Christi, the name of a ſort of wine produced by grapes on the lower part of Mount Veſuvius; ſo called from the drops of juice oozing from the grapes, when fully ripe.

LACRYMAL. See Lachrymal.

LACRYMALIS, in *Anatomy*, an epithet applied to ſeveral parts about the eye. The lacrymal gland is the organ ſecreting the fluid which compoſes the tears: the puncta lacrymalia are the orifices of two ſmall ducts, by which this fluid is abſorbed from the ſurface of the eye; and the lacrymal ſac or bag is the cavity in which the tears ſo abſorbed are received. See Eye.

The os lacrymale is a name applied to the bone in which the lacrymal bag is lodged; it is called alſo os unguis. See Cranium.

The lacrymal nerve is a branch of the ophthalmic or firſt branch of the fifth pair. See Nerve.

LACSUR, in *Geography*, a town of Perſia, in the province of Koraſan; 50 miles N.E. of Herat.

LACTANTIUS, generally called Lucius Cœlius, or Cæcilius Firmianus, in *Biography*, the moſt eloquent of the Latin fathers, flouriſhed towards the cloſe of the third and the beginning of the fourth century. Some have conjectured that he was born at Firmum, now Fermo, in Italy, and hence called Firmianus; but as he was a diſciple of Arnobius, who taught rhetoric at Sicca in Africa, this was probably the country of his nativity. This latter opinion is confirmed by his itinerary from Africa to Nicomedia, which contained, as we may reaſonably imagine, an account of his own journey, when he was ſent for by Diocleſian. Whilſt he was young, he wrote his "Sympoſium," or Banquet, and thus acquired a degree of reputation, which occaſioned his being ſent for to teach rhetoric at Nicomedia, when Diocleſian propoſed to render this city a rival to Rome. Some have ſuppoſed that Lactantius was in his youth a heathen, and converted to the Chriſtian faith; but it is moſt probable, from the arguments alleged by Dr. Lardner, that he was educated in Chriſtian principles, and that he was a

Chriſtian when he taught rhetoric at Nicomedia, at the commencement of Diocleſian's perſecution, though it does not appear how he eſcaped the danger to which his Chriſtian profeſſion muſt have expoſed him, at a time when the church of the Chriſtians in that city was deſtroyed. Nicomedia was at this time chiefly inhabited by Greeks, who had no great taſte for Roman eloquence; and the religious profeſſion of Lactantius, notwithſtanding his learning and talents, rendered him unpopular, ſo that the number of his ſcholars was ſmall, and he was under the neceſſity of writing, in order to procure a ſcanty ſubſiſtence. As he was much addicted to reading, and books in MS. were coſtly, his library muſt have exhauſted his pecuniary ſupplies. Theſe circumſtances will account for the poverty of his condition; without ſuppoſing with Dupin and Tillemont that it was voluntary. His ſituation, however, was improved, when he was invited by the emperor Conſtantine into Gaul, and appointed preceptor to his ſon Criſpus; but when Criſpus was put to death by his father, he loſt the benefit of this office; nor does it appear that Conſtantine made any permanent proviſion for him, which might reaſonably have been expected. It is generally allowed, that, during the greateſt part of his life, Lactantius was in indigent and even deſtitute circumſtances, often wanting neceſſaries. Of other particulars of Lactantius's life, which was prolonged to a very advanced period, no records remain; nor has the time of his death been aſcertained. It does not appear that he ever pleaded as an advocate at the bar. From his works, which are allowed to be authentic, we may collect his ſentiments with regard to ſome of the diſtinguiſhing tenets of theology. Lactantius often ſpeaks of the nature and deſign of the Chriſtian revelation, as ſuited to promote the general good of all, of every age, ſex, and condition; ſo that all may attain to juſt ſentiments of God, and be directed and aſſiſted in the way of holineſs, and obtain everlaſting happineſs. And he aſſerts it to be in the power of the meaneſt and pooreſt of men to attain to righteouſneſs. He ſometimes glories in the great and happy effects of the Chriſtian doctrine upon the minds and lives of men; and he recommends this divine religion, as the medicine of the ſoul, effectual for healing all its diſeaſes. He aſſerts the freedom of man's will, or his power to do good or evil. He openly aſſerts the innocence of Chriſtian people, all whoſe religion, he ſays, conſiſts in good works, or a care to live unblameably and inoffenſively. And the criminals, who fell under the ſentence of the magiſtrate for robbery and other offences, he obſerves, were not Chriſtians, but of the ſame religion with their enemies. He expreſſes himſelf as if in his time Chriſtians performed miracles in diſpoſſeſſing demons. Lactantius was of opinion, that another life, or a future ſtate of happineſs for good men, may be proved by reaſon. He did not deny the eternity of hell torments. With regard to repentance he often aſſerts its great value, and maintains, that whenever ſinners repent, they are pardoned. He alſo thinks, that the divine diſpleaſure againſt men ceaſes immediately upon their repentance and amendment. True virtue alone, as he alleges, recommends man to the divine acceptance; and God deſires nothing of man but ſincere virtue, or true holineſs. As to the ends and views of Chriſt's coming, and particularly of his death, he aſſerts, that Chriſt came to be a teacher and a pattern of virtue; and that he died and roſe again, to aſſiſt men in overcoming death, and give them alſo hopes of riſing again, and obtaining the reward of immortality. Chriſt, he ſays, lived in a mean condition, and underwent the ignominious death of the croſs, that he might be a complete example of virtue, and of patience under ſufferings; and that he might more eſpecially lead and encourage ſuch as are poor and mean in this world. In a word, he ſays, Chriſt came, and was made like unto man, lived, and died, and roſe again, that he might clearly teach the precepts of virtue, and afford the beſt motives to the practice of it, and effectually help frail man to conquer the deſires of the fleſh, and the fears of preſent evil, and to overcome all the temptations of this life, and thus obtain a happy immortality.

Lactantius has ſtrenuouſly aſſerted the right of private judgment for every man in things of religion, and he exhorts all men to the reſolute and diligent exerciſe of it. He alſo argues excellently againſt perſecution; eſteeming it the greateſt abſurdity that can be conceived, for any to impoſe on others a worſhip contrary to their conſcience, or to deny men the liberty to chooſe their own religion; and expreſsly affirming, that it is not zeal for religion, but a love of power. For religion, he ſays, is the freeſt thing in the world; nor can it be promoted by force and violence. Compulſion may make men hypocrites, but it cannot make them religious. He alſo maintains, that it is no juſt reaſon why men ſhould be perſecuted, becauſe they deſert or oppoſe ancient and eſtabliſhed religions. For there can be no proſcription againſt truth; and every man has an unalienable right to ſearch after truth, and to profeſs it, when he has acquired the knowledge of it;—with much more, admirably expreſſed, to the ſame purpoſe. Of the numerous errors, real or imaginary, charged upon Lactantius, we ſhall enumerate the following: the firſt and principal is that of Manichæiſm, from which he is vindicated by Lardner. It is well known, that he denied the exiſtence of Antipodes. He adopted the common notion of the age in which he lived concerning the fall of many of the angels; and he expected a terreſtrial reign of Chriſt for 1000 years before the general judgment, and he thought it to be very near, within a period of 200 years. (See MILLENNIUM.) Lactantius denied the perſonality of the holy ghoſt; nor did he conſider Chriſt's death as a propitiatory ſacrifice for ſin, or a ſatisfaction made to divine juſtice for the ſins of the human race. Theſe opinions, in which he differs from many others, and ſome of which are undoubtedly erroneous, have occaſioned ſeveral reflections upon his judgment and character. Dr. Heumann, in particular, acknowledges that he was pious, learned, and eloquent; though chargeable with ſeveral faults and defects; he was no critic, nor philoſopher, and but a poor divine. Bull ſays, that he had very little knowledge of the Chriſtian doctrine; and Warburton aſſerts, that he knew but little of Chriſtianity.

As a writer, Lactantius has been highly commended. Dupin ſays, that he is juſtly eſteemed the Chriſtian Cicero for his ſtyle, whilſt he greatly ſurpaſſed him in his thoughts. Some authors have not only found a ſtriking reſemblance between the ſtyle of Cicero and that of Lactantius, but have even preferred the latter to the former. Dr. Lardner ſays of him, "that the time in which he lived ſecures him a kind of veneration. He ſaw the quiet and peaceful ſtate of the church before Diocleſian's perſecution; he was alſo witneſs of that dreadful ſcene, and afterwards ſaw the flouriſhing condition of Chriſtians under Conſtantine. His eminent abilities recommended him to the eſteem of two great emperors, of different religions. His uncommon honeſty and ſimplicity, and earneſt zeal for the Chriſtian religion, and all truth in general, appear in his works, where alſo his learning is very conſpicuous." He had, as it ſeems, a certain vehemence and impetuoſity of natural temper not uncommon in Africans, which on ſome occaſions hindered his conſidering and weighing what might be ſaid on both ſides of a queſtion. At the ſame time, poſſibly we are indebted to that fire, which ſupported him in the fatigues of acquiring knowledge, and then communicating it to others. Upon the whole, he was “an honour and ornament to the Chriſtian profeſſion in his day;” for “he employed his fine parts and extenſive learning in the ſervice of religion, without worldly views of any kind.” “A part,” it will be allowed, “of this writer's reputation is owing to the charms and beauties of his ſtyle; but the matter of his works is alſo a juſt recommendation.”

The principal work of Lactantius is intitled “Inſtitutionum, libri vii.” which was occaſioned by the writings of two heathens of note, who publiſhed their pieces againſt the Chriſtians at the beginning of the perſecution under Diocleſian, and was alſo intended as a general anſwer and full confutation of all others, who already had oppoſed, or hereafter might oppoſe, the Chriſtian doctrine. The learned are not agreed about the time when this noble work was written. Dr. Lardner, after having examined different opinions on this ſubject, concludes, that Lactantius formed the deſign of this work in the year 303, that he compoſed the greateſt part of it under the perſecution of Diocleſian, and that, probably, it was not publiſhed till that perſecution terminated. We have alſo an “Epitome” of the Inſtitutions, inſcribed by Lactantius to his brother Pentadius, which is ſuppoſed to have been written not later than the year 311, 312, or 313. This work was imperfect, until a copy of it was found in the library of the king of Sardinia at Turin, by Dr. Chriſtopher Matthew Pfaff, and publiſhed by him intire, or nearly ſo, at Paris in 1712, to the great joy of the learned world. This abridgment is an uſeful book, and contains ſome things not to be found in the Inſtitutions themſelves. His book “De Ira Dei,” *i. e.* of the wrath or anger of God, which is ſtill extant, is particularly commended by Jerom, as a learned and elegant performance, and a complete treatiſe on the ſubject. In this work he endeavours to prove that God is capable of anger, as well as of mercy and compaſſion. In his treatiſe “De opificio Dei,” *i. e.* of the workmanſhip of God, he eſtabliſhes the doctrine of God's providence, by demonſtrating the excellence of man, his principal work, giving an elegant deſcription of the parts of the human body, and the properties and faculties of the ſoul. Of the genuineneſs of another work, uſually aſcribed to Lactantius, and intitled “De Mortibus Perſecutorum,” *i. e.* of the deaths of perſecutors, different opinions have been entertained. Dr. Lardner has referred to the writers who have eſpouſed both ſides of the queſtion; and as for himſelf, he ſeems to incline to the opinion of thoſe who do not allow it to have been written by Lactantius. He allows, however, that it is a very valuable work, containing a ſhort account of the ſufferings of Chriſtians under ſeveral of the Roman emperors, from the death and reſurrection of Chriſt to Diocleſian; and then a particular hiſtory of the perſecution excited by that emperor, with the cauſes and ſprings of it; as well as the miſerable deaths of its chief inſtruments. In this work occur alſo ſeveral remarkable facts, that are recorded no where elſe. This is a work which none of the ancients, after the time of Jerom, have noticed; it was firſt publiſhed by Stephen Baluze in the ſecond volume of his Miſcellanea, in the year 1679. It is needleſs to ſay any thing of the poems de Phœnice, de Paſche, de Paſſione Domini, which ſome have aſcribed to Lactantius, and which are joined to his works in moſt editions. They are not mentioned by Jerom, and are now generally ſuppoſed not to belong to this author. The “Itinerary” and “Grammaticus,” mentioned by Jerom, are irrecoverably loſt. A work, nuder the title of the “Sympoſium,” or Banquet, long ſuppoſed to have been loſt, was not long ago publiſhed by Dr. Heumann, who aſſerts its genuineneſs. It is a collection of 100 triſtich epigrams, with a prologue. All our author's books of Epiſtles are entirely loſt. The editions of Lactantius are very numerous. Fabricius has given a full and copious catalogue of them. The firſt edition was publiſhed at Rome, in 1468, fol. by Conrad Lewenheim; and the laſt, which is the moſt correct, was edited at Paris in 1748, in two vols. 4to, by the Abbé Lenglet.

Lactantius has, in his various works, references to the goſpels, the Acts of the Apoſtles, and ſome of the epiſtles, and to the book of the Revelation, which he expreſsly quotes as ſacred ſcripture, and written by John. It appears alſo, that he had a collection of ſcriptures, conſiſting of the Old and New Teſtament; which he eſteemed ſacred and divine, and of the higheſt authority. His quotations of Sibylline books, and other writings, aſcribed to heathen vates or diviners, ſuch as Hydaſpes, and Hermes Triſmegiſtus, were intended to ſerve the cauſe of Chriſtianity; but he did not reckon them a part of thoſe books which were of authority with Chriſtians. Nor does it appear, that he placed the preaching of Peter and Paul in the rank of ſacred ſcripture, though he has once quoted it. Fabr. Bibl. Eccl. ſub Hieron. cap. lxxx. Cave's H. L. vol. ſub ſæc. Arian. Dupin. Lardner's Works. vol. iv.

LACTARY, in *Rural Economy*, a term frequently applied to a milk-houſe, or place where milk is kept.

Lactary *Column*. See Column.

LACTATION, the act of giving ſuck.

The word is alſo applied to the time during which the mother doth that office to her young.

LACTEA Vasa, or *Lacteals*, in *Anatomy*, are thoſe abſorbing veſſels which take up the chyle, or the nutritive matter furniſhed by the food, from the ſurface of the inteſtines. As this fluid is of a white colour, the veſſels, when filled with it, appear quite white, and hence their name. They may be ſeen in vaſt abundance in an animal killed a few hours after a meal. See Absorbents.

Lactea *Via*, the milky way. See Galaxy.

Lacteal *Fevers*, a term uſed by *Medical Writers*, to expreſs what the women call *milk fevers*, that is, ſuch fevers as attend the difficult ingreſs of milk to the breaſt of lying-in women. See Labour.

Lacteals *of Birds*. See *Anatomy of* Birds.

LACTEUS Lapis, in *Natural Hiſtory*, a name given by ſome authors to the galactites.

LACTIFERI Ductus, in *Anatomy*, the tubes of the mammary gland, in which the milk is ſecreted. See Breast.

LACTIFEROUS, an epithet applied to ſuch plants as abound with a milk-like juice, ſuch as the tithymal, ſow-thiſtle, and many others.

LACTOMETER, in *Rural Economy*, the name of an inſtrument for the purpoſe of aſcertaining the different qualities of milk. It was invented by Mr. Dicas, mathematical inſtrument maker, in Liverpool; and the following deſcription of it is given in the Survey of the County of Lancaſter. This lactometer is contrived ſo as to aſcertain the richneſs of milk from its ſpecific gravity, compared with water, by its degree of warmth taken by a ſtandard thermometer, on comparing its ſpecific quality with its warmth, on a ſcale conſtructed for this particular purpoſe, and by which, if the principle be right, may be diſcovered not only the qualities of the milk of different cows, paſtures, food, as turnips, potatoes, grains, &c. but alſo probably, which may be the beſt milk or beſt paſtures for butter, and which for cheeſe. This inſtrument, however, is but in its infancy. At his own houſe, the writer has made a number of varied experiments upon different milks from different farms.

It is ſtated to be conſtructed with ten diviſions upon the ſtem, ſimilar to the patent brewing hydrometer, and with eight weights, which are to be applied only one at a time upon the top, to obtain the weight of milk; an ivory ſliding-rule accompanies the inſtrument, upon the middle or ſliding part of which is laid down the lactometer weight of the milk, going from 0 to 80; and oppoſite thereto are placed the various ſtrengths of the milk, from water to 160; 100 having previouſly been fixed upon, from a number of experiments, as the ſtandard of good new-milk, and each of the other numbers bearing a proportionate reference thereto. At one end of the ſliding-rule the degrees of heat, from 40 to 100, are placed with a ſtar oppoſite, as an index to fix the ſlide to the temperature of the milk; the whole being graduated to ſhew the exact ſtrength of the milk, as it would appear in the temperature of 55 degrees of heat, although tried in any inferior or ſuperior temperature between 40° and 100°: thus the great inconvenience which would attend bringing the milk at all times to one temperature is avoided, and a ſimple mechanical method of allowing for the contraction and expanſion ſubſtituted. And as ſkimmed milk, being diveſted of the particles of butter which exiſted before ſkimming, appears to have a leſs degree of affinity with that than the new milk has, one ſide of the ivory ſliding-rule is adapted to ſkimmed, and the other to new. This ſimple contrivance is repreſented in the annexed plate.

General Rule.—Firſt, find the temperature of the milk with the thermometer, and fix the ſliding-rule ſo that the ſtar ſhall be facing the degree of heat the mercury riſes or falls to; then put in the lactometer, and try which of the weights, applied to the top, will ſink it to ſome one diviſion upon the ſtem; add the number of the weight upon the top and that of the diviſion together, and oppoſite the ſame, formed upon the ſide, will be ſhewn the ſtrength of the milk.

Examples of New milk.—If in the temperature of 72°, the lactometer with the weight 40 ſinks to 9 upon the ſtem, fix the ſlide ſo that the ſtar ſhall be facing 72°; then oppoſite 49 will be found 100, the ſtrength of the milk. Again, if in 60°, the lactometer with 50 on the top ſinks to 6 upon the ſtem, the ſlide being fixed for new-milk, ſo that the ſtar ſhall be at 60 of heat, then facing 56 will be found 110, the ſtrength of this milk in proportion towards the other, provided it is equally replete with cream. To diſcover which, it becomes requiſite theſe two ſamples ſhould ſtand a certain time, that the cream may riſe, which being taken off, they are to be tried with the lactometer again; and as the cream is evidently the lighter part, the milk will appear by the lactometer denſer or better in quality than before. Suppoſe the milk in the firſt example to be 57 by the lactometer in 60 degrees of heat, then the ſtrength by the ſkimmed milk ſide of the rule will be 112. And admit the ſecond example of new-milk to be 58 in 64° when ſkimmed, the ſtrength would be 116.

As a compariſon ſay,

No. 1.	New-milk	-	100
	Ditto ſkimmed	-	112
		Difference	12
No. 2.	New-milk	-	110
	When ſkimmed	-	116
		Difference	6

From which it appears, that No. 1. has produced a larger quantity of cream than No. 2, and conſequently may be deemed the better milk. Some inſtances have occurred where the ſtrength of new-milk has only been about 80, and when ſkimmed near 100. Thus it may, without the leaſt impropriety, be called a milk much better adapted for making butter than cheeſe; the ſerum or whey in general being near the ſame denſity.

The inſtances in which the lactometer may be uſeful, are, according to the ſame writer, in diſcovering what breeds of cattle are moſt advantageous; what food in the winter ſeaſon, whether carrots, turnips, potatoes, &c. are beſt; what the effects of different paſtures may be; how far particular farms are beſt adapted to making butter and cheeſe; how far the inconvenience of large cheeſes in ſome dairies being too rich to ſtand may be prevented, by diſcovering when this redundancy of richneſs exiſts in the milk; and in fixing a ſtandard for the ſale of this uſeful article of life.

A ſtandard for ſkimmed milk may readily be fixed, by ſaying what ſtrength the common ſaleable ſkimmed milk ſhall be by the lactometer, or what its ſpecific gravity ſhall be in relation to that of water in the temperate degree of heat, and that an eaſy compariſon may be made between the ſpecific gravity of any milk, and its lactometer ſtrength; this inſtrument is ſo conſtructed, that one of ſpecific gravity ſhall exactly correſpond with three of ſtrength; that is, the ſtrength of 90 by the lactometer is a milk whoſe ſpecific gravity is 1030, to common pump water 1000. From a number of experiments and obſervations, it is obſerved, that the common ſaleable ſkimmed milk in Liverpool is from 52 to 64 of ſtrength, and that of new-milk from 70 to 80; but it would be difficult to fix any ſtandard for the latter, unleſs ſome mode could be deviſed to diſcover whether it was mixed with old milk or not. The only method would be, after fixing the ſtrength of it, to try, by letting it ſtand, to diſcover if it produced that quantity of cream, which as new-milk it might reaſonably be expected to do.

This ingenious contrivance is made uſe of in the Liverpool workhouſe, with great ſucceſs in aſcertaining the goodneſs of the milk which is there employed.

LACTUCA, in *Botany*, ſo called by the Latins, from *lac*, milk, becauſe of its milky juice; the Lettuce.—Linn. Gen. 400. Schreb. 528. Willd. Sp. Pl. v. 3. 1523. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 3. 117. Sm. Fl. Brit. 819. Juſſ. 169. Tourn. t. 267. Lamarck. Illuſtr. t. 649. Gærtn. t. 158.—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ Semifloſculoſæ*, Linn. *Cichoraceæ*, Juſſ.

Gen. Ch. *Common Calyx* imbricated, nearly cylindrical, of numerous pointed ſcales, with membranous edges. *Cor.* compound, imbricated, uniform; the florets hermaphrodite, numerous, equal, each of one petal, ligulate, abrupt, with four or five teeth. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen nearly ovate; ſtyle thread-ſhaped, as long as the ſtamens; ſtigmas two, reflexed. *Peric.* none, except the permanent cloſed calyx, become rather ovate at the baſe. *Seeds* ſolitary, obovate, pointed, ſtriated, compreſſed; down capillary, ſupported by a long ſtalk tapering at its baſe. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Calyx imbricated, cylindrical,

cal, with pointed, membranous-bordered ſcales. Seeds compreſſed, ſtriated. Down ſimple, ſtalked.

This genus is moſt naturally allied to *Sonchus*, the Sow-thiſtle, in habit and qualities. as well as fructification, the ſtalked ſeed-down, and much more ſlender and cylindrical calyx, conſtituting its chief marks of diſtinction. The 14th edition of *Syſt. Veg.* enumerates ten ſpecies; Willdenow has 21. Three of them are natives of Britain, occurring chiefly in warm dry ſpots, where the ſoil is calcareous. Theſe are *L. viroſa*, Engl. Bot. t. 1957. Woodv. Med. Bot. Suppl. t. 250, celebrated for its opium-like ſcent and ſoporiferous quality: *L. Scariola*, Engl. Bot. t. 268, a more ſlender and leſs active plant, diſtinguiſhed by the vertical poſture of its leaves, of much more rare occurrence, being ſcarcely found wild except in the iſle of Ely: and *L. ſaligna*, Engl. Bot. t. 707. Jacq Auſtr. t. 250, the moſt ſlender of all, which ever ſince the time of Ray has been ſtationary about Pancras, and near the Small-pox Hoſpital. Theſe are all biennial plants, three or four feet high, more or leſs glaucous, with ſmall ſulphur-coloured flowers, which expand only in bright ſunny mornings. The Rev. Mr R. B. Francis found the laſt-mentioned at South-end, Eſſex, but it is among the moſt uncommon of Engliſh plants.

Of the foreign ſpecies, *L. ſativa*, Linn. Sp. Pl. 1118. Ger. em. 306, is well known as the Garden Lettuce, rendered luxuriant, mild, and wholeſome by culture; for though we know it not in an actually wild ſtate, ſome idea of its nature may be diſcovered by allowing it to ſow itſelf ſpontaneouſly for two or three generations, the produce of which will be found much more bitter and acrid, as well as far leſs luxuriant, than the cultivated plants. Of this ſpecies the *L. criſpa*, Willd. n. 2. Ger. em. 306. Dod. Pempt. 644, appears to be a variety, as it has always been thought, till Roth diſtinguiſhed it. Such is the caſe with *L. palmata* of Willdenow, who quotes for this the *L. criſpa non capitata*, Lob. Ic. 242, which is the very identical wooden cut he had juſt before cited from Dodonæus for the preceding.

L. *quercina*, Linn. Sp. Pl. 1118, has always been a very obſcure plant, ſcarcely known but in the Linnæan herbarium. The ſynonym of Ray is, at beſt, doubtful, and the figure given by ſir John Hill, in his cumbrous Vegetable Syſtem, is altogether a deception, drawn from deſcription or imagination. What the German writers intend under this name, we have no information. The following is a tranſlation of Linnæus's account of the *L. quercina*, from his Swediſh Travels to Oeland and Gothland.—" *Lactuca* with leaves ſinuated in a pinnate form, finely toothed, acute, without prickles at the back, and a ſmooth ſtem. Fl. Suec. ed. 1. n. 646. Found on the ſouth ſide of the leſſer iſle of Carlſoen, towards the eaſt. I never had an opportunity of ſeeing this plant before; and Ray is the only author whoſe deſcription is ſufficiently clear to prove, beyond a doubt, that the *Lactuca foliis quernis*, of his Hiſt. Plant. v. 1. 219, is a ſimilar plant. The *root* of our's is fleſhy and obtuſe *Stem* a cubit high, erect, round, ſmooth, ſimple. *Cluſter* of flowers terminal, cloſe, narrow and long. *Leaves* like *Sonchus oleraceus*, but having ſharper teeth, as if bitten or jagged. *Calyx* nearly cylindrical, ſcaly, ſmooth, with ſcattered ruſty ſpots; the ſcales erect, furniſhed at the back with an additional ſpreading ſcale."

L. *canadenſis*, Linn. Sp. Pl. 1119, is rightly removed to *Sonchus* by Willdenow, under the name of *pallidus*. The ſame author, on the contrary, removes the Linnæan *Sonchus tuberoſus* to *Lactuca*, calling it *ſonchifolia*, and he appears to be right in this inſtance alſo, the ſeed-down being ſupported by a conſiderable ſtalk.

L. *perennis*, Linn. Sp. Pl. 1120. (Chondrilla cærulea; Ger. em. 286.), is one of the more handſome ſpecies of this genus, on account of its elegantly pinnatifid *leaves*, and large blue *flowers*. It grows in the warmer parts of Germany, Switzerland, and France, and is perennial.

A typographical error in our account of *Hieracium*, column 3, line 6 from the bottom, demands correction. The comma after *remarks*, and the word *theſe*, both require to be expunged.

Lactuca, in *Gardening*, comprehends a plant of the herbaceous annual kind, of which the ſpecies uſually cultivated in the garden, is the common garden lettuce, L. ſativa, which has ſeveral varieties: the principal of which are;—of the cabbage-lettuce kind, the hardy green, white honey, great admirable white, brown Dutch, ſmall early, white ball, green ball;—and of the coſs-lettuce kind, the green coſs, white coſs, Egyptian coſs. ſpotted coſs, black coſs, brown Cilicia, green Cilicia, red Capuchin, green Capuchin, large imperial, the Roman, the prince; but the three or four firſt of the different ſorts are the moſt valuable, and it is of much conſequence to have the beſt kinds employed in cultivation.

Method of Culture.—This ſpecies, and all the varieties, are raiſed by ſowing the ſeed annually, at different times, as in February and the three following months, for the ſummer ſupply of plants; and in Auguſt and the following month, for the autumn, winter, and very early ſpring ſupplies. And all theſe different ſowings ſhould be performed upon beds of fine light dry earth, in an open ſituation, and expoſed to the ſun. Some of the late ſowings may be made under hand-glaſſes, or in frames or boxes, in order to have the young plants protected from the froſts. Each of the varieties or ſorts ſhould be ſown ſeparately, and diſtinct from the others, and be ſlightly raked into the ſoil.

It is ſometimes the practice to ſow them among other low growing crops, ſuch as radiſhes, ſpinach, onions, &c. to ſave ground; but this ſhould always be avoided as much as poſſible, as a very ſmall portion of land is ſufficient for raiſing large ſupplies of plants.

For the very early ſpring uſe, as open lettuces, the early white cabbage ſorts are the moſt proper; but for the main crops, to remain for full growth, the principal ſorts of the coſs and cabbage kind muſt be employed.

When the plants appear, they muſt be kept perfectly free from weeds, and properly thinned out. As they attain a proper growth, as three or four inches in height, ſome of the different ſorts muſt be planted out into beds in the open ground, drawing them up carefully, and planting them immediately. This work ſhould be performed by a line and ſmall dibble, in rows, a foot or more diſtant, with the ſame ſpace from plant to plant. The quincunx mode is moſtly adopted, which affords the moſt room, and at the ſame time has the neateſt appearance. As ſoon as the planting is finiſhed, the whole ſhould be well watered; and when the weather is dry, repeated once or twice.

By thus planting out the ſeveral ſorts at different times, at the diſtance of three weeks or a month, from the early ſpring till the latter end of the autumn, due ſucceſſions of good lettuces may be provided. In the ſummer plantings out, when the weather proves very dry, it is ſometimes the practice to plant them in ſmall drills, in order to preſerve the moiſture more effectually.

After the beds of the different principal ſowings have been conſiderably thinned by the ſeveral tranſplantations that have been made from them, the plants that remain may be ſet out to proper diſtances by the hoe, and left to take their full growth.

As ſoon as the plants of the main ſpring and ſummer crops have attained a pretty full growth, eſpecially thoſe of the coſs kinds, it is neceſſary to tie the leaves of them up with baſs pretty cloſe, when the plants are quite dry, in order to blanch the inner parts, and render them perfectly criſp, ſweet, and tender.

Mode of Culture in the Winter and very early Spring Crops.—For this purpoſe, ſome ſeed of the hardy green and white cabbage ſorts, and the brown Dutch, and white and green coſs kinds ſhould be ſown about the middle of Auguſt, and beginning of September, in open ſituations, when the plants will come up in a week or ten days, and about the end of September; and in October, a parcel of the beſt plants of each ſowing ſhould be planted out in a warm dry ſituation, five or ſix inches aſunder; and at the latter period ſome in ſhallow frames, to be covered with glaſſes on cold nights, and in bad weather; or under hand-glaſſes, or in a bed arched over with hoops or rods, to be covered with mats in winter froſts. Under either of the above ſhelters the plants ſhould have the free air in the day time in mild dry weather, covering them in cold nights with proper covers, eſpecially after this month; alſo, in all very cold, and in very wet weather, day or night, particularly thoſe in the frames and under glaſſes; and thoſe in hand-glaſſes may have the glaſſes almoſt conſtantly over them in winter, tilting up one ſide in mild weather, only ſetting them entirely off in fine mild or dry days; but in ſharp froſty weather keeping thoſe under every kind of ſhelter quite cloſe; allowing alſo additional covering of mats or litter, when the froſt is very intenſe. Thoſe in the borders may be defended by ſome light litter; but the covering ſhould never be ſuffered to remain longer on any of the crops than the bad weather continues, the free air being admitted every mild day.

In this method lettuces may be had the greateſt part of the winter and early in the ſpring, particularly the cabbage ſorts: thoſe planted out firſt will be fit for uſe in November and December, and the ſecond plantings come in towards Chriſtmas, and being ſheltered by the glaſſes, continue coming in for uſe till ſucceeded by the other latter autumn ſowings; being careful that, as any are gathered out of the frames or glaſſes, others be removed from the borders to fill up the vacancies, whereby the glaſſes may be conſtantly ſupplied during the winter ſeaſon.

It is ſometimes the practice where lettuces are intended to be planted in frames late in autumn, for winter uſe, to have a moderate hot-bed made for their reception, in order that they may be well forwarded in the beginning of winter; and if the heat is continued moderately by aid of linings, allowing plenty of air in mild weather, the plants may be very fine by Chriſtmas, or a little after.

Mode of Culture in the Winter ſtanding Spring Crops.—In order to have good lettuces for ſpring uſe, ſome ſeed ſhould be ſown toward the middle and latter end of Auguſt, for the plants to ſtand the winter, ſome where ſown, others tranſplanted into warm borders, to ſtand without any other ſhelter than that of the walls or other fences; and another ſowing ſhould be performed about the middle of September, to provide plants for pricking out under frames, to have the ſhelter of the glaſſes all winter, as a reſerve in caſe thoſe in the borders are deſtroyed; where both ſtand, one may ſucceed the other as crops. In the firſt caſe a quantity of the beſt plants, when two or three inches high, ſhould be planted out towards the latter end of October, into a ſouth border, under a wall, &c. and in ſome other warm dry ſituation, in rows ſix inches aſunder, and four inches in the rows; or ſome cloſe under a ſouth wall, or other fence, in a foot wide ſpace all the way along, pricking them therein four or ſix inches diſtant; as they will have a better chance of ſtanding the winter than thoſe ſituated more diſtant from the ſhelter of the wall. In each method the plants are to remain to take their chance all winter: out of the whole many of them will probably eſcape the froſt; but in very ſevere weather they may be protected by a light covering of dry long litter, which ſhould be removed again in due time when the froſt breaks. In March or April, if they remain too thick, ſome ſhould be thinned out and planted in another place, in rows twelve or fifteen inches aſunder; the crops thus wintered in the open ground, come in for uſe in April and May, to ſucceed thoſe ſown in autumn, and ſheltered occaſionally all winter, and will remain good till the ſpring-ſown plants are ready for uſe.

But in the latter caſe, or thoſe ſown in September, to be wintered in frames, they ſhould be planted about the latter end of October, or the beginning of the following month, in rows, from the back to the front of the frame, three inches diſtant, cloſing the earth well about each plant, finiſhing with a moderate watering all over the plants, and putting on the glaſſes to promote their more ſpeedy rooting afreſh, puſhing the lights, however, two or three inches down, to give vent to the moiſt vapour ariſing from the mould. But when the plants have taken freſh root, and are ſet to growing, the full air ſhould be admitted every mild dry day, by taking the glaſſes entirely off, which muſt be continued throughout the winter ſeaſon, in all dry mild weather, but putting them on every night in cold or very wet weather; alſo in the day-time when great rains prevail; and in froſty weather keeping the glaſſes always on, except in the middle of ſunny days, and when the froſt is but ſlight; uſing alſo other coverings of mats or long litter over the glaſſes, and around the ſides of the frame, when the froſts are very ſevere; during the winter keeping all decayed leaves clean picked off; and as the ſpring and warm weather advance, letting them have the benefit of warm ſhowers. In this way they may be effectually preſerved, if thoſe in the open ground ſhould be deſtroyed by the froſt or exceſſive moiſture. About March ſome of them ſhould be tranſplanted into a warm ſituation in the open ground, in rows, a foot aſunder, watering them moderately till freſh rooted; leaving a crop remaining in the frames or winter-bed, a foot apart, to ſtand to cabbage; which will arrive to perfection a conſiderable time before the tranſplanted ones, and thoſe that have been fully expoſed all winter, are ready. Where frames cannot be ſpared, a quantity of the plants may be pricked out under hand or bell-glaſſes in autumn, to ſtand the winter, either by themſelves for a full crop, or ſome under the hand or bell-glaſſes that are placed over early cauliflowers, as practiſed by the London gardeners, planting them round juſt within the glaſſes, and managing them as directed for thoſe in the frames; or for want either of a ſufficiency of frames or hand-glaſſes, a quantity may be planted out in October, in four-feet wide beds, in a warm ſituation, arched over with hoops or rods, to cover with mats and litter in bad weather. In this way they have a better chance of ſurviving the winter than thoſe fully expoſed; and in ſpring tranſplanting a quantity, by way of thinning, into other beds, as directed already.

Manner of ſaving Seed.—With this intention ſome of the beſt cabbaged early plants of all the ſorts ſhould be choſen, as thoſe of the latter crops rarely run ſoon enough to ripen ſeeds perfectly before they are attacked by the autumnal rains and cold, which greatly retard the ripening of the ſeed. And it is of much importance to have the different varieties intended for ſeed at ſome diſtance from each other, as, when too near together, the farina of the different ſorts may mix and fecundate one another, and thereby degenerate plants be produced, inſtead of ſuch as are perfect in their nature.

The ſeed uſually ripens in Auguſt and September, but that of different plants rarely equally together; ſo that, as it arrives to perfection, the reſpective ſtems, &c. of ripe ſeed ſhould be pulled up or cut off in dry days, and ſpread upon a cloth, or tied in ſmall bunches acroſs lines in a dry airy place for a week or two, for the ſeeds to harden and become dry; then beaten or rubbed out, and cleaned from the down and other rubbiſh, and expoſed upon cloths a few days to dry for keeping; being afterwards put up in bags for uſe, and hung in a dry room or other place.

In general theſe plants may be conſidered as annuals and biennials; as thoſe ſown in ſpring and ſummer attain perfection, run up to ſeed, and periſh the ſame year; while the autumn ſowings ſtand all winter until the ſpring following, when they attain perfection, ſhoot up to ſeed, and periſh root and branch. All the ſorts are ſufficiently hardy to grow in any good dry common ſoil, in a free ſituation open to the ſun and air.

In regard to the uſe of theſe plants it is principally in ſallads, when arrived at full growth and cabbaged, that the inner leaves become blanched, criſp, and ſweet; and ſometimes, alſo, the young open plants of the cabbage-lettuce ſorts are uſed in winter and ſpring, till the other general crops arrive at perfection. Young open lettuces are alſo often uſed as ſmall ſallad herbs, ſowing them thick in rows, like creſſes, &c. and gathering them in the ſame manner; but this mode is more particularly practiſed in winter and early ſpring. They, however, in general, do not eat any way ſo criſp, ſweet, and palatable, as when fully cabbaged. The fully cabbaged-lettuces are alſo excellent for ſtewing and for ſoups, as well as many other culinary uſes.

Lactuoa *Marina*, *ſea-lettuce*, in *Botany*, a name uſed by ſome authors for the *lichen marinus*, commonly called *oiſter-green.*

Lactuca *Viroſa*, in the *Materia Medica*, a ſpecies of lactuca, which grows about ditches, banks, borders of fields, and old walls, flowering in July and Auguſt. The plant has a ſtrong ungrateful ſmell, reſembling that of opium, and a bitteriſh acrid taſte. It abounds with a milk juice, in which its ſenſible qualities ſeem to reſide, and which ſeems to have been noticed by Dioſcorides, who repreſents its odour and taſte as agreeing with that of the white poppy: and Haller ſays, that its effects are powerfully narcotic. Dr. Collin, at Vienna, firſt brought this plant into medical repute, and it has been lately inſerted by the College of Phyſicians at Edinburgh in the catalogue of the Materia Medica. Dr. Collin mentions more than twenty-four caſes of dropſy that have been treated with ſucceſs by employing an extract prepared from the expreſſed juice of this plant, which is ſtated to be, not only powerfully diuretic, but to promote all the ſecretions, and to remove viſceral obſtructions. In the more ſimple caſes, proceeding from debility, doſes of the extract, from eighteen to thirty grains a day, proved ſufficient to accompliſh a cure; but as the diſeaſe was inveterate, and accompanied with viſceral obſtructions, the quantity of extract was increaſed to three drams; nor did larger doſes produce any bad effect beſides exciting a nauſea. The patients, it is ſaid, continued ſo ſtrong under the uſe of this remedy, that it was ſeldom neceſſary to employ any tonic medicines. In Germany, few phyſicians have, ſince the year 1771, when Dr. Collin made his experiments with the lactuca, adopted the uſe of this plant: and hence Dr. Woodville (Med. Bot.) takes occaſion to obſerve, that the recommendation of Dr. Collin will be ſcarcely thought ſufficient to eſtabliſh its uſe in England.

LACTUMEN, from *lac*, milk, in *Surgery*, a name ſometimes given to tinea capitis, or the ſcald head, on account of the white ſcabs which are formed in this diſeaſe.

LACTUMINA, from *lac*, milk, little ulcers, or cruſty ſcabs in the ſkin, chiefly occurring in children at the breaſt.

LACUNA, Andrew, in *Biography*, an eminent Spaniſh phyſician, was born at Segovia, in Old Caſtile, in the year 1499. He ſtudied philoſophy at Salamanca, and afterwards went to Paris, partly for the purpoſe of improving his knowledge of the Greek language, and partly for the ſtudy of medicine. He took a degree in that capital, but probably only that of maſter of arts. In 1536, he returned to Spain, and followed the courſes eſtabliſhed in the colleges of Alcala, Henarez, and Toledo, in the latter of which he received the honours of the doctorate. After this he immediately repaired to the Low Countries, in conſequence of a command from the emperor Charles V. and he paſſed the greater part of his life at the court of that monarch. In 1540, he went to the imperial city of Metz, and reſided there five or ſix years, rendering great ſervices to the citizens during the prevalence of an epidemic peſtilence: and by his influence, thus acquired, he contributed to ſtrengthen their adherence to the church of Rome and to the emperor. He viſited Italy, Germany, and France again, where he received many honours from the learned corporations, and at Rome was created count palatine, and knight of the order of St. Peter. He died in his native country in the beginning of the year 1560.

He proved himſelf a learned critic by the corrections and commentaries on the works of Dioſcorides, and on many parts of thoſe of Hippocrates, Ariſtotle, Galen, &c. His own works are numerous, conſiſting of a treatiſe on anatomy; an account of the epidemic at Metz; a life of Galen, an epitome of his works, and notes on the labours of his tranſlators, &c. He likewiſe publiſhed a treatiſe on gout, on excreſcences in the neck of the bladder, and on diet, and an epiſtle to Cornaro; and he tranſlated the works of Dioſcorides into Spaniſh. Eloy. Dict. Hiſt. de Med.

LACUNÆ, in *Anatomy*, ſmall cavities in ſome of the mucous membranes, in which a ſecretion of mucus is carried on: as in the urethra of the male and female. See a deſcription of them in thoſe organs under Generation.

LACUNARS, in *Architecture*, are the pannels or coffers formed on the ceilings of apartments, and ſometimes on the ſoffits of the corona of the Ionic, Corinthian, and Compoſite orders.

In the temple of Minerva at Athens, the lacunars are placed immediately above the frieze within the portico, and formed with a ſingle receſs, having an ovolo at the top, which moulding terminates the vertical plane ſides, and the horizontal heads of the lacunars. The lacunars are not ſquare, but longer in the longitudinal than in the tranſverſe direction of the building.

In the temple of Theſeus at Athens, the lacunars are formed above the frieze, in two rows, between large beams which reach from the rear to the front of the pronaos: their figures are of a ſquare horizontal ſection, and have only a ſingle receſs upwards, with an ovolo above the receſs. The ſide of the ſquare of each coffer is about one-fifth part of the diameter of the column, and their receſs upwards half the ſide of their ſquare. The diſtance between the beams is equal to the breadth of the antæ at the bottom, or nearly equal to the diameter of the columns. The beams are not regulated by the columns, but placed at equidiſtant intervals, to receive the two rows of lacunars or coffers. Within the temple or cella, the beams reach tranſverſely from ſide to ſide; but without, and under the ſoffit of the pronaos, they extend longitudinally from the front to the rear of the pronaos, and the lacunars in the ſame direction.

Temple of Minerva at Athens, *Plates* IV., VII.—The lacunars are placed above a frieze highly decorated with hiſtorical figures.

In this they are formed in one receſs, with a moulding ovolo at the top of the receſs, or the fartheſt extremity of the ſides. The lacunars are not ſquare, but longer from front to rear of the portico, than in the tranſverſe direction of the building. Chap. ii. *Plate* XVIII.

In the ſoffit of the temple of Pandroſus at Athens, the lacunars are formed immediately above the architrave, each into three receſſes, with an ovolo at the bottom of each, nearly as broad as the perpendicular ſurface. The whole depth of the receſs is nearly half the ſide of the ſquare of the lower part of the ſaid receſs. Each part diminiſhes gradually in breadth in a ſloping ſtraight line, till the ſide of the ſquare of the upper part is ſo contracted as to be only half that of the lower. Each ſucceeding third part diminiſhes regularly in altitude, ſo that accounting the bottom the firſt, the altitude of the ſecond, or the one next above, is ſomething leſs, and the third about the ſame quantity leſs than the ſecond. Each ovolo is ſomething leſs in height than the vertical ſurface below it, and has the ſame ratio to its reſpective ſurface.

The cella of the temple of Veſta at Rome is ſurrounded with a circular colonnade. The ceiling of the portico has a double row of lacunars, being two in the breadth of the portico. The lacunars approach as nearly to a ſquare as is conſiſtent with their diminution, formed by radiations towards the centre of the building, and are conſtructed in two receſſes. The greateſt breadth of the outſide lacunar is about nine thirteenths of the diameter of the columns. The whole depth of the receſs upwards is about one-ſeventh of a diameter. The radiating ſides of the lacunars or coffers are in vertical planes, and the other two ſides of each are vertical cylindric concentric ſurfaces. The greateſt breadth of the upper receſs is about two-thirds of the lower. The hollow of this receſs is occupied by a roſe of a circular form. The receſs or cradle vaults of the temple of Peace at Rome are arched and enriched with octagonal lacunars, each formed in three receſſes, which diminiſh in their margins as they recede upwards Between the octagonal lacunars are others of a ſquare form in a diagonal poſition. The ceiling of the middle of the chapel of the ſaid temple is comparted with hexagonal and rhomboidal lacunars.

The lacunars of the arch of Titus at Rome are each ſquare, the ſide of which being about three quarters of the diameter of the column.

The entablatures of the Ionic, Corinthian, and Compoſite orders, are generally enriched with lacunars between the modillions

LACYDES, in *Biography*, a Greek philoſopher, and native of Cyrene, was a diſciple of Arceſilaus, whom he ſucceeded in the academic chair He was brought up in very humble circumſtances, but acquired great reputation by intenſe application to his ſtudies, and a graceful elocution. He was highly eſteemed by king Attalus, who gave him a garden where he might devote himſelf to ſtudy, and to the inſtruction of others: this was afterwards known by the name of the Lacydean garden. Attalus wiſhed Lacydes to come and reſide at his court, to which he reſpectfully replied, that the portraits of kings ſhould be viewed at a diſtance. He taught his diſciples never to be haſty in their judgments, and never to ſpeak poſitively. Having taught philoſophy twenty-ſix years, he reſigned the employment to his ſcholars Telecles and Evander, in the ſecond year of the 141ſt Olympiad. In old age he diſgraced himſelf by giving a favourite gooſe a moſt magnificent funeral, and he fell a victim to exceſſive drinking. Bayle. Enfield.

LAD, in *Geography*, a town of Moldavia, on the Reut; 36 miles E.N.E. of Stephanowze.

LADA, in *Botany*, a name given by ſome authors to the plant which produces the common black-pepper.

LADAK, or LAUTA, in *Geography*, a province of Thibet, bounding on Caſhmire towards the weſt, towards the eaſt on Ngari, and towards the north on the Uſbeks. See THIBET.

LADANUM, in *Botany*. See CISTUS.

LADANUM, or *Labdanum*, in *Pharmacy*, a gummous or a reſinous matter, oozing out of the leaves of a ſhrub called *ciſtus creticus*, or *ladanifera*, which is very common in the hot countries of the Levant, particularly in Candia, and of which there are various kinds. The ſhrub is alſo plentiful in Spain, though no ladanum is brought from thence.

Dioſcorides ſays, they gather the ladanum by means of goats, which, browſing on the leaves of this ſhrub, return to the ſtable with their beards loaded with a fat ſubſtance, which the peaſants rake off with a kind of combs made for that purpoſe. This matter they thus collect into lumps, and, as it is mixed with the goats' hair, and other impurities, call it *ladanum in the beard*, or *natural ladanum*. Others are ſaid to draw cords over the leaves, and other parts of the ſhrub; and, ſcraping off what had ſtuck to the cords, they make up the ladanum into little balls.

Tournefort aſſures us, that the common way of gathering the ladanum at this time is, by bruſhing it off the leaves with a ſort of whip, compoſed of many laſhes, or ſtraps: after it is ſcraped off the ſtraps, they make it into cakes of different ſizes.

Pietro delle Valle tells us, he was informed by the Indians, that ladanum is formed like dew, and falls from heaven like manna; that it is gathered on the leaves of a plant a palm and a half high; that, after gathering, they boil it, by which means it becomes ſoft, like wax.

Bellonius ſays that this juice is collected by lightly bruſhing the ſhrub, in the ſummer heats, with a kind of rake, called in Candia "Erga-tiri," having ſeveral ſtraps or thongs of leather fixed to it inſtead of teeth; the unctuous juice adheres to the thongs, and is afterwards ſcraped off with knives, and formed into regular maſſes for exportation.

There are two ſorts of ladanum in the ſhops: the beſt, which is very rare, is in dark-coloured maſſes, of the conſiſtence of a ſoft plaſter, which becomes ſtill ſofter on being handled. The other is in long rolls, coiled up and much harder than the preceding, and not ſo dark. The firſt has commonly a ſmall, and the laſt a very large admixture of fine ſand, blown upon the juice from the ſandy ſoil where it is found.

Ladanum has been ſometimes exhibited as a pectoral and aſtringent in catarrhal affections, dyſenteries, and ſeveral other diſeaſes, but it is at preſent wholly employed in external applications and perfumes. The ſoft kind, which has an agreeable ſmell, and a lightly pungent bitteriſh taſte, makes an uſeful ingredient in the cephalic and ſtomachic plaſters of the ſhops. Rectiſied ſpirit of wine diſſolves nearly the whole of the pure ladanum into a gold-coloured liquor. Water acquires by infuſion much of its ſmell and taſte: and, by diſtillation in water an eſſential oil ariſes, leaving a brittle almoſt inſipid reſin and a pale-coloured liquor, which, inſpiſſated, yields a weakly bitteriſh extract. Heat ſoon deſtroys the ſpecific flavour of this juice. Lewis.

Ladanum, *Liquid,* more properly called *clear* or *purified* ladanum, is a preparation of the natural ladanum, by melting and purifying it from the hairs, &c.

This hardened is ſometimes ſold for a ſort of black ambergris.

LADDER *to Heaven,* in *Botany.* See Lily *of the Valley.*

Ladders, *Scaling,* in the *Military Art,* are uſed in eſcalade. They are of various ſorts; ſome are of ropes and ſome of wood; ſome are made of ſeveral joints, ſo as to be capable of being put together, and to form ladders of different length, according to the ſervice required. There is a ſort uſed in England, much of the ſame make as the common ladders, except that the ſteps turn about wooden pegs, ſo that the poles may be brought near each other, or to ſhut like a parallel ruler. Theſe are very convenient for carriage.

Ladders, in a *Ship,* derive their names from the ſeveral hatchways or other parts where they are ſituated. Beſides theſe, there are ſome of a particular conſtruction, as the accommodation-ladder, and the quarter-ladder. The accommodation-ladder is a ſort of light ſtaircaſe, occaſionally fixed on the gang-way of the admiral, or commander in chief of a fleet. It is furniſhed with rails and entering ropes, covered with red baize, and the lower end of it is kept at a proper diſtance from the ſhip's ſide by iron-bars or braces, to render the paſſage more convenient to thoſe who enter or leave the ſhip. Quarter-ladders, are two ladders of rope, depending from the right and left ſide of the ſhip's ſtern, whereby to deſcend into the boats which are moored aſtern, in order to bring them up along-ſide of the ſhip, or to uſe them for any other occaſion.

Ladder *Ways,* the openings in the decks where the ladders are placed.

LADEINOEPOLI, in *Geography,* a town of Ruſſia, in the government of Olonetz; 56 miles S. of Petrozavodſk. N. lat. 61° 56′. E. long. 33° 50′.

LADEN, in *Sea Language,* denotes the ſtate of a ſhip when ſhe is charged with a weight or quantity of any ſort of merchandize or other materials, equal to her tonnage or burthen. If the cargo with which ſhe is laden be extremely heavy, her burthen then is denominated by the weight of the goods; if it be light ſhe carries as much as ſhe can ſtow, ſo as to be fit for the purpoſes of navigation. A ton in meaſure is generally eſtimated at 2000lb. in weight, and therefore a veſſel of 200 tons ought to carry a weight of 400,000lb. when the matter of which the cargo is compoſed is ſpecifically heavier than the water in which ſhe floats.

Laden, in *Bulk,* denotes the ſtate of being freighted with a cargo, which is not in caſks, boxes, bales, or caſes: but lies looſe in the hold, being defended from the moiſture or wet of the hold, by a number of mats and a quantity of dunnage. Such are uſually the cargoes of corn, ſalt, or ſuch materials.

LADENBURG, in *Geography,* a town of Weſtphalia, in the biſhopric of Oſnabruck; nine miles S.S.E. of Oſnabruck.—Alſo, a town of the duchy of Baden; ſix miles E. of Manheim. N. lat. 49° 27′. E. long. 8° 40′.

LADETSCH, a town of Bohemia, in the circle of Czaſlau; 12 miles S.S.W. of Czaſlau.

LADJA, in *Hindoo Mythology,* a being produced by Brahma, ſimilarly with Labha: a being which Brahma, or the creative power of the deity, produced from his lips when peopling the world. Labha is a perſonification of appetite or paſſion, and the word in Sanſcrit has, as in many other languages, a labial meaning, indicating the ſource of the being thus produced. On that occaſion Kama, a perſonification of love or deſire (ſee Kama), ſprung from his heart in the form of a beauteous female, and Brahma, looking on her with amorous emotions, was informed by the Munis, (ſee Muni,) that ſhe was his own daughter: he ſhrunk back, and Ladja, a perſonification of ſhame, a bluſhing virgin, was produced. Brahma, deeming his body defiled by its emotions toward Kama, purified it by partially metamorphoſing it into ten females, who were reſpectively eſpouſed by the Munis.

LADIKIEH, in *Geography,* a town of Aſiatic Turkey, in Caramania, anciently Laodicea; 20 miles W. of Cogni.

Lading. See Bill *of Lading.*

LADISLAUS I., in *Biography,* king of Hungary, ſon of Bela I. born in 1041, was a martial prince, and joined his brother Geyſa in a war againſt Solomon, whom he was the chief cauſe of defeating, at the bloody battle which deprived him of his crown, and placed it upon the head of Geyſa. Upon the death of the latter in 1078, Ladiſlaus was choſen to ſucceed him. He immediately attacked and defeated the rebellious Wallachians, and annexed to his dominions Dalmatia and Croatia, through the gift of his ſiſter, who was widow of the laſt king of Dalmatia. He reduced the Bohemians who had revolted, expelled the Huns, and conquered part of Bulgaria and Ruſſia. He defeated alſo the Tartars, and having made his dominions ſecure on all ſides, he ſtudied to render them flouriſhing and happy by the arts of peace: he encouraged commerce, and publiſhed an improved code of laws. He built ſeveral new churches, and made conſiderable preparations for joining in the firſt cruſade, when in an expedition into Bohemia he was attacked with a diſeaſe, which put an end to his life in the year 1095, after a glorious reign of ſeventeen years. He was diſtinguiſhed for piety as well as valour, and was canonized in 1198 by pope Celeſtine III. Univer. Hiſt.

Ladislaus III., king of Hungary. The ſecond prince of this name reigned but a few months, and did nothing worthy of record. The third Ladiſlaus, the ſubject of this article, ſurnamed Chun, came to the throne in 1272, after the death of his father, Stephen IV. He obtained the name of Chun from the barbarity of his diſpoſition. Soon after his acceſſion to the throne, he, in conjunction with the emperor Rodolph, defeated the Bohemian king Othogar, who was ſlain in battle. After this ſucceſs, he gave himſelf up to all manner of voluptuouſneſs; divorcing his own wife, that he might indulge his paſſion with women of the Tartar nation of Cumans. His general conduct was ſo baſe, and his oppreſſion of the Chriſtians ſo enormous, that the pope, at the deſire of the principal people of Hungary, excommunicated him; upon which he feigned a ſincere repentance, and built an hoſpital for ſtrangers. His total neglect of the government, and the diſaffection of his ſubjects, invited the incurſions of the Tartars, by whom Hungary was ſo dreadfully deſolated, that, for want of beaſts, men, and even thoſe of the higher ranks, were obliged to draw the plough. Hence the Hungarian proverb, "The ploughs of Ladiſlaus." After a ſecond invaſion, which Ladiſlaus took no meaſures to repel, he was ſtabbed, while ſleeping in his tent, by ſome of the Cumanian women in whom he confided, but whom he had offended. Univer. Hiſt.

Ladislaus IV., king of Hungary, alſo king of Poland, under the title of Uladiſlaus V., was ſon of Jagello, or

Uladiſlaus IV., whom he ſucceeded on the Poliſh throne in 1435, being then only in the ninth year of his age. He was elected king of Hungary in 1440. As the famous crown of St. Stephen was in poſſeſſion of the late queen, he was crowned with a diadem taken from the cheſt containing the relics of that ſainted monarch. He declared war againſt the Turks, and employed as his general John Huniades, who was very ſucceſsful in the cauſe. Ladiſlaus made peace, which gave much diſſatisfaction to the pope, and other Chriſtian princes; ſo that he was induced to break it. A battle ſoon after enſued, in which he loſt his life at Varna, in the year 1444. His death occaſioned the complete ruin of his army. Univer. Hiſt.

Ladislaus V., king of Hungary, was born in 1440, and ſucceeded to the crown in 1444, when he was only in the fifth year of his age. He was, at this time, at the court of the emperor Frederic III.; and it was not till 1452 that he was reſtored to his country. It was agreed that, during his minority, Hungary ſhould be governed by John Corvin, ſon of Huniades; Bohemia by George Podiebrad; and Auſtria by Ulric count of Ciley, the king's uncle, who was appointed guardian of his perſon. The count endeavoured to ſupplant John Corvin, but in vain; and he obtained great honour by the defeat of the Turks before Belgrade. At the death of John, the government was transferred to his ſon Ladiſlaus, to the great mortification of the count of Ciley, who endeavoured to procure his aſſaſſination; but he was himſelf killed at Belgrade by the friends of that family. In 1457, Ladiſlaus went to Prague, in order to celebrate his nuptials with Magdalen of France, daughter to Charles VII.; but in the midſt of the feſtivities, he was taken ſuddenly ill, and died, not without ſuſpicion of poiſon. Mod. Univer. Hiſt.

Ladislaus VI., king of Hungary, ſon of Caſimir IV. of Poland, was choſen king of Bohemia in 1470, and was ſoon involved in a war with Matthias king of Hungary, which was terminated by a peace in 1475. At the death of Matthias in 1490, Ladiſlaus was elected to ſucceed him. He had, however, to make his way to the throne againſt the hoſtile oppoſition of his competitors, one of whom was his own brother. At length he was quietly ſeated; but being of an indolent and pacific diſpoſition, he was ill fitted to contend with the diſorders which haraſſed his kingdom: and from his great bulk and inactivity, he acquired from his ſubjects the appellation of an *ox*. The Turks having threatened Hungary, he was, during his whole reign, conſtantly at war with the Turks, and other neighbouring powers. Ladiſlaus, though not warlike, was attentive to the duties of his high ſtation, and employed much time in collecting all the Hungarian laws, and the decrees of the monarchs, into one body, which has ever ſince formed the baſe of the conſtitution and juriſprudence of the country. He died in 1516. Univer. Hiſt.

Ladislaus, kings of Poland. See Uladislaus.

Ladislaus, or Lancelot, king of Naples, called the liberal and victorious, ſucceeded his father, Charles Duras, in 1386. He was before count of Provence and king of Hungary. He obtained the latter crown in 1403, during the impriſonment of Sigiſmund, who compelled him to return to Italy. On the death of his father, he was oppoſed by Lewis II. duke of Anjou, which occaſioned ſome bloody wars. The pope at firſt eſpouſed the cauſe of Lewis, but afterwards took the part of Ladiſlaus, who, however, marched againſt Rome, and having taken it, turned his arms on the Florentines, whom he compelled to ſue for peace in 1413. He died in 1414, aged 38, being poiſoned, as it was reported, by his miſtreſs, who had been bribed to perpetrate the bloody deed by the Florentines. Univer. Hiſt. Tablettes Chronologiques, par Du Freſnoy.

LADIZIN, in *Geography*, a town of Poland, in the palatinate of Braclaw; 14 miles S. of Braclaw.

LADLE *of a Gun*, the inſtrument wherewith the powder is put into the piece.

It is made of a plate of copper bowed in form of a half-cylinder, rounded at one end, the other being fixed upon a long ſtaff: this filled with powder, the gunner carries, with his left hand under the end of it, to keep the powder from falling out, till he enters it in the muzzle of the piece; when he has carried the powder home to the charged cylinder, he turns the ladle, that the powder may fall out, and withdraws it.

Ladles are fitted to the bore of each gun, and hold powder ſufficient for the charge.

Small ladles, with ſhort handles of wood, are alſo uſed in filling the fuzes of ſhells, or any other compoſition for filling the caſes of rockets, &c.

Ladle-*Boards*, thoſe boards diſpoſed on the circumference of the water-wheels of over-ſhot mills; forming hollows, or receptacles, not unlike ladles, to receive the water that falls upon the wheel. See *Water*-Wheel.

LADOCO, *Los Codos de*, in *Geography*, mountains, which commence in Portugal, and are continued into Spain, ſeparating Galicia from the Aſturias.

LADODA, a town of Hindooſtan, in the ſubah of Agimere; 20 miles S.E. of Roopnagur.

LADOGA, Nov, a town of Ruſſia, on the ſouth coaſt of the lake Ladoga; 56 miles E. of Peterſburg N. lat. 60° 2'. E. long. 21° 44'.

Ladoga, or *Ladozſkoi, Lake*, lies in the government of Vyborg, between the gulf of Finland and the lake of Onega; its ſouth-weſt extremity lying about 30 miles eaſt from Peterſburg. In ancient times it is ſaid to have been called Nebo. Being in length 175, and in breadth 105 verſts, it is reckoned one of the largeſt lakes in Europe. It produces a great number of ſeals. On account of the perilous ſtorms to which it is liable, and the ſeveral ſand-banks that are ever ſhifting their poſition, Peter the Great, in 1718, cauſed the famous Ladoga canal to be dug along its ſhore, from the Volkhof into the Neva. It was begun by order of Peter, and finiſhed under the reign of the empreſs Anne. This canal is 104 verſts long, 10 ſajenes broad, 1½ ſajene deep, and has 25 ſluices. By the Neva the Ladoga is connected with the Baltic; by the Svir, with the Onega; and by the Volkhof, with the Ilmen. Into the canal flow the rivers Lipke, Naſia, Sheldika, Lava, and Kabona; into the lake the rivers Paſha, Sias, Oiat, &c.; whereas the Neva alone runs out of it. Both ſhores of the lake belong to Ruſſia, which have every where a flat coaſt and a ſandy beach. On this ſhore it has alſo a few low fiſhery iſlands, and a ſandy bottom. That part of the northern ſide which lies in the government of Olonetz has marble on its coaſt, whence ſome of theſe beautiful kinds of Finniſh marble are brought to St. Peterſburg. As the bed of this lake, for a great extent, is in the loweſt part of the country, it receives, beſides the above-mentioned rivers, the waters that come from the Alum hills; all of which have no other outlet than the Neva. Tooke's Ruſſ. Emp. vol. i.

LADONIS, in the *Materia Medica of the Ancients*, a name given by ſome to the laurus or bay-tree. We find the word in a compoſition preſcribed in Galen, from the works of ſome of the empirics of his time; but it never was uſed by the more regular authors.

LADOS, in *Geography*, a ſmall iſland in the Eaſt Indian ſea. N. lat. 6° 11. E. long. 99° 40'.

LADRE, in the *Manege*, denotes *dull.* See Horse.

LADRONES, Marian, or *Mary-Anne*, *Iſlands*, in *Geography*, a group of iſlands in the North Pacific ocean, forming a chain of 200 leagues, and occupying a ſpace of about 450 miles in extent. Magellan, who diſcovered this archipelago in 1521, impoſed on them the name of Ladrones, (*Thieves* or *Robbers*,) becauſe the natives, like thoſe of many other iſlands, who had no idea of the excluſive right of property, manifeſted a diſpoſition to pilfer, and a conſiderable degree of addreſs in the execution of their deſigns. Theſe iſlands were alſo called "Iſlas de las Velas," from the great number of ſailing craft which came from theſe iſlands to meet ſhips, when they preſented themſelves there for the purpoſe of anchoring. Towards the middle of the 17th century, in the reign of Philip IV. of Spain, theſe iſlands were called the "Marians," in honour of Mary-Anne, the queen of Philip. In 1564 or 1565, Andreas Miguel Lopes Legaſpi took poſſeſſion of them in the name of the crown of Spain; but he neglected them as unworthy of his attention, and purſued his voyage to the Philippines. The iſlands of Ladrones were forgotten till the zeal of a celebrated Jeſuit, Santevores, intereſted the devotion of queen Mary-Anne of Auſtria, regent during the minority of her ſon Charles II., and excited her to cauſe the goſpel to be carried into theſe iſlands, which Magellan had found means to annex to the poſſeſſions of Spain, by diſcovering a new route, that eluded the ridiculous line of demarcation eſtabliſhed by the ſee of Rome, in the plenitude of its power. In 1688, the Spaniards preſented themſelves at the Mary-Anne iſlands, with the croſs in one hand and the ſword in the other; and with theſe two weapons, which lent one another mutual aid, their pretended right to the poſſeſſion of theſe iſlands could not fail to be acknowledged. They had no difficulty in making themſelves maſters of Guahan or Guaham (now called Guam), the principal of theſe iſlands, and the moſt ſouthern of the Archipelago; and by degrees they ſubdued all the others. Pigafetta, who accompanied Magellan, deſcribes the people of theſe iſlands as naked, their hair and beards long, tall, and well-proportioned, with an olive complexion. They coloured their teeth black, like the inhabitants of the Pelew iſlands; and in their manners and cuſtoms they reſembled one another. Till the arrival of the Spaniards, the inhabitants of theſe iſlands conſidered themſelves as the only men in the world, being aſſured that the firſt man was made of a piece of rock taken from Funa, a little iſland near Guam; but, according to others, he was made of earth in the latter iſland. When they were viſited by the Spaniards and Dutch, they inferred that theſe ſtrangers were brethren, who had loſt the primitive Guameſe language. In colour, ſpeech, manners, and government, they much reſemble the Tagals, or people of the Philippines, before the Spaniſh conqueſt. They were then very populous; Guam, which is 40 leagues in circuit, having 30,000 inhabitants. The women employed themſelves in dyeing their teeth black, and their hair white. The nobles were treated with great reſpect, and thought it criminal to connect themſelves in marriage with a common girl; nevertheleſs, the people were not enſlaved, or even ſubjects, though they treated their nobles with great reverence.

Their houſes were divided into four apartments, ſeparated by palm-leaves. In their abſolute independence each man avenged his own quarrel; but though wars were frequent, they were not ſanguinary; the loſs of a man or two deciding the battle. Their magicians invoke the anitis, or the dead, whoſe ſkulls were preſerved in the houſe; and they manifeſt an anxiety leſt the anitis, or ghoſt, ſhould diſturb their fiſhing, or nocturnal repoſe. Although Guam is the largeſt of theſe iſlands, Tinian has attracted the greateſt degree of attention in conſequence of the romantic deſcription given of it in Anſon's voyage. (See Guam and Tinian.) The number of theſe iſlands has been differently ſtated from 9 to 16; but it does not appear that above three or four are inhabited. Their ſailing veſſels, called *proas*, evince conſiderable ſkill in naval architecture. For an account of them, ſee the article Boat. La Perouſe leads us to conclude that theſe iſlands are volcanic; but their natural hiſtory is little known. They cultivate various ſeeds and fruit, and particularly the bread-fruit. For their productions of this kind, ſee Tinian. In ſir George Staunton's account of the embaſſy to China, we have ſome information of a recent and authentic kind with reſpect to theſe iſlands. The grand Ladrone he repreſents as a high-peaked iſland; and he mentions another near it, whoſe ſummit is ſomewhat lower and more level. The latitude of the grand Ladrone appeared to be 21° 52′ N., and the longitude 113° 36′ E. of Greenwich. The latitude of another iſland, called *Chooktchoo* was 21° 55′ N., and its longitude 113° 44′ E. The obſervations from which theſe latitudes and longitudes are deduced were carefully made, and therefore they may be deemed correct; though they differ from thoſe ſtated by other geographers. The margins, or rocks, of the Ladrone iſlands next the ſea are of a black, or dark brown colour, owing to the action of the ſalt-water; and the ſpray and daſhing of the waves have corroded their ſurface, ſo as to give them a honey-comb appearance. Some ſprings are found on theſe iſlands; and the water is neither brackiſh nor chalybeate, nor in any reſpect mineral in its taſte. The ſoil upon the ſurface appears to be of the ſame nature with the component parts of the rocks below, and, indeed, is merely the upper layer of the rock, decompoſed and pulverized by the joint action of the ſun and rain in a ſucceſſion of ages. The rock conſiſts of a mixture of clay, calx of iron in a ſmall proportion, and a great deal of ſiliceous earth and mica. The ſea all round is of a dirty-yellowiſh muddy colour, and of no great depth. The bottom is mud and clay.

The Ladrones, and cluſters of iſlands between them and the ſouthern extremity of China, are ſo near to each other, and to the main land, and are alſo ſo broken, as well as ſo irregular in their form and poſition, as to appear like fragments, disjointed from the continent, and from each other, at remote periods, by the ſucceſsive violence of mighty torrents, or in ſome ſudden convulſions of nature. Theſe fragments have now a very barren and unpromiſing aſpect. In particular ſpots, however, there are ſome ſcattered patches of pleaſing verdure; but, in general, little better than naked rocks appear; and ſcarcely ever a tree or ſhrub is viſible among them. Theſe iſlands ſerve chiefly as retreats for pirates, and for the temporary abode of fiſhermen. To the north of the Ladrones are many ſmall iſlands, extending to Todos los Santos, N. lat. 30; thoſe further to the N. belonging to Japan. This group may either be arranged, ſays Pinkerton, among the Ladrones, or might, perhaps, admit of a diſtinct appellation. For a more ample account of the Ladrones, we refer to the Supplement of De Broſſes, vol. ii. p. 492, and to the article Tinian.

Ladrones, three ſmall iſlands in the Pacific ocean, on the coaſt of Veragua; 8 miles S.E. of Cape Boruca. N. lat. 8° 20′. W. long. 83° 16′.

LADROON, a river of Africa, which runs into the Indian ſea, S. lat. 22° 36′.

LADVOCAT, John Baptist, in *Biography*, a man of letters in France, was born in 1709. He was, at the uſual age, admitted a member of the ſociety of Jeſuits, and for ſome time occupied the cure of Domremi, the birth-place of the celebrated Joan of Arc; but in 1740 he was appointed royal profeſſor at the Sorbonne, and in two years after he was elected librarian. The good duke of Orleans having founded a Hebrew profeſſorſhip in the Sorbonne, Ladvocat was appointed, in 1751, to fill that office, which he kept till his death, in the year 1765. His works are "A Geographical Dictionary;" "An Hiſtorical Dictionary;" "A Hebrew Grammar," and ſeveral theological tracts. He is repreſented as remarkably mild, humane, and undiſguiſed in his manners.

Ladvocat, Lewis Francis, a philoſophical writer, and dean of the chamber of accounts at Paris, where he died in 1735, in the ninety-firſt year of his age. As an author. his principal work is entitled "Entretiens ſur un nouveau Syſteme de Morale et de Phyſique," which abounds in ſolid reflections, and well digeſted reaſonings. Some objections being made to the principles contained in theſe converſations, Ladvocat, in 1728, replied by publiſhing "A new Syſtem of Philoſophy founded on the indiſputable Nature of Things, compared with the Opinions of the ancient Philoſophers relating to the firſt Principles of Nature, &c.:" to which is added a treatiſe on the nature of the ſoul, and the exiſtence of God. Ladvocat was an able magiſtrate, and a good man. Moreri.

LADY, in *Geography*, a town of Ruſſia, in the government of Smolenſko, and before the late diſmemberment of Poland, a Ruſſian frontier town.

Lady's *Iſland*, an iſland in the Atlantic, near the coaſt of S. Carolina, in America, between Port Royal iſland and St. Helena. N. lat. 42° 30′. W. long. 80° 32′.

Lady's *Bed-Straw*, or *Cheeſe-Rennet*, in *Botany* and the *Materia Medica*. See Galium.

Lady's *Bower*. See Clematis.

Lady-*Bird*, in *Zoology*. See Hemisphæria, and Scarabæus.

Lady-*Chapel*, a name invented by modern architects and virtuoſi to ſignify the chapel which is generally found in our ancient cathedrals behind the ſkreen of the high altar. It is ſo denominated from its being generally dedicated to the bleſſed Virgin Mary, called *Our Lady*.

Lady's *Comb*, in *Botany*. See Shepherd's *Needle*.

Lady's *Cuſhion*. See Saxifrage.

Lady-*Day*, in *Law*, the 25th of March, being the Annunciation of the Holy Virgin.

Lady's *Finger*, in *Botany*. See Anthyllis.

Lady's *Mantle*. See Alchemilla.

Lady's *Seal*. See Tamus.

Lady's *Slipper*. See Cypripedium.

Lady's *Smock*, the common name of a perennial weed often met with in paſture grounds. The ſtalk is upright, ſound, and ſmooth, the leaves are winged, with the lobes of the lower ones roundiſh, and thoſe on the ſtalk oblong. The flowers are large, handſome, and white, or purpliſh, conſiſting of four obtuſe veined petals. The ſeeds are contained in erect compreſſed pods, about an inch in length, divided into two cells, which, when ripe, burſt with a touch, and throw out their ſeed to a conſiderable diſtance. It has ſometimes the vulgar names of cuckow-flower, Canterbury-bells, &c.

Lady's *Traces*. See Twyblade.

Lady *of the Thiſtle*. See Thistle.

Lady, *Preſentation of our*. See Presentation.

LADYKIRK, in *Geography*, a town of the iſland of Ronaldſha. N. lat. 58° 38′. W. long. 2° 49′.

LÆLIUS, Caius, in *Biography*, a noble Roman, the particular friend of the firſt Scipio Africanus, accompanied that commander to Spain, and was inſtrumental in the capture of New Carthage. When Spain was reduced under the Roman power, Lælius was ſent by Scipio to treat with Syphax, and after this he was employed to ravage the coaſt of Africa. In conjunction with Maſſiniſſa, he defeated Syphax, and brought him priſoner to Rome. He commanded the Italian horſe at the battle of Zama, and had a conſiderable ſhare in the ſucceſs of the day. He was made conſul in the year 190 B. C.

Lælius, Caius, ſurnamed *Sapiens*, ſuppoſed to have been the ſon of the preceding, was equally diſtinguiſhed with the former by his friendſhip with the ſecond Scipio Africanus, ſo that Cicero repreſents him in his treatiſe "De Amicitia," as explaining the real nature of friendſhip with its attendant pleaſures. In this work, which is known to every well educated youth, Lælius appears as the chief ſpeaker. He was an eminent orator, and a ſucceſsful cultivator of polite literature. He was ſignalized by his proweſs in the war with Spain, but is chiefly celebrated by the civil honours to which he attained. His oratory is deſcribed as of the mild and elegant kind. He was a member of the college of augurs, and pronounced one of the moſt famous orations in that capacity. He was conſul in the year B. C. 140. When his friend Scipio quitted all concern in public affairs, Lælius accompanied him to his country retreat, preferring the pleaſures of retirement and friendſhip to the honours of the world. He is ſuppoſed to have had a ſhare in the compoſition, or, at leaſt, in the correction, of Terence's comedies. His modeſty, humanity, and the manner in which he patronized literature and learned men, are as illuſtrious as the greatneſs of his mind, and the integrity which he diſplayed as a ſtateſman. Univer. Hiſt.

LÆNA, among the *Ancients*, a thick, ſhaggy, upper garment. See Chlæna.

LAER, Peter Van, in *Biography*, a landſcape, cattle, and converſation painter, known in Italy by the name of Bamboccio, from the nature of the ſubjects he frequently painted during a long reſidence at Rome, ſuch as vintage-revels, drolleries, quarrels, mummeries, &c. which are termed by the Italians Bambocciate. He was a native of Laeren, near Narden, was born in 1613, and being endowed with excellent faculties of perception and imitation, he practiſed the art he adopted with very great ſucceſs. His hand and his imagination were equally rapid; and ſo readily would the former execute the dictates of the latter, that he rarely found it neceſſary to make previous ſtudies for his pictures; but ſketching ſlightly the ſubject on his canvas, he finiſhed the work without more delay. He had the great advantage of poſſeſſing an excellent memory, and if he conſidered any object with an intention to inſert it in a picture, it became ſo imprinted in his mind, that he could repreſent it with great truth without its being placed again before his eyes.

His pictures are of a ſmall ſize, but very pleaſingly executed, with an excellent tone of colour.

In the latter part of his life he was ſeverely tormented with an aſthma, of which (not being endued with patience enough to bear its miſeries tranquilly), he contrived to rid himſelf by drowning, in the 60th year of his age.

LAERTA, in *Natural Hiſtory*, a name given by authors to a ſpecies of veſpa or waſp, whoſe ſting is ſaid to be fatal: but this is an erroneous opinion. This waſp is larger and longer bodied than the common kind, but ſmaller than the hornet. It ſeems of a very irritable diſpoſition, attacking animals of any kind that come in its way.

LAET, John de, in *Biography*, director of the Eaſt India company, was born at Antwerp, where he died in 1649.

1649. He was a great proficient in the languages, and compoſed or edited ſeveral works relating to geography and civil hiſtory, as "Novus Orbis;" "Hiſtoria Naturalis Braſiliæ;" "De regis Hiſpaniæ Regnis et Opibus;" "Reſpublica Belgarum;" "Gallia;" "Turcici imperii Status.;" "Perſiæ imperii Status." Theſe works are ſtill in conſiderable repute, as well on account of the hiſtorical and geographical information which they contain, as on account of the great beauty of the Elzevir types. They are known generally under the name of the Reipublicæ. Laet gave a new edition of the works of Vitruvius, enriched with notes of various critics. Laet's account of America, which is found in his "Novus Orbis," involved the author in a controverſy with Grotius reſpecting the origin of the inhabitants. It has been much uſed by more modern geographers.

LAETIA, in *Botany*, named by Loefling, in memory of John de Laet of Antwerp, who publiſhed a Latin hiſtory of America in folio, in 1633, dedicated to king Charles I. of England. Haller ſpeaks with reſpect of his botanical remarks, as throwing light upon the plants of Marcgrave, and tending to reconcile his deſcriptions with thoſe of Cluſius and the Spaniſh botaniſts.—Linn. Gen. 267. Schreb. 355. Willd. Sp. Pl. v. 2. 1163. Mart. Mill. Dict. v. 3. Juſſ. 293. (Guidonia; Browne Jam. 249. Linn. in Loefl. It. 190. Thamnia; Browne Jam. 245.)—Claſs and order, *Polyandria Monogynia*. Nat. Ord. *Tiliaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five oblong, concave, reflexed, coloured, withering leaves. *Cor.* either wanting, or of five petals. *Stam.* Filaments numerous, capillary, rather ſhorter than the calyx; anthers roundiſh. *Piſt.* Germen ſuperior, oblong; ſtyle thread-ſhaped, longer than the ſtamens; ſtigma capitate, depreſſed. *Peric.* Capſule roundiſh with three or four angles and as many furrows, fleſhy, of one cell and three or four valves finally recurved. *Seeds* numerous, angular, each clothed with a pulpy tunic.

Eſſ. Ch. Corolla of five petals, or wanting. Calyx inferior, of five leaves. Capſule fleſhy, of one cell, and three or four valves. Seeds numerous, with a pulpy tunic.

Obſ. We have endeavoured to profit by the obſervations of Swartz, compared with thoſe of Browne and Loefling, in order to give a juſt idea of the fruit, of which we regret having never examined any ſpecimen. Neither is any ſufficient repreſentation of it extant.

1. L. *apetala*. Linn. Sp. Pl. 733. Jacq. Amer. 167. t. 108. Swartz. Obſ. 219. Loefl. It. 190 n. 65.—Petals none. Stalks axillary, three-flowered. Leaves elliptic-oblong, obtuſe, minutely ſerrated, ſmooth and ſhining.—Gathered by Jacquin in woods at Carthagena, South America, flowering in April and May, bearing fruit in Auguſt. A *tree* 20 feet high, throwing out ſpreading branches from the very bottom of its trunk. *Leaves* about the ends of the ſhort alternate tapering lateral ſhoots, ſtalked, above an inch in length, elliptic-oblong, or obovate, obtuſe, ſmooth and ſhining, very minutely ſerrated. *Flowers* white, compared by Jacquin to thoſe of Hawthorn, both in appearance and ſcent, ſtanding moſtly three together, on ſolitary axillary ſtalks, not half ſo long as the leaves. *Fruit*, according to Jacquin, ovate with three blunt angles, the ſize of an olive, generally found more or leſs eaten by birds or inſects, but he ſeems to ſpeak of it as ſmooth; Loefling deſcribes it as yellow and downy, nearly globoſe, with four obſcure angles and as many furrows. We are unable to determine whether theſe writers both ſpeak of the ſame ſpecies, though ſuch is the general opinion. Loefling found his near Comana.—Lamarck ſuſpects the *L. apetala* to belong to the *Ludia* of Commerſon. See Ludia.

2. L. *Guidonia*. Swartz. Prodr. 83. (Guidonia; Browne Jam. 249. t. 29. f. 4?)—"Petals none. Stalks terminal, ſingle-flowered. Leaves oblong, pointed, ſerrated and downy."—Native of Jamaica. *Swartz.* Browne calls his plant Rod-wood, and ſays it "grows to a conſiderable ſize, being eſteemed a fine timber, and much uſed in all ſorts of buildings. The lines between the valves of the *fruit* are of a beautiful red, as well as the *placentæ*." We know not why Swartz quotes him with a mark of doubt, nor have we ever ſeen any ſpecimen of this ſpecies from either of theſe botaniſts.

3. L. *Thamnia*. Swartz. Prodr. 83. Fl. Ind. Occ. v. 2. 950. (Thamnia; Browne Jam. 245.)—Petals none. Stalks axillary, forked, many-flowered. Leaves elliptic-oblong, ſomewhat crenate, ſmooth and ſhining.—Native of Jamaica. Browne gathered it on the red hills above the *Angels*, but ſays it is not common. His own ſpecimen is before us. This is a *ſhrub*, ſix feet high, with roundiſh, ſmooth, ſlightly zigzag *branches*, whoſe young ends are compreſſed and coloured. *Leaves* alternate, on round ſmooth ſtalks half an inch long, elliptic-oblong, with a blunt point, ſmooth and ſhining, ſlightly crenate, two or three inches in length, marked with pellucid dots readily ſeen when the leaf is held againſt the light. *Flower-ſtalks* from the young ſhoots, axillary, much ſhorter than the leaves, forked and as it were jointed, minutely downy, as are the calyx-leaves. The *flowers* are not numerous, larger than the common Myrtle, the two outer leaves of the calyx purpliſh, inner white, all reflexed. *Stamens* downy. *Anthers* yellow. *Fruit* with four, rarely five, angles, and as many valves, which are revolute when ripe. *Seeds* numerous, with a purpliſh tunic. Swartz found this plant on the ſouth coaſt of Jamaica, in buſhy chalky ſpots, flowering in the ſpring. We have borrowed moſt of his deſcription, comparing it with Browne's ſpecimen.

4. L. *completa*. Linn. Sp. Pl. 733. Jacq. Amer. 167. t. 183. f. 60. Lamarck. Dict. v. 3. 374.—Petals five. Stalks many-flowered, axillary. Leaves ovate-oblong, finely ſerrated, rugoſe, ſmooth.—This was gathered in woods at Carthagena by Jacquin, from whoſe book alone we have any knowledge of it. The *ſtem* is ſhrubby, branched, nine feet high. *Leaves* about three inches long, of a broad ovate ſomewhat oblique figure, rugoſe, veiny, finely but ſharply ſerrated, ſmooth, ſtalked. Common *flower-ſtalks* downy. *Fruit* yellowiſh red, often ſlightly triangular, ripening in Auguſt and September. The flowering ſeaſon is June. The *petals* are as long as the calyx, but nothing is ſaid of their colour, Jacquin having ſeen them in a faded ſtate only.

Not one of this genus is known in the gardens of Europe, nor have any dried ſpecimens, except the above-mentioned, fallen in our way.

LAEUANGER, in *Geography*, a town of Norway, in the dioceſe of Drontheim; 46 miles E.N.E. of Drontheim.

LÆVIUS, in *Biography*, a Latin poet, who probably flouriſhed about the time of Cicero. He wrote a poem entitled "Erotopagnia," or "Love games," which is quoted by Aulus Gellius, and Apuleius. He compoſed alſo a poem entitled "The Centaurs," which is quoted by Feſtus under the title of Petrarum.

LA FERE, in *Geography*. See *La* Fere.

LAFITAU, Joseph Francis, in *Biography*, born at Bourdeaux, entered the ſociety of Jeſuits, and became a miſſionary among the uncultivated nations of North America. On his return home he wrote a work entitled "Les Mœurs des Sauvages Americains compares aux Mœurs des premiers tems," in two volumes 4to.: "A Hiſtory of the diſcoveries of the Portugueſe in the New World," in two vols. 4to. which maintains a high reputation. He died about the year 1740.

Lafitau, Peter Francis, brother of the above, was a native of Bourdeaux, and became diſtinguiſhed as a preacher among the Jeſuits. Being ſent to Rome on various negociations he became a great favourite with pope Clement IX. who promoted him to the biſhopric of Siſteron in Provence. He died in the year 1764, at the age of ſeventy-nine. He was author of the "Hiſtory of the Conſtitution Unigenitus," two vols. 12mo.; "Hiſtory of Clement IX.," in two volumes, and "Sermons," in four volumes, beſides ſeveral devotional and practical treatiſes.

LA FORCE, in *Geography*. See *La* Force.

LAFORDSWICK, (Saxon, *hlaford*, i. e. *dominus*, and *ſwic*, *proditio*, *infidelitas erga dominum*,) the betraying of a lord or maſter. This word is found in king Canute's laws. c. 61. and in the laws of king Henry I.

LA FRESNAYE, in *Geography*. See *La* Fresnaye.

LAFVENSARI, a ſmall iſland in the gulf of Finland. N. lat. 59° 57'. E. long. 45° 32'.

LAGA, in *Antiquity*, denotes *lex* or *law*: whence are deduced *Saxon-lage*, *Dane-lage*, &c.

Laga, in *Geography*, a river of Sweden, which runs into the North ſea; four miles W. of Laholm.

LAGAMAN, a town of Candahar; 60 miles N.E. of Cabul.

LAGAN, or Lagon, in our *Ancient Sea Laws*, ſhipwrecked goods, left by the ſea, lying on the ſand, either aſhore, or out at ſea.

The word ſeems formed from the Saxon *legan*, or *lugan*, *jacere*, *to lie*. Though others deduce it from the Latin *ligare*, *to bind*; and ſuppoſe it to denote goods tied together with a buoy, or the like, to hinder their ſinking to the bottom, that they may be found again.

Lagan is uſually joined with *jetſon* and *flotſon*; which ſee.

Lagan, in *Geography*, a river of Ireland, which riſes in the Sliebh-droob mountains, in the centre of the county of Down, and making a ſweep to the weſt by Dromore, becomes the boundary between the counties of Down and Antrim, from the neighbourhood of Moira until it flows a little below Belfaſt into that large eſtuary called Belfaſt Lough. There are many villages, beſides the conſiderable towns of Liſburne and Belfaſt, on this river, and its banks are adorned with numerous bleach greens. Great exertions have been uſed to improve the navigation of this river, and a canal joins it to Lough Neagh.

LAGANUM, in *Natural Hiſtory*, the name of a genus of the echini marini, of the general claſs of the placentæ. The characters of the lagana are, that they have their mouth in the centre of the baſe, and their aperture for the anus in its third region; that their ſuperficies is whole, and their edges waved. Of this genus there are five known ſpecies.

LAGARES, in *Geography*, a town of Portugal, in the province of Beira; 14 miles S.S.W. of Viſeu.

LAGAU, a town of Brandenburg, in the New Mark; 25 miles S.E. of Cuſtrin. E. lat. 52° 38'. E. long. 15° 26'.

LAGEMAN, (*Lagammannus*) *homo habens legem*, or *homo legalis ſeu legitimus*: ſuch as we call now good men of the jury. The word is frequently uſed in Domeſday, and the laws of Edward the Confeſſor, cap. 38.

LAGEN, Lagena, in ancient time, was a meaſure of wine, containing ſix ſextarii: whence probably is derived our *flagon*. The lieutenant of the Tower has the privilege to take *unam lagenam vini ante malum et retro*, of all wine ſhips that come up the Thames; and ſir Peter Leiceſter, in his Antiquities of Cheſhire, interprets *lagena vini*, a bottle of wine.

Lagen *Bay*, in *Geography*, a bay on the W. coaſt of the iſland of Ila, S. of Lagen point.

LAGENS, a town of the iſland of Flores, one of the Azores, containing near 1400 inhabitants.

LAGENULA, in *Botany*, from *lagena*, a bottle, becauſe the form of the fruit is like that of a little bottle or flagon. Loureir. Cochinch. 88.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Cucurbitaceæ*, Linn. Juſſ.?

Gen. Ch. *Cal.* Perianth inferior, of four ovate-oblong, reflexed, permanent leaves. *Cor.* Petals none. Nectary fleſhy, with four erect, ſomewhat approximated, lobes. *Stam.* Filaments four, awl ſhaped, equal to the calyx; anthers ovate, incumbent. *Piſt.* Germen concealed by the nectary; ſtyle thick, ſhorter than the ſtamens; ſtigma ſimple. *Peric.* Berry ſmall, bottle-ſhaped, with a narrow neck, of two cells, and containing two ſeeds. *Seeds* ſolitary, convex on one ſide, angular on the other.

Eſſ. Ch. Calyx of four leaves, inferior. Petals none. Nectary four-lobed. Berry of two cells. Seeds ſolitary.

1. L. *pedata*. Called by the Cochinchineſe *Cây rât nho lá*. A moderate-ſized *ſhrub*, found on the hills of Cochinchina. The *ſtem* climbs by means of tendrils, and is branched, deſtitute of prickles. *Leaves* pedate, of five ovate, crenate, downy leaflets. *Flowers* whitiſh green, in terminal, ſpreading, ſubdivided cluſters.

Such is Loureiro's deſcription, which in moſt reſpects indicates a plant of the Gourd or Bryony tribe, except the germen being ſuperior. It ſhould ſeem therefore to range with a few more genera, mentioned by Juſſieu, at the end of his *Cucurbitaceæ*, which differ from the character of that order in the ſituation of their germen.

LAGERSTRŒMIA, ſo called by Linnæus, in commemoration of his friend Magnus Lagerſtrœm, a director of the Swediſh Eaſt India Company, member of the Royal Societies of Upſal and Stockholm, who communicated to him many natural productions, and ſome other curioſities, deſcribed in the fourth volume of the *Amœnitates Academicæ*, under the title of *Chinenſia Lagerſtrœmiana*. Amongſt theſe was an exquiſitely carved horn of a Rhinoceros, now in the hands of the writer of this article, which repreſents a leaf of the *Cyamus Nelumbo*, accompanied by the flower and fruit in a ſmaller ſize, with other memorable plants, and ſeveral half-formed lizards, crawling as it were out of their native mud, and ſeizing on the grape, the Litchi, the Mango, and the Mangoſtan, celebrated oriental fruits. This ſeems to expreſs the ſuppoſed beginning of animal life, with its dependance on the vegetable kingdom, and throws light on the mythological hiſtory of the *Cyamus*, to which article, written by our lamented friend the late Rev. Mr. Wood, in our 10th volume, we refer the reader. —Linn. Gen. 269. Schreb. 361. 833. Willd. Sp. Pl. v. 2. 1178. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 2. 230. Juſſ. 331. Lamarck Dict. v. 3. 375. Illuſtr. t. 473. (Munchauſia; Linn. Mant. 153. Schreb. 515. 833. Mart. Mill. Dict. v. 3. Juſſ. 331. Murr. Gott. Præf. t. 1. Adambea; Lamarck Dict. v. 1. 39.)—Claſs and order, *Icoſandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Salicariæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, angular, permanent, with ſix deep, ſharpiſh, triangular teeth. *Cor.* Petals ſix, roundiſh or obovate, wavy; their claws thread-ſhaped, inſerted into the calyx. *Stam.* Filaments numerous, thread-ſhaped, unequal, inſerted into the calyx, and exceeding it in length; anthers roundiſh, incumbent. *Piſt.* Germen ſuperior, roundiſh; ſtyle thread-ſhaped, declining, longer than the ſtamens; ſtigma obtuſe.

Peric. Capſule ovate, pointed, of ſix cells and ſix valves, rarely but four. *Seeds* numerous, angular, compreſſed, attached to the central hexagonal column.

Eſſ. Ch. Petals ſix, their claws inſerted betwixt the teeth of the bell-ſhaped ſix-cleft calyx. Stamens unequal. Capſule of four or ſix cells, with many angular ſeeds.

Obſ. L. *parviflora* has but four, or occaſionally only three, cells and valves to the capſule.

1. L. *indica.* Linn. Sp. Pl. 734. Curt. Mag. t. 405. J. Miller Ic.—(Tſjinkin; Rumph. Amb. v. 7. 61. t. 28.)—Petals pointed, criſped. Six ſtamens much longer than the reſt. Panicle terminal. Leaves roundiſh-oval, ſmooth.—Native of China, Cochinchina, and Japan. Kæmpfer ſays it is very rare. The *Hortus Kewenſis* records its having been introduced into this country by the late duke of Northumberland, in 1759. Nothing could be a more deſirable acquiſition to the green-houſe or ſtove. In the latter it blooms moſt freely, and is increaſed readily by cuttings. The *ſhrub* is about the ſize of a Pomgranate-tree, rather ſtraggling, ſmooth, with angular twigs. *Leaves* oppoſite or alternate, nearly ſeſſile, an inch or two in length, of a broadiſh rounded elliptical form, ſlightly pointed, entire, finely dotted, ſmooth, except ſome ſhort pubeſcence at the rib and veins on both ſides. *Stipulas* none. *Buds* axillary, ovate, compreſſed. *Flowers* in a large, terminal, ſomewhat racemoſe panicle, of a fine roſe-colour, not unlike a double ſtock at firſt ſight, but far more delicate and without ſcent. The *petals* are heart-ſhaped, pointed, exceſſively crumpled and curled, with long ſlender claws. *Anthers* yellow.

2. L. *Reginæ.* Roxb. Coromand. v. 1. 46. t. 65. (L. Flos Reginæ; Retz. Obſ. faſc. 5. 25. Adambea glabra; Lamarck Dict. v. 1. 39. Adamboe; Rheed. Hort. Mal. v. 4. 45. t. 20, 21.)—Petals bluntiſh, wavy. Stamens all nearly equal. Panicle terminal, much branched. Leaves oblong, pointed, ſmooth.—Native of woody mountains in Malabar and Java, flowering during the hot ſeaſon, and ripening ſeed in Auguſt. A moderate-ſized tree, with ſpreading *branches*, angular and winged when young. *Leaves* from three to five inches in length, elliptic-oblong, entire, ſmooth, generally oppoſite, on very ſhort ſtalks. *Panicle* compound, ſpreading. *Flowers* two inches broad, with roſe-coloured, round, bluntiſh, ſhort-clawed petals, and very numerous, purpliſh, almoſt equal ſtamens, with yellow anthers. *Capſules* the ſize of a large oblong acorn, pointed, woody, ſmooth, accompanied by the reflexed calyx at their baſe, which is downy while in flower.

3. L. *hirſuta.* Willd. n. 3. (Adambea hirſuta; Lamarck Dict. v. 1. 39. Katou-Adamboe; Rheede Hort. Mal. v. 4. 47. t. 22.)—Petals pointed. Six ſtamens much longer than the reſt. Panicle terminal, much branched. Leaves oblong, pointed, hairy.—Native of the provinces of Mala and Poiga in Malabar, according to Rheede, from whoſe work alone we have any knowledge of this ſpecies, and who repreſents it as the wild ſtate of the preceding, differing in being taller, with downy or hairy *leaves* and *branches.* The *fruit* alſo is roughiſh with fine hairs. In his plate moreover the *petals* are leſs wavy and much more pointed, and he mentions that five ſtamens (we have ventured to preſume ſix from analogy) are alone conſpicuous in each flower. The ſtamens of *L. indica* enable us to underſtand this, and it is probable that the reſt of the filaments are ſhorter than the calyx, ſo as to have paſſed unobſerved. Lamarck, after having firſt, on Rheede's authority, defined and named this ſpecies, ſuggeſts in his Dictionary, v. 3. 376, that it may probably be only a variety of the laſt. We muſt leave this point in doubt, after having collected all the information in our power.

4. L. *Munchauſia.* Lamarck Dict. v. 3. 375. Willd. n. 4. (Munchauſia ſpecioſa; Linn. Mant. 243. Murray Gott. t. 1.)—Petals bluntiſh, wavy. Stamens all nearly equal. Cluſter terminal, many-flowered, nearly ſimple. Leaves ovate, pointed, almoſt entire, ſmooth.—Native of China, according to Linnæus. His ſpecimen is marked as coming from India. Lamarck, in his Dict. v. 3. 375, confounds this with *L. Reginæ*, from which it is nevertheleſs very diſtinct. The *leaves* are not half ſo long, much thinner, and are ovate, with much longer and ſlenderer footſtalks. The only leaf we have ſeen agrees preciſely with that drawn by Murray, except in being ſtill leſs entire, the upper part being bluntly ſerrated. The *flowers* are copious, racemoſe rather than panicled, but they appear to differ very little in themſelves from thoſe of *L. Reginæ*, the petals in Murray's plate being erroneouſly made flat, obovate and obtuſe. Willdenow probably took his ſpecific character from thence, the plant being very rare, even in dried collections.

5. L. *parviflora.* Roxb. Coromand. v. 1. 47. t. 66. Willd. n. 5.—Petals wavy, blunt. Six ſtamens much longer than the reſt. Flower-ſtalks axillary and terminal, about three-flowered. Leaves oblong, obtuſe, downy beneath.—Native of the Circar mountains of India, flowering during the hot ſeaſon, ripening ſeed in Auguſt and September. The inhabitants call it *Chinamghie*, and uſe the wood for various economical purpoſes. This is a little *tree*, differing from all the foregoing in the ſmallneſs of its *flowers*, which are leſs than the common Myrtle, white, chiefly axillary, uſually three on each of the ſtalks, which grow in pairs, and are (like the *leaves*) about two inches long. The *petals* are ſix, round, with an undulated edge. The *capſule* has but three or four cells. Six of the *ſtamens* are as long as the corolla. Profeſſor Willdenow, from miſunderſtanding the Engliſh deſcription, deſcribes the *leaves* as ſcabrous. They are ſmooth and ſhining above, downy at the back. S.

LAGERSTRŒMIA, in *Gardening*, contains a plant of the exotic tree kind, for the green-houſe, of which the ſpecies cultivated is L. indica.

Method of Culture.—This plant is capable of being increaſed, either by layers or cuttings of the young branches. The layers ſhould be made from the young ſhoots of the preceding ſummer, and be laid down in the autumn. When they are well rooted in the ſucceeding autumn, they ſhould be taken off and planted out in ſeparate pots.

The ſlips or cuttings ſhould be made from ſhoots of the ſame year's growth, and be planted out early in the ſummer, in pots of light earth, being plunged in a bark hot-bed, and covered with ſmall bell hand-glaſſes, due ſhade and water being given. When well-rooted in the ſpring following, they may be taken up and planted in ſeparate pots, filled with light mould, being afterwards managed as other green-houſe plants.

Theſe plants afford variety in collections of potted plants of different kinds.

LAGETTA, in *Botany*, the Lagetto or Lace-bark of Jamaica. Juſſ. 77. Lamarck. Dict. v. 3. 376. Illuſtr. t. 289. (Daphne Lagetto; Swartz. Ind. Occ. v. 2. 680. Willd. Sp. Pl. v. 2. 419. Frutex foliis majoribus, cordatis, nitidis, petiolis ſemipollicaribus inſidentibus; Browne Jam. 371. t. 31. f. 5. Laurifolia arbor, folio latiore, longo, mucronato, lævi, ſplendente; cortice interiore in telas plurimas, linearum æmulas, extenſili; Sloane Jam. v. 2. 22. t. 168. f. 1, 2, 3. t. 169. f. 1.) See DAPHNE.

This *tree* is a native of the loftier mountains of Jamaica and Hiſpaniola. Swartz ſays it is thirty feet high, with a *trunk* as thick as a man's thigh, the wood white and ſolid, the outer bark cracked and greyiſh; branches round and ſmooth. *Leaves* alternate, on ſhort ſtalks, ovate or ſomewhat heart-ſhaped, more or leſs pointed, entire, from four to ſix inches long, evergreen, very ſmooth and ſhining, veiny, flat except a ſlight undulation at the edges; the under ſide paleſt. *Spikes* or *cluſters* terminal, either ſimple or panicled, each ſcarcely a finger's length, of few *flowers*, which are white, four lines long, ovate, four-cleft, the mouth below the ſtamens cloſed with wool. *Stamens* eight, very ſhort. *Germen* clothed with long upright hairs. *Drupa* inveſted with the permanent calyx, its pulp ſweet and whitiſh, its coat rough with pungent briſtles. *Seed* ovate, brittle.

We cannot find ſufficient reaſons to make this a diſtinct genus from *Daphne*, but having ſeen only a ſingle leaf, without any parts of fructification, we preſume not to decide with poſitiveneſs. The inner bark of this tree is very beautiful and remarkable, conſiſting of many layers, which are eaſily pulled out laterally, into a fine white ſilky reticulated web, like lace or gauze, three or four feet wide, which has been uſed in ladies' dreſs on many occaſions; and Charles II. is ſaid to have had a cravat made of it, preſented to him by ſir Thomas Lynch, then governor of Jamaica. Swartz aſſerts that articles of dreſs made of this web, may be waſhed in ſoap and water without injury.

LAGGA, in *Geography*, a town of Sweden, in the province of Upland; 9 miles S.E. of Upſal.

LAGHI, a town of Arabia, in the province of Hadramaut, on the coaſt of the Arabian ſea; 12 miles N.E. of Aden.

LAGNASCO, a town of the Ligurian republic; 11 miles N.W. of Genoa.

LAGNIEUX, a town of France, in the department of the Ain, and chief place of a canton, in the diſtrict of Belley; 22 miles N.E. of Lyons. The place contains 2551, and the canton 10,266 inhabitants, on a territory of 207½ kiliometres, in 14 communes.

LAGNY, Thomas Fantet de, in *Biography*, an eminent mathematician, was born at Lyons in the year 1660. He was intended for the bar, and was ſent to purſue his ſtudies for that purpoſe, firſt at the college of Lyons, and next at the univerſity of Thoulouſe; but having accidentally met with Fournier's Euclid, and a treatiſe on algebra, his genius for mathematics was developed, and he reſolved to devote himſelf to the purſuit of his favourite ſcience. He came to Paris in the year 1686, and was ſoon after appointed tutor to the duke de Noailles. He became a member of the Academy of Sciences, and was appointed by Louis XIV. royal hydrographer at Rochefort, but fixteen years afterwards he was recalled to Paris, and made librarian to the king with a conſiderable penſion. He died in the year 1734, and in his laſt moments, when he no longer knew the perſons who ſurrounded his bed, one of them, through a fooliſh curioſity, aſked him "What is the ſquare of 12?" to which he replied, as it were mechanically, 144. His works are, 1. New Methods for the Extraction and Approximation of Roots: 2. Elements of Arithmetic and Algebra: 3. On the Cubature of the Sphere: 4. A general Analyſis, or Method of reſolving Problems: and 5. Several Papers in the Memoirs of the Academy. Lagny excelled in arithmetic, algebra, and geometry, in which he made many important diſcoveries. He delivered the meaſures of angles in a new ſcience, called "Goniometry;" in which he found the value of angles to great accuracy by means of compaſſes, without ſcales or tables of any kind. He paid great attention to "Cyclometry," or the method of meaſuring the circle, and calculated by means of infinite ſeries the ratio of the circumference of a circle to its diameter to 120 places of figures. Moreri.

Lagny, in *Geography*, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the diſtrict of Meaux, ſeated on the Marne, and containing three pariſh churches; 15 miles E.N.E. of Paris. N. lat. 48° 53'. E. long. 2° 46'. The place contains 1836, and the canton 12,257 inhabitants, on a territory of 157½ kiliometres, in 31 communes.

LAGO, a town of Italy, in the department of the Lower Po; 4 miles N. of Comacchio.

Lago *Maggiore*. See Langensee.

Lago *Nero*, a town of Naples, in Baſilicata, at the foot of the Apennines, near a lake from which it receives its name; 12 miles N.E. of Policaſtro.

LAGOA, a town of the iſland of May, one of the Cape Verde iſlands.—Alſo, a town of Portugal, in Algarva; 5 miles N E. of Silves.—Alſo, a river of Africa, which runs into the Atlantic, N. lat. 6° 55'.—Alſo, a bay of the Indian ſea, on the coaſt of Africa. S. lat. 33° 10'.

Lagoa. See Delagoa.

Lagoa *d'Albafeira*, a lake on the W. coaſt of Portugal, near the ſea; 12 miles S.S.W. of Liſbon.

Lagoa *d'Obidos*, a lake on the W. coaſt of Portugal, which diſcharges itſelf into the ſea, four miles N.E. from Cape Carvaeiro, in the province of Eſtramadura.

Lagoa *de Patos*, a bay on the coaſt of Brazil. S. lat. 29° 25'.

Lagoa *de Peſcara*, a bay on the coaſt of Brazil. S. lat. 21° 30'.

LAGOAS, As, a town of Africa, in the country of Matamba, on the Sierra Leone. N. lat. 8 40'. W. long. 10° 50'.

LAGOCHEILOS, (from λαγωος, *a hare*, and χειλος, *a lip*), denotes, in *Surgery*, the deformity more commonly named a hare-lip. See Hare-lip.

LAGODA, in *Geography*, a town of Brazil; 85 miles W. of Fort Rio Negro.

LAGOECIA, in *Botany*, ſo named by Linnæus, from λαγωος, *a hare*, and οικος, *a dwelling, or ſeat*, the plant being, according to Bellonius, Obſ. 32, (in Cluſ. Exot.) called in the iſle of Lemnos *Lagochymeni*, which means the form or ſeat of the hare.—Linn. Gen. 112. Schreb. 156. Willd. Sp. Pl. v. 1. 1184. Mart. Mill. Dict. v. 2. Ait. Hort. Kew. ed. 2. v. 2. 53. Sm. Prodr. Fl. Græc. v. 1. 162. Juſſ. 227. Lamarck Illuſtr. t. 142. Gærtn. t. 23. (Cuminoides; Tourn. t. 155.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Umbellatæ*, Linn. *Umbelliferæ*, Juſſ.

Gen. Ch. *Cal. General Involucrum* of eight leaves, cut like a feather, fringed, reflexed, containing a ſmall umbel; *partial* one of four leaves, in feather-like capillary ſegments, ſurrounding a ſolitary flower-ſtalk, ſhorter than itſelf. *Perianth* ſuperior, of five leaves, in many capillary ſegments. *Cor.* Petals five, two-horned, ſhorter than the perianth. *Stam.* Filaments five, capillary, the length of the corolla; anthers roundiſh. *Piſt.* Germen roundiſh, under the baſe of the perianth; ſtyle as long as the ſtamens; ſtigmas two, one of them abrupt. *Peric.* none. *Seed* ſolitary, ovate-oblong, crowned with the perianth.

Obſ. Gærtner remarks that there are the rudiments of two ſeeds, though one only comes to perfection.

Eſſ. Ch. Involucrum both general and partial, pinnatifid. Perianth of five leaves, in many capillary ſegments. Petals cloven. Seed ſolitary, inferior.

1. L. *Cuminoides*. Wild Cumin. Linn. Sp. Pl. 294. (Cuminum ſylveſtre; Matth. Valgr. v. 2. 117. Camer. Epit.

519.

519. Κυμινον αγριον; Dioſc. lib. 3. cap. 69.)—This is the only known ſpecies of its ſingular genus, found in fields and vineyards, not uncommonly in Greece and the Levant. Its name in modern Greek is, according to Dr. Sibthorp, Αγριοριγανη, or Wild Marjoram; and Bellonius deſcribes its ſcent and taſte as like that of *Origanum heracleoticum.* Dioſcorides ſpeaks of the ſeed as a warm, rather acrid carminative, more powerful than the Garden Cumin. The *root* is annual, tapering. *Stem* ten or twelve inches high, branched, zigzag, round, ſtriated, ſmooth, leafy. *Leaves* pale green, ſmooth, ſimply pinnate, with about a dozen pair of ſeſſile, roundiſh, deeply cut, nearly oppoſite leaflets, and an odd one; the upper leaves become very much diminiſhed, and briſtle-pointed. *Umbels* terminal, globoſe, denſe, half an inch wide, beſet with ſhining, ſilvery, briſtly points.—A figure of this is deſtined to appear in the *Flora Græca,* v. 3. t. 243.—We know not how the idea of a hare's form can bear any analogy to this plant, except it alludes to the ſeed, neſtling amongſt the fine briſtly coverings of the flowers like a hare amongſt graſs.

Lagoecia, in *Gardening,* contains a plant of the herbaceous kind, of which the ſpecies cultivated here is the wild or baſtard cumin, L. cuminoides.

Method of Culture.—Theſe plants may be increaſed by ſowing the ſeeds in autumn, on a warm border, ſoon after they are ripe, or where they are to remain; or when permitted to ſcatter, they come up and form good plants. They afterwards require only to be kept clean from weeds, and in the former caſes planted out when of ſufficient growth where they are to grow.

Plants of this kind afford ornament and variety in the borders and other parts of ſhrubberies and pleaſure grounds.

LAGOON Island, in *Geography,* an iſland of the Pacific ocean, diſcovered in lieutenant Cook's voyage in 1769. It is of an oval form, with a lagoon in the middle, which occupies much the larger part of it: the border of land circumſcribing the lagoon is in many places very low and narrow, particularly on the S. ſide, where it chiefly conſiſts of a beach or reef of rocks: it has alſo the ſame appearance in three places on the N. ſide: ſo that, the firm land being disjoined, the whole looks like many iſlands covered with wood. On the weſt end of the iſland is a clump of trees, appearing like a tower, and about the middle are two cocoa-nut trees, which riſe above all the reſt, which in approaching the iſland appear like a flag. The whole iſland is covered with trees of different verdure; but none could be diſtinguiſhed except cocoa-nuts and palm-nuts. The natives appeared to be tall, and to have remarkably large heads; they were of a copper colour, and had long black hair. Whilſt they walked on the beach they ſeemed to be naked; but when they retired they covered themſelves with ſomething of a light colour. Their habitations were under ſome clumps of palm-nut trees, which appeared to Cook and his companions, who had long ſeen nothing but ſea and ſky, except the dreary hills of Terra del Fuego, to be a terreſtrial paradiſe. S. lat. 18° 47′. W. long. 139° 28′. Variation 2° 54′ E. Hawkeſworth's Voyages, vol. ii.

Lagoon, *Middle,* a gulf on the coaſt of Yucatan, in the bay of Honduras. N. lat. 18° 7′. W. long. 88° 59′. *North* Lagoon is a gulf in the ſame bay. N. lat. 18° 40′. W. long. 88° 58′. *South* Lagoon in the ſame bay lies in N. lat. 17° 54′. W. long. 88° 59′.

LAGOPHTHALMIA, or Lagophthalmus, (derived from λαγωος, *a hare,* and οφθαλμος, *an eye,*) denotes, in *Surgery,* a particular caſe, where the patient experiences an inability of cloſing the eye-lids ſo as to cover the eye. It is the defect to which the term *oculus leporinus,* or *hare-eye,* has ſometimes been applied. The ectropium, or gaping of the eye-lids, if the affection is confined to the upper palpebra, now and then receives one of the foregoing appellations. Some writers, however, with much reaſon, are deſirous of reſtricting the term *lagophthalmia,* or *lagophthalmus,* to caſes of ſimple retraction of the eye-lid, unattended with any degree of everſion.

Various and many are the inconveniences which may be the conſequence of this incapacity of properly covering the eye with the eye-lids. The tears are inceſſantly dropping over the cheek, becauſe the alternate opening and cloſure of the eye-lids, ſo eſſential to the propulſion of this ſecretion into the puncta lachrymalia, are impeded. In a ſtrong light the patient is quite blinded; for it is impoſſible for him to leſſen the quantity of rays which fall upon the eye, by making the eye-lids approach each other. From this cauſe viſion gradually becomes very much weakened. Nor can the patient ſleep well in any apartments which admit the light. And, in addition to theſe unpleaſant circumſtances, we muſt mention the painful inflamed ſtate of the eye, frequently induced by the irritation which it ſuffers from the lodgment of duſt, and other extraneous ſubſtances upon it.

A preternatural ſwelling, or protruſion of the eye from the orbit, is ſometimes the cauſe of lagophthalmus, which in this circumſtance is to be regarded only as a ſymptom of another diſeaſe, and generally gets well with the primary affection. In the majority of caſes the defect is ſituated in the upper eye-lid.

Several ſpecies of lagophthalmus are noticed by Richter. In ſome, though not many inſtances, the diſeaſe depends upon a weakneſs, or paralyſis, of the orbicularis palpebrarum muſcle. Here the upper eye-lid may readily be brought down over the eye with the fingers; but the patient is quite incapable of doing this without external aid. The cure can in general only be accompliſhed with difficulty. The treatment moſt likely to prove beneficial conſiſts in applying corroborant and ſtimulating applications. Rubbing the ſkin of the eye-lids once or twice a day, with a drop or two of fennel-oil, electricity, frictions upon the eye-lids with the tinctura cantharidis, bliſters near or immediately upon the eye-lids, the application of cold water to the eye by means of compreſſes wet very often in the courſe of the day; &c. are plans in repute. Letting the water of a ſhower-bath fall upon the hinder part of the head; cold applications aſſiſted with the internal employment of bark, and camphorated remedies, are all likely means to do good in caſes of the paralytic lagophthalmus.

A fiſſure in the lower, and eſpecially in the upper eye-lid, whether an original malformation, or the conſequence of a neglected wound, may produce a conſiderable expoſure of the eye-ball, when the patient attempts to ſhut his eye; for at this period the margins of the ſlit will be drawn furtheſt aſunder. This particular caſe requires a ſimilar operation to that for the hare-lip. (See Hare-lip.) But inſtead of the twiſted ſuture, the ſurgeon is to employ the interrupted. See Suture.

The moſt common kind of lagophthalmus is undoubtedly that which originates from a contraction of the integuments of the upper eye-lid, in conſequence of wounds, abſceſſes, burns, &c. Here the obſervations, elſewhere made concerning the diagnoſis and cure of an analogous caſe, are ſtrictly applicable. See Ectropium.

Sometimes lagophthalmus appears to depend upon an indurated thickening and contraction of the levator palpebræ ſuperioris, and of the ſkin of the eye-lid together. In this caſe no ſurgical operation will avail in curing the diſeaſe, and every chance of benefit lies in a trial of other plans.

In order to preſerve the ſight, it is proper to guard the eye with a green ſhade from the effects of ſtrong light, until the infirmity is completely removed.

LAGOPODES, in *Ornithology*, a name given to a diviſion of the genus *Tetrao*, diſtinguiſhed by a naked ſpot above the eyes, and hairy legs. See TETRAO.

LAGOPUS, in *Botany*, from λαγωος, *a hare*, and πȣς, *a foot*, a name which has been applied to ſeveral different plants, whoſe ſoft hairy heads of flowers have ſuggeſted the idea of a hare's foot. Among theſe are a ſpecies of *Plantago*; one of *Gnaphalium*, called by Linnæus *dioicum*; ſome graſſes; and ſeveral of the *Diadelphia* claſs. There are grounds of ſuſpicion that the *Lagoecia*, (ſee that article,) might primarily have been named with ſome alluſion to the *foot* rather than the *form* of a hare, which its round hairy tufts of flowers might very well juſtify.

LAGOPUS, in *Ornithology*. See GROUS, *Red*, PTARMIGAN, and TETRAO.

LAGOPUS, in *Zoology*, is the name of a ſpecies of the canis, with a ſtraight tail throughout of the ſame colour. It is ſometimes called the white fox, the iſatis, and the ſky-coloured fox. It is found in Lapland and Siberia. See Fox.

LAGOR, in *Geography*, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Orthés; 8 miles S.E. of Orthés. The place contains 1700, and the canton 10,588 inhabitants, on a territory of 177½ kiliometres, in 23 communes.

LAGOS, a ſea-port of Portugal, in the province of Algarve, ſituated in a bay of the Atlantic, to which it gives name, defended by ſeveral forts: the harbour is deep, but full of rocks. This place is the reſidence of the viceroy of Algarve, and contains two pariſh churches, four convents, and about 4600 inhabitants; 96 miles S. of Liſbon. N. lat. 37°. W. long. 8° 39'.—Alſo, a river of Africa, which riſes in Benin, and runs into the Atlantic, N. lat. 5° 10'. Its navigation is obſtructed by a bar at its mouth.—Alſo, a town of Mexico, in the province of Guadalajara; 36 miles N.E. of Guadalajara.

LAGOSTOMA, (from λαγωος, *a hare*, and ϛομα, *the mouth*,) is a term in *Surgery*, ſignifying the hare-lip.

LAGOUSA, in *Geography*, a ſmall iſland in the gulf of Engia; 3 miles N. of Engia.

LAGOW, a town of Auſtrian Poland; 16 miles N. of Sandomirz.

LA GRAVE. See *La* GRAVE.

LAGRIMOSO. See LACRIMOSO.

LAGUA, in *Geography*, a town of the iſland of Cuba; 80 miles W.N.W. of Villa del Principe.

LA GUAYRA. See GUAYRA.

LAGUEN, one of the ſmall Philippine iſlands, near the north coaſt of Samar. N. lat. 12° 43'. E. long. 125° 9'.

LAGUERRE, LOUIS, in *Biography*, a painter of hiſtories on ceilings, ſtaircaſes, halls, &c., and an aſſiſtant and imitator of Verrio; with whoſe name his own has been moſt unpropitiouſly immortalized by Pope, in that characteriſtic verſe,

> "Where ſprawl the ſaints of Verrio and Laguerre."

Laguerre, though the ſon of a Catalan, was born in France; and his father being maſter of the menagerie at Verſailles, he had the honour of having Louis XIV. for his god-father, and after him he was named. At firſt he was intended for the church, and was placed in the Jeſuits' college for education; but having a heſitation in his ſpeech, and therefore not ſuited to ſupport their ambitious projects, and having exhibited ſome taſte in drawing, the god-father recommended to his parents to bring him up to the profeſſion of painting.

He then ſtudied in the ſchool of Le Brun, and in the Royal Academy of Paris; and made ſo much progreſs, that, in the year 1683, at the age of 20, he came to England, and was immediately employed by Verrio upon the large work at St. Bartholomew's hoſpital; in which he ſucceeded ſo well, that he ſoon obtained conſiderable employment on his own account, and executed a great number of ceilings, halls, and ſtaircaſes, in the houſes of the principal nobility of the country, particularly at lord Exeter's at Burleigh, at Devonſhire Houſe, Piccadilly, Petworth, and Blenheim. King William gave him lodgings at Hampton Court, where he painted the "Labours of Hercules," and repaired the large pictures called "The Triumphs of Cæſar," by Andrea Mantegna.

His talents were not of a caſt to demand very high reſpect, but they were fully equal to the mode in which they were employed,—which requiring a certain portion of ingenuity, is a certain waſte of talents of a ſuperior claſs. In a few years, it is probable his name will repoſe for perpetuity on the records of hiſtory, and the unlucky ſatire of Pope above mentioned.

His death happened in the year 1721, and in a place very ſeldom diſturbed by ſuch an event, *viz.* in the theatre of Drury-lane. He had gone there to ſee the Iſland Princeſs acted for the benefit of his ſon, who was newly entered upon the ſtage as a ſinger; but before the play began, he was ſeized by an apoplexy, and carried away ſenſeleſs.

LAGUNA, in *Botany*. See LAGUNÆA.

LAGUNA, in *Geography*, a town of South America, in the province of Venezuela, on the weſt ſide of lake Maracaybo; 80 miles S. of Maracaybo.

LAGUNA, or *St. Chriſtobal de la Laguna*, a city of Teneriffe, ſo called from an adjoining lake, which does not now remain, about four miles from Santa Cruz. It uſed to be reckoned the capital of the iſland, the gentry and lawyers living there, and the courts of juſtice being held in this town; though the governor-general of the Canary iſlands reſides at Santa Cruz, as being the centre of their trade both with Europe and America. The place, though pretty extenſive, ſcarcely deſerves to be dignified with the name of a city. The diſpoſition of its ſtreets is very irregular; but ſome of them are of a tolerable breadth, and have ſome good houſes. In general, however, Laguna is inferior in appearance to Santa Cruz, though the latter is ſmall compared with the former; and it is ſaid to be in a declining ſtate; vineyards being now planted where houſes formerly ſtood: whereas Santa Cruz is daily increaſing. Laguna is ſituated on an eminence, in a fertile plain of conſiderable extent. Beſide vines, it bears wheat, Indian corn, potatoes, and a ſpecies of bean not unlike a lupin. From grounds ſtill higher, water is conveyed to a variety of fountains in this city, as at Santa Cruz, in an aqueduct compoſed of wooden troughs, and ſupported by poles fixed into the earth. To the plain now mentioned ſucceeds a ridge of hills, of gentle aſcent, from the ſummit of which may be eaſily traced the windings of a pleaſant valley, ſtretching to the weſtward, along the feet of a range of hills that ſeparate it from the ſea-coaſt. The town of Ticoronta and numerous little villages form a ſcene agreeable and pictureſque. The boſoms of the mountains are well cultivated, and their more rugged ſides are chiefly covered with the ſpontaneous plants of warm regions, ſuch as the Cacalia kleinia, the Agave americana, the Cactus tuna, beſides others of little ornament or uſe. N. lat. 28° 28'. W. long. 16° 20'.

Laguna *Eſcura*, a cape of Portugal, in the province of Beira; 7 miles S.W. of Guarda.

LAGUNÆA, in *Botany*, named by Cavanilles in memory of Andrew Laguna, a Spaniſh botaniſt and phyſician of the 16th century, who made a tranſlation of Dioſcorides, with a commentary, into his own language, and wrote alſo ſome botanical as well as medical works.—Schreb. 463. Willd. Sp. Pl. v. 3. 733. Mart. Mill. Dict. v. 3. (Laguna; Cavan. Diſſ. 173. Juſſ. 273. Lamarck Illuſtr. t. 577. Solandra; Murr. in Linn. Syſt. Veg. ed. 14. 623. Juſſ. 273. Lamarck Illuſtr. t. 580. Cavan. Diſſ. 55. Triguera; Cavan. Diſſ, 41. t. 11.)—Claſs and order, *Monadelphia Polyandria*. Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſimple, inferior, of one leaf, bell-ſhaped, ſlightly angular, cut about half way down into five ſegments, permanent. *Cor.* Petals five, ovate-oblong, obtuſe, ſpreading, attached to the baſe of the tube of the ſtamens. *Stam.* Filaments numerous, 25 to 30, united below into a tube, at the top of which, as well as at its ſides, they become ſeparate and diſtinct; anthers roundiſh. *Peric.* Germen ovate-oblong, ſuperior; ſtyle thread-ſhaped, longer than the ſtamens, either with five ſpreading branches at the top, or only five notches; ſtigmas capitate. *Peric.* Capſule ovate-oblong, obſcurely five-ſided, with five cells and five valves; the partitions contrary to the valves. *Seeds* ſeveral, roundiſh, with three angles.

Obſ. The *Solandra* of Murray has a deeply five-cleft calyx, and five diſtinct ſtigmas; *Laguna* of Cavanilles has a five-toothed calyx, burſting at one ſide, and a ſtigma with five notches or teeth. Schreber has very judiciouſly united the two, from obſerving ſimilar differences among many ſpecies of the genus *Hibiſcus*.

Eſſ. Ch. Calyx ſimple, five-cleft. Stigmas five-cleft. Capſule of five cells, with contrary partitions.

1. L. *lobata*. Lobed Lagunæa. Willd. n. 1. (Solandra lobata; Murr. in Comm. Goett. for 1784. 21. t. 1. Cavan. Diſſ. 279. t. 136. f. 1. Hibiſcus Solandra; L'Herit. Stirp. v. 1. 103. t. 49. Ait. Hort. Kew. ed. 1. v. 2. 455.)—Leaves heart-ſhaped, three-lobed, unequally ſerrated.—Native of the Iſle of Bourbon. *Root* fibrous, annual. *Stem* branched, two feet high, round, clothed, like every other part of the herbage, with prominent hairs. *Leaves* alternate, on long ſtalks, heart-ſhaped, more or leſs deeply three-lobed, acute, unequally cut or ſerrated, two or three inches long, and nearly as wide, of a light green. *Stipulas* linear-oblong. *Flowers* on long ſtalks, in long terminal cluſters, with bracteas like the ſtipulas. *Corolla* white, about half an inch or more in diameter. It is a plant of little beauty, compared at leaſt with the generality of its natural order.

2. L. *ternata*. Ternate Entire Lagunæa. Willd. n. 2. (Solandra ternata; Cavan. Diſſ. 279. t. 136. f. 2.)—Leaves ternate and ſimple, entire.—Native of Senegal, whence Adanſon brought ſpecimens, the only ones of which we have any account. The *root* appears to be annual. *Stems* ſeveral, about a foot high, ſlender, round, downy, like the other parts. *Leaves* alternate, diſtant, on long ſtalks, moſtly ternate, the upper ones ſimple; leaflets oblong, narrow and entire, the ſide ones ſmalleſt. *Stipulas* ſmall, acute. *Flowers* on longiſh, ſimple, ſolitary, axillary or lateral ſtalks, ſhorter than the leaves. Of the *corolla* we have no information.

3. L. *aculeata*. Prickly Lagunæa. Cavan. Diſſ. 173. t. 71. f. 1.—Leaves ternate, cut. Stem prickly.—Found near Pondicherry. The *ſtem* is a foot and half high, muricated. *Leaflets* nearly equal, obtuſe, cut. *Flowers* yellow. Sometimes the leaflets are more than three.

L. *Paterſonia*, Sims in Curt. Mag. t. 769. (L. ſquamea; Venten. Malmais. t. 42. Hibiſcus Paterſonius; Andr. Repoſ. t. 286.) found in Norfolk iſland by Col. Paterſon, a very handſome ſhrub with a large purple flower, appears to us at beſt but a doubtful *Lagunæa*, nor is the account of the fruit given with ſufficient accuracy in Andrews, for us to judge reſpecting this matter.

LAGUNILLA, in *Geography*, a town of South America, in the vice-royalty of New Granada; 14 miles S.W. of Merida.—Alſo, a town of South America, in the province of Cordova; 30 miles E. of Cordova.

LAGUNILLAS, Las, a town of Peru, in the dioceſe of La Paz; 39 miles N. of Potoſi.

LAGURUS, in *Botany*, from λαγωος, *a hare*, and ουρα, *the tail*, alluding to the appearance of the ſpike or head of flowers. Hare's tail Graſs.—Linn. Gen. 37. Schreb. 52. Willd. Sp. Pl. v. 1. 453. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 173. Sm. Prodr. Fl. Græc. v. 1. 68. Fl. Brit. 143. Juſſ. 30. Lamarck. Illuſtr. t. 41. Gærtn. t. 1. Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. *Cal.* Glume ſingle-flowered, of two long, linear, very thin, ſpreading, feathery valves. *Cor.* of two firmer valves; the outermoſt longeſt, terminating in two ſmall ſtraight awns, with a third awn from the middle of the back, twiſted and more or leſs bent backward; inner valve ſmaller, narrower, pointed, beardleſs. Nectary of two lanceolate blunt ſcales, tumid at their baſe. *Stam.* Filaments three, capillary; anthers oblong, pendulous, cloven at each end. *Piſt.* Germen ſuperior, oblong; ſtyles two, ſhort; ſtigmas long, cylindrical, feathery. *Peric.* none, except the permanent corolla attached to the ſeed. *Seed* ſolitary, obovate, clothed with the corolla and its awns.

Eſſ. Ch. Calyx of two valves, ſingle-flowered, feathery. Outer valve of the corolla with two terminal awns, and a dorſal twiſted one.

1. L. *ovatus*. Linn. Sp. Pl. 119. Sm. Engl. Bot. t. 1334. Fl. Græc. Sibth. v. 1. 71. t. 90. Schreb. Gram. t. 19. f. 3.—Native of ſandy open places in the ſouth of Europe and north of Africa, flowering early in ſummer. Being found in Guernſey, it is admitted into the liſt of Britiſh plants. The *root* is annual, compoſed of downy fibres, like all graſſes that grow in driving ſand. *Stem* ſolitary, various in height, downy and ſoft like the *leaves*, whoſe ſheaths are long and rather tumid. *Spike* ovate, at firſt erect, but ſoon bent to one ſide, or drooping, from the power of the wind; it is not unaptly compared to the tail of a hare, which it reſembles in denſity, ſhape, lightneſs, and whiteneſs. The name in modern Greek, Λαγουνέρα, expreſſes the ſame idea.

Lagurus cylindricus of Linnæus being properly removed to *Saccharum*, the above ſtands a ſolitary ſpecies of its genus. We know not of its having any uſeful property, except ſerving to decorate flower-pots in winter, mixed with any everlaſting flowers.

Lagurus, in *Zoology*. See Mus.

LAGUYO, in *Geography*, a town of Africa, on the Gold Coaſt, in the country of Fantin.

LAHAAR, a town of Hindooſtan, in the circar of Gohud; 40 miles E. of Gwalior. N. lat. 26° 9'. E. long. 79° 35'.

LAHADSI, a town of Arabia, in the province of Yemen; 16 miles N.W. of Aden.

LAHALL, a town of Sweden, in the province of Weſt Gothland; 10 miles N. of Gothenburg.

LAHAWANNOCK Creek, a river of Pennſylvania, which runs into the Suſquehanna, S. lat. 41° 20'. W. long. 57° 58'.

LAHIGIAN, or Lanigien, a town of Perſia, in the province of Ghilan, on the Iſperud, ſituated on an eminence; eight miles E. of Reſhd.

LAHISZIN, a town of Poland, in the palatinate of Brzeſe; 12 miles N.E. of Pinſk.

LAHMEDIE, a town of Egypt; 14 miles S.S.W. of Damietta.

LAHN, a town of Sileſia, in the principality of Jauer, on the Bober. N. lat. 50° 58'. E. long. 15° 44'.—Alſo, a river of Germany, called Lohn, which riſes in the N.E. part of the principality of Siegen, about 10 miles E.N.E. from the town of Siegen, and runs into the Rhine near Lohnſtein.

LAHNSTEIN, or Lohnstein, a town of Germany, at the conflux of the Lohn and Rhine; four miles E. of Coblentz.

LAHO, a town of Africa, on the Ivory Coaſt, which has been repreſented as a large and populous place, extending a league along the coaſt; the ſhore being compoſed of a beautiful yellow ſand, againſt which the ſea beats with great violence. The natives, who are well ſupplied with all kinds of proviſions, are of a mild, tractable, and gentle diſpoſition; but ready to ſeize any opportunity for raiſing the price of their ivory, according to the demand, and the number of ſhips they obſerve on the coaſt. They are viſited by interlopers of all nations, the free ſhips of England, Holland, Denmark, and formerly the Hanſe towns, whence the occaſions of raiſing their price frequently occur. Laho is planted, like Axim, with a great number of cocoa-trees; and thus the neighbouring countries of both diſtricts very much reſemble one another. Cape Laho is ſituated in N. lat. 5° 10', equally diſtant from Cape Palmas and Cape Tres Puntas, and the weſtern frontier of that diſtrict, called the country of the "Good People." Beyond Cape Laho the coaſt falls in directly N.E., forming a fine bay, at the head of which opens the mouth of the little river, called Jaque Lahu, or Das Balbas, running directly N. and S. but not navigable. Farther eaſtward is Korbi Laho, the little pool, called the "Bottomleſs pit," ſo called both by the Engliſh and Dutch, becauſe ſeveral unſucceſsful attempts had been made to ſound it; but at laſt it was found to be no more than 60 fathoms; the difficulty of ſounding it reſulting from a tide at the bottom which carried away the lead faſter than they could furniſh line. Excepting this pool, there is no anchorage for ſeveral leagues along the coaſt. The produce of the adjacent country conſiſts of cloths and ſtuffs of Quaquas, ivory, and proviſions. The negroes of this part are ſingularly ſkilful in ſwimming and diving; for if any pieces of coral, iron, glaſs, &c. are thrown over board, the negroes will dive after them with ſuch rapidity as to catch them before they reach the bottom.

LAHOLM, or Lageholm, a ſea-port town of Sweden, in the province of Halland, at the mouth of the Laga, near the ſea, with a good ſalmon fiſhery, fortified by the Danes, and ceded to Sweden by the peace of Bromſebro; 12 miles S.S.E. of Halmſtad. N. lat. 56° 40'. E. long. 12° 45'.

LAHOOR, a town of Thibet, on the Setlege; 24 miles N.W. of Gangotri. N. lat. 23° 10'. E. long. 76° 25'.

LAHORE, or Panjab, a ſubah or province in the N.W. part of Hindooſtan, bounded on the N. by Caſhmere, on the E. by the mountains of Thibet, on the S.E. by Delhi, on the S. by Moultan, and on the W. by the Indus, which ſeparates it from Cabul and Candahar; about 300 miles in length from E. to W. and about 100 miles from N. to S. This country, which is now occupied by the Seiks, is extenſive, and very fertile; affording, in addition to all the neceſſaries of life, wine, ſugar, and cotton-wool: the laſt of which ſupplies the manufactories of the province. It is watered by the Indus on the W., and the Setlege on the E., and alſo by the Behut, Chunaub, Rauvee, &c. In the tract between the Indus and Jhylum (Behut) there are ſalt-mines, which are wonderfully productive, and which afford fragments of rock ſalt, hard enough to be formed into veſſels, &c. Gold (according to the Ayin Acbaree) was found in the channels of its rivers; and the ſame is related of thoſe of Kemaoon, which proceed from the ſame ridge of mountains. See Panjab.

Lahore, a city of Hindooſtan, and capital of the country above deſcribed, ſituated on the Rauvee. This city was the reſidence of the firſt Mahometan conquerors of Hindooſtan, before they eſtabliſhed themſelves in the central parts of the country. It owes its modern improvements, however, to Humaioon, the father of Acbar, who made it his reſidence during a part of his troubleſome reign. Thevenot ſays, that, including the ſuburbs, it was three leagues in length at that period, and when he ſaw it, about the year 1665, the city itſelf was above a league in extent. Schauguive, ſon of Acbar, allowed the Portugueſe to build a church there; and ſome of its furniture remained at the time of Thevenot's viſit. It has 12 gates. It is now the capital of the Seiks; but by the deſertion of its inhabitants, it has loſt not only a conſiderable part of its population, but much of its ancient ſplendour. Here are manufactures of carpets, cotton, &c. Ice is brought from the northern mountains to Lahore, and ſold there all the year. The famous avenue of ſhady trees, ſo much ſpoken of by the early Indian travellers, began at Lahore, and extended to Agra, near 500 Engliſh miles. N. lat. 31° 50'. E. long. 73° 50'. See Seiks.

LAHOREY, a town of Hindooſtan, in Baglana; 20 miles S. of Bahbelgong.

LAHORPORUM, a town of Hindooſtan, in Oude; 25 miles W.N.W. of Kairabad.

LAHR, a town of Germany, in the biſhopric of Munſter; 12 miles N.W. of Munſter.

Lahr, or *Lohr*, a town of the principality of Naſſau Saarbruck Uſingen, the capital of a lordſhip, on the river Schutter; 18 miles S.S.E. of Straſburgh. N. lat. 48° 21'. E. long. 7° 57'.

LAJA, La, a town of Peru, in the dioceſe of La Paz; 14 miles N.W. of La Paz.

LAJAPOUR, a town of Hindooſtan, in Guzerat; 10 miles S. of Surat.

LAIBEEDY, a town of Africa, in the country of Tunis; 18 miles S.E. of El Jemma.

LAICA, a town of Abyſſinia; 100 miles S. of Mine.

Laica *vi removenda*. See Vi.

LAID-Up is applied to a ſhip, when ſhe is either moored in a harbour during the winter ſeaſon, or laid by for want of employment; or when ſhe is become incapable of farther ſervice.

Laid *under metal*. See Metal.

LAIDA, in *Geography*, a town of Bengal; 14 miles S. of Curruckdeagh.

LAIDALLA, a town of Hindooſtan, in Golconda; 10 miles N. of Warangole.

LAIGLE, a town of France, in the department of the Orne, and chief place of a canton, in the diſtrict of

Mortagne. The place contains 5947, and the canton 14,388 inhabitants, on a territory of 207½ kiliometres, in 19 communes.

LAIGNES, a town of France, in the department of the Côte d'Or, and chief place of a canton, in the diſtrict of Chatillon; 19 miles W.S.W. of Chatillon-ſur-Seine. The place contains 1559, and the canton 11,103 inhabitants, on a territory of 497 kiliometres, in 23 communes.

LAILAKARI, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 65° 14'. E. long. 25° 9'.

LAINEZ, James, in *Biography*, a Spaniſh Jeſuit, and the firſt general of the order after the death of the founder, (ſee Loyola,) was born in the year 1512. He ſtudied theology at Paris, became the intimate friend of Loyola, and was one of ſeven who bound themſelvss by a vow at Mont-Martre to erect the new community: he is ſaid to have had a great ſhare in drawing up the conſtitutions for their government. Upon the death of the general, he ſucceeded as ſuperior of the ſociety, but was not formally elected till the year 1558. He aſſiſted at the council of Trent, where he ſupported the papal authority to a very extravagant degree. He obtained from pope Paul IV. the perpetual generalſhip of the order, together with the following extraordinary privileges, *viz.* the right of making all manner of contracts, without the privity or conſent of the ſociety: that of giving authority and authenticity to all comments and explanations of the conſtitutions: the power of making new, and altering the old ones, and alſo to eſtabliſh priſons, for the confinement of refractory and diſobedient members, independently of the ſecular power. In 1561, he went to France in the ſuit of cardinal de Ferrara, the legate of pope Pius IV., and attended the conference at Poiſſi, where he diſputed with Beza and Peter Martyr. After his return to Rome, he refuſed a cardinal's hat, which was offered him by the pope. He died in 1565, leaving behind him ſome theological and moral treatiſes. Moreri.

LAINO, in *Geography*, a town of Naples, in Calabria Citra; 10 miles W.N.W. of Caſſano.

LAJOUN, a town of Perſia, in the province of Mazanderan, near the coaſt of the Caſpian ſea; 12 miles E. of Reſhd.

LAIR, in *Agriculture*, a term applied to land in a ſtate of graſs or ſward. See Lay and Layer.

Lair, *Layr*, or *Layer*, among *Sportſmen*, denotes a place where deer harbour by day.

Lair, or *Layr of a deer*, is the impreſſion which the beaſt has made on the graſs and ground where he has lain down, or repoſed.

Lair, among *Huſbandmen*, alſo denotes a place where cattle uſually reſt, under ſome ſhelter; the ground being enriched by their dung.

LAIRE, Francis Xavier, in *Biography*, who was born at Vadans, in France, in 1739, and died at Sens in the year 1800, was celebrated for his knowledge of bibliography, and publiſhed, 1. Memoirs towards the Hiſtory of great Men of the 15th and 16th Centuries, with a Supplement to Mattaire's Annals of Typography. 2. Specimen Hiſtoricum Typographiæ Romanæ cum Indice Librorum. 3. Epiſtola ad Abbate Ugolini. 4. On the Origin and Progreſs of Printing in Franche Compte, and other pieces.

LAIRESSE, Gerard, a painter of hiſtory and portraits, born at Liege in 1640. His father firſt inſtructed him in the art, and he is ſuppoſed alſo to have been a diſciple of Bertholet, whoſe manner he very much followed in his practice.

For a long time the art of painting was an unprofitable purſuit to him; but as he made his pictures gay and agreeable, he at laſt, by the help of Vytenburgh, a picture merchant at Amſterdam, acquired conſiderable credit.

His ſtyle of painting was a compound of thoſe of Pouſſin and the old French ſchool. While he aimed at imitating the beſt Italian maſters, he never avoided thoſe falſe airs of the head and limbs, which ſeem rather taken from the ſtage than from nature; ſo that his works do not riſe to the level of true merit.

He was blind for ſome years before his death: but having reflected upon the principles of the art, and being a communicative man, he was conſtantly attended by artiſts and amateurs, who were gratified by his inſtructions. Thoſe treatiſes on deſign which go under his name were not written by him, but collected from his obſervations, and publiſhed after his death, by a ſociety of artiſts. He died in 1711, at the age of 71.

LAIS, the famous courtezan, born at Hyccara, a ſmall city in Sicily; and being carried into Greece by Nicias the Athenian general, began her conqueſts by *muſic.* We mention it not among the encomiums of the art; but almoſt all the celebrated courtezans of antiquity were originally muſicians. According to Athenæus, (lib. xiii.) muſic was thought a neceſſary female accompliſhment in the time of Darius; for Parmenio wrote Alexander word, that he had taken at Damaſcus three hundred and twenty-nine of the Perſian monarch's concubines priſoners, who were all well ſkilled in muſic, and performed on the flute, and other inſtruments. Lais was ſuppoſed to be the daughter of the courtezan Timandra and Alcibiades. She began firſt to exerciſe her powers of inchantment at Corinth, in Greece. She is often called the Corinthian, from having paſſed great part of her life in that voluptuous city. She ſet ſo high a price on her favours, that Demoſthenes, of whom ſhe required for one night ten thouſand drachmas, refuſing to comply with her demands, ſaid, "he would not buy repentance at ſo high a price." As a caprice, ſhe was more indulgent to the diſguſting Cynic Diogenes. Ariſtippus, another philoſopher, but much more amiable, almoſt ruined himſelf in ſacrifices to this terreſtrial divinity, who loved him leſs than Diogenes. When he was rallied on her coldneſs, he ſaid, "I cannot flatter myſelf that either wine or fiſh is in love with me, yet I enjoy, and feed on them both with great pleaſure." This female ſometimes ridiculed the frailty of the philoſophers whom ſhe had captivated. "I do not underſtand what is meant by the auſterity of philoſophers; but with this fine name, they are as much in my power, as the reſt of the Athenians." After having corrupted all the youth of Corinth and Athens, ſhe went into Theſſaly, to ſee a young man with whom ſhe was in love, when, it is ſaid, that ſome women, jealous of her beauty, aſſaſſinated her in the temple of Venus, about 340 years B. C. Greece erected ſtatues to her memory.

LAISBY, in *Geography*, a town of Swediſh Lapland, in the lap-mark of Umea; 100 miles N.W. of Umea.

LAISCHEV, a town of Ruſſia, in the government of Kazan, at the union of the Kama and Volga; 20 miles S. of Kazan. N. lat. 55° 20'. E. long. 49° 14'.

LAISSAC, a town of France, in the department of Aveyron, and chief place of a canton, in the diſtrict of Milhau. The place contains 1083, and the canton 7453 inhabitants, on a territory of 172½ kiliometres, in 12 communes.

LAI-TCHEOU, a city of China, of the firſt rank, in the province of Chantong, is built on a promontory, and has a convenient harbour, a numerous garriſon, and ſeveral armed veſſels to defend the coaſt. The juriſdiction extends over ſeven cities, two being of the firſt claſs. N. lat 37° 9'. E. long. 119° 46'.

LAITY comprehends ſuch of the people as are not included under the denomination of clergy; and may be divided into three diſtinct ſtates, *viz.* the civil, the military, and the maritime. For the origin of this diſtinction, ſee Clergy.

LAK, in *Geography*, a town of Hungary; 18 miles E.S.E. of Caniſcha.

LAKE, in *Phyſical Geography*, a body of water, moſtly of conſiderable extent, ſituate, unconnected with the ocean, in an inland place, and commonly in the immediate neighbourhood of lofty mountains. The form of theſe collections of waters is various; but thoſe that receive and emit rivers, are generally of an elongated ſhape, and their longeſt diameter is in the direction of the rivers that traverſe them. Lakes are generally divided into four claſſes: 1. Such as neither receive nor emit rivers. 2. Such as emit rivers, without viſibly receiving any. 3. Such as receive one or more rivers, without emitting any. And, 4. Such as both receive and ſend forth rivers.

1. *Lakes which neither receive nor emit rivers*, are not frequently ſeen of any conſiderable extent; but there are countries where they occur in great number, and as it were in groups. This is the caſe in the deſerts northward of the Caſpian ſea, and in the plains between the Ural mountains and the Irtiſch, and in the vaſt deſert of Baraba, between the Irtiſch and the Obb. The ſoil of theſe countries is deſcribed by the accurate Mr. Patrin as being uniformly compoſed of a marle, varying only in the proportion of the admixed clay and ſand. The numerous lakes found in that tract of country are for the moſt part only depreſſions or baſons filled by the rains and melted ſnow: their greateſt extent is ſcarcely ever above three leagues in circumference, and generally they are much ſmaller. Their depth, too, is uſually very inconſiderable, for it ſeldom exceeds a fathom, and is frequently not beyond a few feet. Moſt of them are only temporary; for towards the end of the ſummer they are generally found dry.

A remarkable circumſtance, as obſerved by the ſame naturaliſt, is that in the ſame plain, at the diſtance of a few hundred paces, ſome of theſe lakes are freſh-water lakes, while the water of others is abounding either with ſea ſalt, or with ſulphat of magneſia (Epſom ſalt); or they are impregnated with both thoſe ſalts, either uniformly mixed, or each of them in a ſeparate part of the lake; in ſome caſes the ſea-ſalt and the Epſom ſalt are formed at the ſame period; in others the latter of theſe ſalts manifeſts itſelf only towards the end of the ſummer.

The cauſe of the ſaltneſs obſervable in ſome lakes has been by moſt authors on this ſubject aſcribed to ſalt ſprings at their bottom; and probably they are in the right with regard to moſt of them; but in the above inſtance, ſeveral circumſtances unfavourable to that hypotheſis exiſt in the nature of the ſoil, and the mode and determinate quantity in which thoſe ſalts are depoſited at the bottom; whence Patrin conceives that the lakes in queſtion, as well as moſt other ſalt lakes of the ſame kind, owe their ſaltneſs to principles or particles, with which they are furniſhed immediately from the atmoſphere, in the ſame manner as nitre is formed in particular ſituations in warm climates, ceaſing to be generated as ſoon as the ſoil has taken up the quantity of ſaline matter ſuitable to its nature. The general rule laid down by Buffon, that lakes which emit rivers are freſh-water lakes, and that ſuch as do not ſend forth any are ſalt lakes, appears to be inconſiſtent with experience; ſince, on one hand, the great lake Titicaca, in Peru, ſuppoſed to be eighty miles in circumference, and giving out no river, is by Laet, Acoſta, Garcilaſſo della Vega, and others, deſcribed as a freſh-water lake; while the largeſt of all ſalt lakes, the Black ſea, diſcharges its redundant waters, with a rapid courſe, through the Boſphorus into the Mediterranean.

Dr. Halley is of opinion, that all great perennial lakes are ſaline, either in a greater or leſs degree; and that this ſaltneſs increaſes with time; and on this foundation, he propoſes a method for determining the age of the world.

To the lakes of this firſt claſs likewiſe belong thoſe lodged in the craters of extinct volcanoes, or at leaſt in depreſſions conſidered by moſt geologiſts as the remains of volcanic energy. One of the moſt remarkable, on account of its elevation, is that which travellers relate to exiſt on the ſummit of the Adam's peak in Ceylon. This mountain is ſeen at a diſtance of forty leagues; which appears to indicate its height to be at leaſt that of Mount Ætna. Its cone, which is difficultly acceſſible, has 200 paces in diameter at its ſummit, and in the middle of the platform is ſituated a lake of conſiderable depth. Ribeiro's Hiſt. of Ceylon.

Dolomieu, in a letter to Faujas Saint-Fond, inſerted in this naturaliſt's work, "Sur les Volcans éteints du Vivarais," deſcribes a lake filling up the crater of an extinct volcano in the Serra de Eſtrella; a ridge of mountains in the north of Portugal, denominated *Mons Herminius* by the ancients.

Alſo the lakes of *Agnano* and *Averne*, near Naples, are ſuppoſed by many authors to have been craters of volcanoes. The former of theſe lakes, we are told by Lalande (Voyage, t. 6. p. 27.) appears ſometimes to boil at its borders, eſpecially when its waters are high. This ebullition, like that of the Acqua Zolfa near Rome, is occaſioned by gaſeous fluids traverſing the water. On the borders of this lake are the vapour-baths of San-Germano.

2. *Lakes which emit rivers without receiving any.*—Theſe are more numerous than the preceding. The more copious the ſubterraneous waters by which they are ſupplied, the more conſiderable are the rivers ſent forth by them. The *Seliger lake*, in the government of Twer, 60 leagues N.E. from Moſcow, gives origin to the largeſt river in Europe, the Volga; although no river is viſibly received by that lake. The ſame may be ſaid of the lake called *Koko-nor*, at the foot of the eaſtern ridge of the Tibetan Alps, from which iſſue two of the largeſt rivers of Aſia, the Hoanho, or Yellow river, and Kiam, or Blue river, which, after having traverſed part of the Chineſe empire, empty themſelves into the Japaneſe ſea.

Of the ſame kind are the two ſmall lakes in New Caſtile, in Spain, called *los ojos de la Guadiana*, ſituated near the Alcarraz mountains, and conſidered as the ſources of the Guadiana.

The *lake of Mont-Cenis*, though it does not emit a conſiderable river, is yet remarkable on account of its great elevation, which is 6000 feet perpendicular above the level of the ſea. This lake (together with the Ceniſe, which iſſues from it) is ſupplied by waters conveyed to it by ſubterraneous channels, and which deſcend from the neighbouring mountains, which are as elevated above the lake as this latter is above the plains of Piedmont. This lake is three quarters of a league long, and from 1800 to 2400 feet broad. Sauſſure is of opinion that it has formerly been ſituated at a greater elevation; ſince, at a height of more than thirty feet above its preſent level, traces of eroſion produced by the Ceniſe are ſtill remaining, as well as calcareous layers, exactly like thoſe ſtill depoſited by the waters of that river.

There are in the Pyrenees lakes which appear to have exactly the ſame origin as the lake of Mont Cenis, and which equally emit rivers; and ſeveral of theſe lakes occur even at a greater elevation, (about 700 feet above the level of the ſea,) ſuch as the lakes of *Liens*, *las Congous*, and *Oncet*, in the mountains above Barège. They are frozen over for the greateſt part of the ſummer, and are only partially deprived of their icy covering in the interval between the months of June and Auguſt. The lake of Mont Cenis, on the other hand, had, at the end of September, when Sauſſure obſerved it, a very mild temperature. It is ſo well ſtocked with fiſh, eſpecially trouts, that, in the year 1780, it produced a yearly rent of 636 livres.

3. *Lakes which receive one or more rivers, without emitting any.*—Moſt of theſe formerly both received and ſent forth a river; but the one emitted has become dry, on account of the diminution of the influent river; or the cavity that contains it may have enlarged to ſuch a degree, that the river it receives is barely ſufficient to repair, by new ſupplies, the loſs which the lake ſuſtains by evaporation. To this claſs belong, among others, the *Caſpian ſea*, as it is improperly called, which receives the waters of the Volga, of the Ural, and of ſome other rivers. This vaſt lake, which formerly occupied a much more conſiderable ſpace than at the preſent day, and not only included the *lake of Aral*, but probably had even a communication with the Euxine ſea, (ſee Caspian,) ſtill continues to decreaſe, in proportion as the capacity of the rivers which ſupply it is found gradually to diminiſh. Another lake of this kind is the *Dead ſea*, or lake Aſphaltites, in Paleſtine. See Asphaltites.

Such was the lake that formerly covered *Caſhmere*, which ſee. Lakes of this kind will be naturally formed in every caſe, where the waters of a river are incloſed, in any part of their courſe, by elevated lands. The firſt conſequence of this ſtoppage is, of courſe, the converſion of the incloſed lands into a lake; and if this happens near the fountains of the river, and the ground is ſolid, it is likely to remain a lake for ever; the river not having force enough in its infant ſtate to work itſelf a paſſage through the mountains. Hence it is that more lakes are found near the ſources of rivers than in the lower parts of their courſe. If the river be incloſed after it has gained a great acceſſion of water, and, of courſe, ſtrength; it will, indeed, at firſt, form a lake, as before; but in time, the place at which it runs over, will be gradually fretted away, as in the caſe of the Behut. The Euphrates, in like manner, opens itſelf a paſſage through mount Taurus; and the Ganges through mount Imaus; and even though the baſe of the mountain be of the firmeſt texture, it will give way to the inceſſant friction, through a courſe of ages; for either of theſe paſſages may have been an operation of many thouſand years. In the caſe of the Ganges, which paſſes through mount Imaus, it may be ſuppoſed that the lower ſtrata were ſofter than the upper; for the upper ſtill remain to a great height. In that of the Behut, the latter appears to have exiſted long enough to depoſit a vaſt depth of ſoil, before it diſperſed. Rennell's Memoir.

In the interior of Africa a vaſt lake is ſaid to exiſt, which is ſuppoſed to receive the Niger. In America we have the lake Titicaca in Peru, into which runs a river, the ſource of which is near Caſco..

4. *Lakes which both receive and ſend forth rivers*, are the moſt numerous of all. They are generally found in vallies, or in plains, in the proximity of great chains of mountains. The moſt remarkable among thoſe of the Alps are—

The *lake of Geneva*, traverſed by the Rhone. Its elevation above the level of the ſea, according to De Luc, is 1126 feet, according to Shuckburgh 1152, and according to the obſervations of profeſſor Pictet 1134 feet. The Rhone enters it in the neighbourhood of Villeneuve: at its leaving it, near Geneva, it divides into two branches, which encompaſs an iſland, and ſoon again unite. This lake formerly extended as far as Bex; and the village Port-Vallay, which is at preſent at the diſtance of more than an Engliſh mile, was ſituate cloſe to its banks. The lake of Geneva is ſubject to an annual ſwelling, by which its waters are raiſed from five to ſix feet above the ordinary water-mark. But beſides this periodical riſing of its waters, a fluctuation is ſometimes obſerved, not unlike that produced by the flux and reflux of the ſea. This motion, which generally continues for ſome hours, is in thoſe parts called *Seiches*. It is moſt ſtriking in the neighbourhood of Geneva. The cauſe of this phenomenon is not well underſtood. Fatio attributed it to guſts of wind, by which the water of the ſmaller lake is protruded beyond the ſand-bank that ſeparates it from the larger; and on falling back produces a fluctuation. Jallabert, obſerving that the *Seiches* take place without any guſts of winds, looked for the cauſe of this phenomenon in the ſudden diſſolution of ſnow by which the river Arve, becoming ſuddenly turgid, retards the courſe of the Rhone which iſſues from the lake. Sauſſure, on the other hand, has witneſſed the ſudden ſwelling of the Arve, without any accompanying *Seiches* in the lake. Bertrand is of opinion that electrical clouds attract and raiſe the waters of the lake, which, on falling back, produce that undulation: and Sauſſure and Vaucher add, that ſudden local variations in the preſſure of the atmoſphere, may contribute to the production of this phenomenon. Patrin is inclined to attribute ſuch ſudden fluctuations of lakes to the developement of ſubterraneous gaſes, which alſo, by mixing with the atmoſphere, produce that violent agitation, which, according to him, cannot be the effect of a ſimple diſturbance of the equilibrium, but muſt be looked for in a chemical fermentation taking place in the atmoſphere. An oſcillation ſimilar to the *Seiches* of the lake of Geneva, though in a leſs degree, has been obſerved alſo in ſome other lakes of Switzerland. To the ſame cauſe Patrin aſcribes the hollow ſound which ſome lakes are known to emit, and which is not unlike the noiſe that precedes the eruption of volcanoes. Some writers inform us that ſeveral lakes of Switzerland, and among them the lake of Geneva, give out a grumbling noiſe of this kind. Pallas has ſeen, in the Saïan mountains, near the ſource of the Yeniſei, a lake called *Boulamy-Koul*, which, according to the account given of it by the Tartars of its neighbourhood, emits, at the approach of winter, ſounds compared by them to howling. Alſo the inhabitants of the borders of the lake Baikal have informed Patrin, that they have often heard a dreadful howling proceed from that lake.

The *lake of Lucern*, in the Swiſs canton of that name, (alſo called the Vierwalſtädter ſea,) is ſituated 1320 feet above the level of the ſea, according to Pfyfer; 1314, according to De Luc; 1350, according to Trembley; and 1392 feet, according to Wyſs. The river Reuſs enters it at Fluelin, and is again emitted near Lucern. This moſt romantic of all lakes is ſurrounded by rocks conſiſting partly of lime-ſtone, partly of the calcareons breccia, called Nagelfluhe, and by ſand-ſtone mountains. The line of demarcation between theſe two formations of rocks runs in a direction from E. to W.; to the S. of this line nothing is ſeen but lime-ſtone, and nothing but calcareous breccia and ſand-ſtone in a northern direction. See more of this lake in Ebel "über die Schweitz, &c." 1805.

The *lakes of Brientz and of Thun*, in the canton of Berne, are both traverſed by the river Aar, which enters the former of theſe lakes at its N.E. extremity, and leaves it at its ſouthern end; when, at the diſtance of about two miles, its waters unite with thoſe of the lake of Thun. The rocks of both ſides of the lake of Brientz conſiſt of lime and clay-ſlate.

Dr. Ebel tells us, that on the N. ſide formerly large maſſes of the moſt beautiful varieties of red and white fluor-ſpar were found, which, from the pure fluate of lime, paſſed into blackiſh-grey granular carbonate of lime. The lake of Thun is ſituated about 1780 feet above the level of the ſea, and a few fathoms higher than the lake of Brientz. Its northern banks are entirely mountainous; half of the ſouthern bank is flat and level. The rocks on the north ſide conſiſt chiefly of the remarkable breccia and ſand-ſtone formation, of which Mount Rigi, in the canton of Schweitz, is compoſed. The breccia is made up of rolled pieces of all dimenſions, from 50 cubical feet, down to the ſize of large grains of ſand; the whole cemented by a coarſe-grained calcareous grit poſſeſſing great tenacity, ſo that on the application of blows, the included ſtones, inſtead of becoming detached from their cells, are generally ſeen cloven aſunder. Theſe rolled pieces conſiſt of various kinds of granite, gneiſs, porphyry, flint, and flint-ſlate, horn-ſtone, granular and compact lime-ſtone, and a variety of red, clayey, ferruginous boulders, which, on farther decompoſing and diſſolving, ſtain the cement in which they are imbedded with a red colour. The mountains on the S. and E. ſides conſiſt of lime-ſtone. The temperature of the lake of Thun, in the beginning of the month of July, at a depth of 350 feet, was found by Sauſſure to be 4 of Reaumur, while, at the ſurface, the ſame thermometer indicated 15. The water of the lake of Brientz, at the ſame time of the year, at the depth of 500 feet, ſhewed the temperature of $3\frac{8}{10}°$ while that of the ſurface was 16°, and that of the amoſphere 15°.

The Lake of Zurich.—The principal river which enters this lake, is the Linth or Limmat, which, after having received the Mag, ſent forth by the lake of Wallenſtadt, falls into the lake of Zurich, near a mountain called the Buſh-berg. The elevation of this lake above the level of the ſea is 1279 feet. During the hot weather of the ſummer months its waters are ſeen to riſe higher, and to overflow its banks, owing to the influence of the heat on the vaſt glaciers, and maſſes of ſnow of the Alpine chain of mountains. Several geognoſtic facts render it highly probable that formerly the Rhine, in its courſe to Germany, traverſed both the lake of Wallenſtadt and that of Zurich.

The *lake of Conſtance*, or the Boden See, is traverſed by the Rhine, which enters it at the S.W. extremity, and is again given out near Conſtance. Its elevation above the level of the ſea is 1089 feet. It is navigable for veſſels of 3000 cwt. Within a period of eight centuries, it has only twelve times been covered with ice. This beautiful expanſe of water formerly extended as far as the Rheinthal, or the valley of the Rhine: a change effected by the ſlow but uninterrupted depoſition of alluvial land at the mouth of that river.

The *Langen-See*, or *Lago Maggiore* of the Italians, the *Lacus Verbanus* of the Romans, a lake on the borders of Switzerland, Piedmont, and the Milaneſe territory, receives and ſends forth the river Teſſin. Its length from Tenero to Seſto, is 44 Italian miles; its greateſt breadth, between Luvino and Ferriole, is above ſeven Italian miles; its elevation above the level of the ſea 762 feet, according to Pini, but only 636 according to Sauſſure; its depth, at the chapel of la Bardia, oppoſite Locarno, is 335 feet. Many conſiderable rivers empty themſelves into this lake, ſuch as the Teſſin, the Veraſca, the Maggia, the Toſcia, and the Treſa; in ſhort it receives all the waters of the immenſe group of mountains that encompaſs it.

The natural character of the Lago Maggiore is a ſublime wilderneſs, blended with the milder beauties of the Italian ſoil; a narrow compaſs gradually widening into a vaſt expanſe. Towards the north and weſtward it is ſurrounded by elevated granitic mountains; while the eaſt and north ſides exhibit a ſeries of ſmaller hills, which gradually loſe themſelves in the plain of Lombardy. From Magadino to Luvina, on the N.E., the dark and rugged mountains of Camborogno riſe 6000 feet above the ſurface of the lake; and the wooded Pino, with the mountain of Canobbio, which appear to cloſe the lake, form a long baſin, abounding with fiſh, and known by the name of *Lago di Locarno*.

On the Piedmonteſe ſide of the Lago Maggiore, at Baveno and its neighbourhood, are the quarries of granite, which have furniſhed the magnificent columns that decorate the churches and palaces of Milan. In thoſe parts are likewiſe found the beautiful cryſtals of feldſpar, that were firſt diſcovered by Pini. At the mouth of the river Toccia are the quarries of red and white granite, and behind Mergozzo thoſe of the beautiful variety of marble, of which the cathedral of Milan is conſtructed. At Grantola are ſeen the veſtiges of an extinguiſhed volcano, which is, however, not conſidered as ſuch by the learned Abbate Pini, who viſited it in 1790.

The *Lake of Como*, about 24 miles from Milan, receives, among other ſmaller rivers, the Adda, which is again ſent forth at its eaſtern extremity. The elevation of this romantic lake, the favourite ſpot of the younger Pliny, is, according to Oriani, 654 feet above the ſea.

The *Garda*, a lake of Italy, between the Veroneſe and Breſſan, is traverſed by the Mincio.

A remarkable lake belonging to this claſs, on the French ſide of the Alps, is the *Lac de Joux*, in the Jura mountains. It is traverſed by the river Orbe, which on iſſuing from this lake, is ingulfed in vaſt funnels, hollowed out by its own waters in the calcareous ſtrata, which at preſent are ſeen in a vertical poſition, owing to the effects of the rupture they experienced at the time when the revolution took place, which produced the lake; and this ſame river, after a hidden courſe of three quarters of a league, re-appears in a valley, 680 feet below the funnel-ſhaped cavities that conveyed it to its ſubterranean channel; from whence it proceeds towards and traverſes the lakes of Neufchatel and Bienne.

Sweden, and other mountainous parts of Europe, likewiſe abound with lakes traverſed by rivers. Of this kind is the lake of Bala, in North Wales. See BALA-*pool.*

Northern Aſia has two very conſiderable lakes of this deſcription, *viz.* the *lake Norzaiſan*, in Chineſe Tartary, at the ſouthern baſe of the Altaic chain, where it is traverſed by the Irtiſch and the Baikal, in Eaſt Siberia. This latter is traverſed by the river Angara. (See BAIKAL.) M. Patrin, who has twice viſited this remarkable lake, has deſcribed the highly deſtroying effects which its waters, in their gradual formation of the baſin, have produced in the ſtratified mountains that bound its weſtern ſhores. But it is not the Baikal alone which has thus formed its own bed, for the ſame cauſe has prevailed at the formation of thoſe vaſt Canadian lakes, the lake Superior, Huron, Erie, and Ontario, connected together by the river St. Laurence, which takes its courſe through their ſtupendous baſins.

We are indebted to Sauſſure for ſome very intereſting obſervations reſpecting the *temperature* of the waters of the principal Alpine lakes. It appears from the experiments of this celebrated naturaliſt, made with a thermometer of his own invention, that even in the hotteſt ſummer months, the cold which prevails at the bottom of thoſe lakes far exceeds that obſervable in the depth of the ſea. The following are among the reſults he obtained.

In the *lake of Geneva*, on the 6th of Auguſt, at a depth of 312 feet, the thermometer (having Reaumur's ſcale) indicated

cated a temperature of $8\frac{1}{2}°$; that of the ſurface was 15°, and that of the atmoſphere 20°. On the 11th of February, in a depth of 950 feet, (namely, near the rock of Meillerie, being the deepeſt part of the lake,) the temperature was $4\frac{3}{10}°$; that of the ſurface $4\frac{1}{2}°$; that of the atmoſphere $1\frac{3}{4}°$. It is to be obſerved that as the elevation of this lake (according to Deluc) is 1126 feet above the level of the Mediterranean, the bottom of its baſin is ſituated only 176 feet above the ſame level.

The waters of the *lake of Annecy*, ſituated 210 feet above the lake of Geneva, had, on the 14th of May, and at a depth of 163 feet, the temperature of $4\frac{1}{2}°$, while that of the ſurface was $11\frac{1}{2}°$, and that of the air 10°.

In the *lac du Bourget* in Savoy, the thermometer, on the 6th Oct., at the depth of 240 feet, indicated $4\frac{1}{2}°$; at the ſurface $14\frac{1}{5}°$; in the air $10\frac{1}{10}°$. Sauſſure obſerves, that the cold of the water of this lake cannot be aſcribed to any foreign cauſe, ſince it receives no ſtream from the Alps, and its communication with the Rhone furniſhes it with water only during the turgidity of that river in ſummer.

In the *lake of Thun*, in the canton of Berne, elevated about 630 feet above that of Geneva, the temperature, on the 7th of July, at the depth of 350 feet, was obſerved to be 4°; the temperature of the ſurface was 15°, and that of the atmoſphere 16°. At the ſame time the temperature of the lake of Brientz, which is contiguous to the lake of Thun, was $3\frac{8}{10}°$ at the depth of 500 feet.

The waters of the *lake of Lucern*, ſituated 191 feet above the lake of Geneva, had, on the 28th of July, and in a depth of 600 feet, the temperature of $3\frac{9}{10}°$; temperature of the ſurface $16\frac{}{10}°$; of the air $18\frac{6}{10}°$.

Lake of Conſtance.—The temperature on the 25th of July, at the depth of 370 feet, was $3\frac{4}{10}°$; on the ſurface of the water 14°; in the air 16°.

Lago Maggiore.—On the 19th of July, at the depth of 335 feet, the temperature was $5\frac{4}{10}°$; at the ſurface 20°; in the air 18°. It is remarkable that though the temperature at the bottom of this lake is ſo low, yet olive and orange trees are ſeen to thrive on its borders in the open air.

The comparative experiments which Sauſſure made on the temperature of the ſea, gave the following reſults. On the 8th of October, the ſame thermometer, immerſed at Porto Fino, on the coaſt of Genoa, to the depth of 886 feet, indicated $10\frac{5}{10}°$, while the temperature at the ſurface was $16\frac{5}{10}°$, and that of the atmoſphere $15\frac{3}{10}°$. At Nice, on the 17th of October, and at the depth of 1800 feet, the temperature proved to be $10\frac{6}{10}°$, while that of the ſurface of the water was $16\frac{4}{10}°$. From this difference between the temperature in the depth of the ſea, and that of the bottom of lakes, it has been inferred that it is not the bulk of the maſs of water which proves an obſtacle to the free communication of the external caloric, and that the low temperature obſerved in the lakes of the Alps is owing to a particular and local cauſe.

Beſides the general cauſe which produces a gradual *diminution* in the extent and depth of all lakes, there are others, which, operating on particular lakes, effect a more or leſs ſudden change in that reſpect, according to the circumſtances under which they take place. All rivers emptying themſelves into lakes, convey thither more or leſs of the ſubſtance of the mountains from which they deſcend, and of the ſoil of the tracts of country which is traverſed by them. The nearer, therefore, a lake is to thoſe high mountains from which ſtreams, in their deſcent, may carry away the *detritus* of rocks, the more ſpeedily its baſin will be filled up; while, on the other hand, a lake ſituated at a greater diſtance, in the middle of a plain, and receiving only ſand and mud, part of which is carried off again by its outlet, will experience a much leſs rapid diminution. Some naturaliſts have thought it poſſible to determine the relative antiquity of lakes, by the extent of the alluvial land depoſited in their baſins by thoſe rivers which enter them; but, according to Patrin, it is a matter of great difficulty to obtain ſatisfactory *data* on this head, and no general rules can poſſibly be laid down without a previous and careful examination of all the circumſtances attending the locality of each particular lake. Thus, for inſtance, (ſays the ſame author,) we ſee that the lake of Neufchatel, at the foot of the Jura mountains, has already experienced a very conſiderable diminution through the mechanically forming effects of the waters of the Orbe, while thoſe produced by the Rhone are ſcarcely perceptible in the lake of Geneva, although this lake is probably of greater antiquity than the other. The lake of Annecy, which is wedged in between mountains, is already in a great meaſure choked up with their *detritus*. The valley of Chamouni, according to Sauſſure's obſervations, was alſo formerly a lake; but ſituated at the foot of the higheſt mountains of Europe its baſin has long ſince been levelled by the alluvial land carried into it from all ſides by the Aveiron and other ſtreams. The lac du Bourget, on the other hand, which occupies the middle of a vaſt baſin, where it receives its calm waters unfraught with foreign matter, is leſs than many others ſubject to the influence of this particular cauſe of the diminution of lakes.

The large lakes, with which the northern regions abound, ſerve for very good purpoſes, inaſmuch as the warm vapours ariſing from them ſerve for a defenſative againſt the pinching cold of thoſe climates. To this it is owing, that Ireland, Scotland, &c. are leſs affected with froſts than much warmer countries.

They alſo furniſh exhalations and vapours, which diſtil on the countries bordering upon them in refreſhing ſhowers, and prevent their being barren deſerts.

The lake Neſs, in Scotland, has been commemorated by many writers, but never with any degree of judgment, till Mr. Fraſer gave a perfect account of it to the Royal Society. It never freezes though the winters be ever ſo ſevere, and is full of ſprings in almoſt every part; and its waters, in the time of the ſevereſt froſts run fluid, and ſmoaking for ſix miles down the river into which they are diſcharged, while every thing is frozen about them. The river runs very ſlowly notwithſtanding, and from this ſmoke of the water there is raiſed a ſort of fog which overſpreads the whole country for ſeveral miles. There is a mountain near its ſide, of two miles perpendicular height from the ſurface of the lake; and on the ſummit of this mountain there is another lake, which has no ſpring viſibly running into it, nor any outlet, and yet always keeps of the ſame degree of fulneſs, ſummer and winter. Due weſt from the river into which the lower lake diſcharges itſelf, there is an opening of ſea, or frith, of two miles long and ſix miles wide; the middle of this is ſometimes dry, and it is then eaſily ſeen that this was once dry land, and an inhabited country. There are found there large bodies of trees felled, and lying ſtraight along: the wood of theſe is black, but it is very ſound, and there are many tumuli, or heaps of ſtones, to be ſeen under water in different parts of the frith, one of which is acceſſible at low water, and there have been found in it urns, which prove that they have been all burying-places. Phil. Tranſ. N° 253. p. 251.

As the ſea waſhes away the banks of this frith, there is found in many places a large quantity of wrought timber; beams of fourteen, or more feet long, with the marks of the axe, and other inſtruments upon them; and at the depth of ſixteen feet, in the ſteep banks of the neighbouring river Beuly, there are found oak-trees and pieces of burnt timber. We find by this, that the face of the whole country about this lake is very different from what it was ſome ages ago; and there ſeems ſome reſemblance between the preſent face of things here, and that in the bogs of many parts of England. The trees found buried in theſe were felled by the conquering Romans, and perhaps theſe are of ſome ſuch origin.

We have many ſingularities offering themſelves to our view in the lakes of our own country; that of their freezing at peculiar ſeaſons is not one of the leaſt. Philoſophical Tranſ. N° 114.

LAKE. *Bituminous.* The exiſtence of an expanſe of mineral pitch, ſufficiently extenſive to merit the appellation of a lake, is a circumſtance ſo very remarkable, that it will not be deemed improper to ſet apart an article for the deſcription of the bituminous lake of the iſland of Trinidad. A deſcription of this celebrated pitch lake was firſt given by Mr. Anderſon, in the Philoſophical Tranſactions for 1789, and ſome notices relative to it were communicated by Mr. Tobin, in the eighth volume of the Linnæan Tranſactions; but we now poſſeſs a more complete account of it by Dr. Nugent, who viſited it in October, 1807, and whoſe memoir is publiſhed in the firſt volume of the Tranſactions of the Geological Society.

The pitch lake of Trinidad, by the French called La Braye, is ſituated on the north ſide of the gulf of Paria, on the high point La Braye, a conſiderable head-land, principally compoſed, at its ſouthern ſide, of a kind of porcelain jaſper. It is not eaſy to ſtate preciſely the extent of this collection of pitch; the lines between it and the neighbouring ſoil not being always well defined; and indeed Dr. Nugent ſuppoſes it to form the ſubſtratum of the ſurrounding tract of land. It may, however, be ſaid, that it is bounded on the north and weſt ſides by the ſea, on the ſouth by the juſt mentioned rocky eminence of porcelain jaſper, and on the eaſt by the uſual argillaceous ſoil of the country; the main body may, perhaps, be eſtimated at three miles in circumference; the depth cannot be aſcertained, and no ſubjacent rock or ſoil can be diſcovered. That part of this expanſe, which may properly be called a *lake*, is ſituated higher than the adjoining land, and you deſcend by a gentle ſlope to the ſea, where the pitch is much contaminated by the ſand of the beach.

On approaching the lake a ſtrong ſulphureous and pitchy ſmell is perceived; and on a nearer approach, the bituminous plain itſelf opens to the view, appearing at firſt ſight to be an expanſe of ſtill water, frequently interrupted by clumps of dwarf trees, or iſlets of ruſhes and ſhrubs. Dr. Nugent (from whoſe memoir this article is abſtracted) was ſo ſtruck by the ſingularity of the ſcene, that it was ſome time before he could recover from his ſurprize ſo as to inveſtigate it minutely. The ſurface of the lake is of the colour of aſhes; and at the ſeaſon when this traveller viſited the lake, not ſufficiently ſmooth to be ſlippery; it was not adheſive, though it received the impreſſion of the foot, and the conſiſtence was ſuch as to bear the travellers without any tremulous motion whatever; but in the dry ſeaſon the ſurface is probably in a ſtate approaching fluidity, as is ſhewn by pieces of wood and other ſubſtances being enveloped in it: different bodies have been known ſlowly to ſink into it. If a quantity be cut out, the cavity left will be ſhortly filled up. Numberleſs proofs are given of its being at times in this ſoftened ſtate; the negro houſes of the vicinage, for inſtance, built by driving poſts in the earth, frequently are twiſted or ſunk on one ſide. In many places it ſeems to have actually overflown like lava, and preſents the wrinkled appearance which a ſluggiſh ſubſtance would exhibit in motion.

This bituminous plain is interſected by numerous interſtices or chaſms, filled with water in the wet ſeaſon; they are generally deep in proportion to their width, ſome being only a few inches in depth, others ſeveral feet, and many almoſt unfathomable. The people of the neighbourhood derive their ſupply of water from this ſource, and refreſh themſelves by bathing in it; the water is perfectly uncontaminated by the pitch, and fiſh are caught in it. The arrangement of the chaſms is ſingular; the ſides are invariably ſhelving from the ſurface, ſo as nearly to meet at the bottom; but they bulge out towards each other with a conſiderable convexity. Theſe crevices will now and then cloſe up entirely; when marks or ſeams are left behind.

The bituminous ſubſtance forming this lake preſents different appearances in different ſpots: in ſome parts it is black, with a ſplintery or a conchoidal fracture, of conſiderable ſpecific gravity, and with little or no luſtre, reſembling particular kinds of coal, and ſo hard as to require a ſevere blow of the hammer to break it; in other parts it is ſo much ſofter as to be eaſily cut with a knife or ſpade, when the interior appears veſicular and oily. In one place it bubbles up in a perfectly fluid ſtate, and in one of the neighbouring plantations it is ſaid to occur of a bright colour, ſhining, tranſparent, and brittle, like bottle glaſs or reſin. The odour in all theſe inſtances is ſtrong, and like that of a combination of pitch and ſulphur, which latter ſubſtance, however, is nowhere to be perceived. A bit of the pitch held in the candle melts like ſealing-wax, and burns with a light flame, which is extinguiſhed whenever it is removed, and in cooling the bitumen hardens again. It may be converted to many uſeful purpoſes, and is, indeed, univerſally uſed in the country wherever pitch is required. The reports of naval officers who have tried it are favourable to its more general adoption; in which caſe this vaſt collection of bitumen would afford an inexhauſtible ſupply of an eſſential article of naval ſtores, and being ſituated on the margin of the ſea, would be wrought and ſhipped with little inconvenience or expence.

Immediately to the ſouthward of this bituminous lake, the face of the country, as ſeen from La Braye, is a good deal broken and rugged, which Mr. Anderſon attributes to ſome convulſion of nature from ſubterraneous fires, in which idea he is confirmed by having found in the neighbouring woods ſeveral hot ſprings. He is of opinion, that this tract has experienced the effects of the volcanic power, which, as he ſuppoſes, elevated the great mountains on the main and northern ſide of the iſland. As the production of bituminous ſubſtances has been attributed to the action of fire on beds of coal, Dr. Nugent was particular in his inquiries with regard to the exiſtence of ſuch beds, but could not learn that there was any certain trace of coal in the iſland.

Dr. Nugent, in attempting to explain the origin of this bituminous lake, inclines to the ſide of the Huttonian geologiſts, grounding his opinion on the general character of the country, and ſeveral local appearances, ſuch as the amazing quantity of alluvial ſoil and bituminous ſubſtances brought down by the river Orinoko, and depoſited on the ſhores of the gulf of Paria, and the weſt ſide of Trinidad; as alſo the traces of ſubterranean fire, ſuch as hot ſprings, vortices, frequent earthquakes, and two ſingular volcanic mounds at Point Icaque.

“A vaſt river like the Orinoko,” he ſays, “muſt for ages have rolled down great quantities of woody and vegetable bodies, which, from certain cauſes, as the influence of currents and eddies, may have been arreſted and accumulated in particular places; they may there have undergone thoſe transformations and chemical changes which various vegetable ſubſtances ſimilarly ſituated have been proved to ſuffer in other parts of the world. An accidental fire, ſuch as is known frequently to occur in the bowels of the earth, may then have operated in ſeparating and driving off the newly-formed bitumen, more or leſs combined with ſiliceous and argillaceous earths, which forcing its way through the ſurface and afterwards becoming inſpiſſated by expoſure to the air, may have occaſioned ſuch ſcenes as I have ventured to deſcribe. The only other country accurately reſembling Trinidad, of which I recollect to have read, is that which borders on the gulf of Taman, in Crim Tartary. From the repreſentations of travellers, ſprings of naphtha and petroleum equally abound, and they deſcribe volcanic mounds preciſely ſimilar to thoſe of Point Icaque. Pallas's explanation of their origin ſeems very ſatisfactory, and I think it not improbable that the river Don and ſea of Azof may have acted the ſame part in producing theſe appearances in the one caſe, as the Orinoko and gulf of Paria appear to have done in the other. It may be ſuppoſed that the deſtruction of a foreſt, or perhaps even a great ſavanna on the ſpot, would be a more obvious mode of accounting for this ſingular phenomenon; but all this part of the iſland is of a recent alluvial formation, and the land all along this coaſt is daily receiving a conſiderable acceſſion from the ſurrounding water. The pitch-lake, with the circumjacent tract, being now on the margin of the ſea, muſt, in like manner, have had an origin of no very diſtant date; beſides, according to the repreſentation of captain Mallet, which has been frequently corroborated, a fluid bitumen oozes up and riſes to the ſurface of the water on both ſides of the iſland, not where the ſea has encroached and overwhelmed the ready-formed land, but where it is obviouſly in a very rapid manner depoſiting and forming a new ſoil."

The obſervations of captain Mallet, above-mentioned, but the accuracy of which Dr. Nugent had no opportunity of aſcertaining perſonally, are, that "near Cape la Brea (La Braye) a little to the S.W. is a gulf or vortex, which in ſtormy weather guſhes out, raiſing the water five or ſix feet, and covers the ſurface for a conſiderable ſpace with petroleum, or tar."—"On the E. coaſt," he adds, "in the bay of Magaro, there is another gulf or vortex ſimilar to the former, which, in the months of March and June, produces a detonation like thunder, having ſome flame with a thick black ſmoke, which vaniſhes away immediately; and in about twenty-four hours afterwards, is found along the ſhore of the bay a quantity of bitumen or pitch, about three or four inches thick, which is employed with ſucceſs." The ſame author likewiſe quotes Gumilla as ſtating, in his Deſcription of the Orinoko, that "about ſeventy years ago, a ſpot of land on the weſtern coaſt of this iſland, near half way between the capital and an Indian village, ſunk ſuddenly, and was immediately replaced by a ſmall lake of pitch, to the great terror of the inhabitants." Mallet's Topographical Sketch of the Iſland of Trinidad.

LAKE *of the two Mountains*, a piece of water, that lies weſterly from Montreal, being properly the mouth of Ottawa river; 20 miles long, and 5 broad. It is ſurrounded by cultivated fields of the Iroquois and Algonquin Indians, whoſe village ſtands on a delightful point of land, that projects into the lake. Each tribe has a Roman Catholic miſſionary. They attend public worſhip in the ſame church. Their paſtors have taught them to read and write. Their warriors are about 500.

LAKE *of the Woods*. See WOODS.

LAKE *River*, a river of America, which runs into the Miſſiſippi, N. lat. 46° 30′. W. long. 95°.

LAKE *River, Little*, a river which runs into the Miſſiſippi, N. lat. 45° 36′. W. long. 94° 23′.

LAKES, *Subterranean*. That there are in many places immenſe ſubterranean lakes, can ſcarce be doubted, becauſe we ſee them in ſome places; but their effects are often perceived where they are not ſeen, and puzzle the people who attempt to account for thoſe effects upon other principles. The famous Zirchnitzer lake in Carniola, which fills and empties itſelf, at times, in an impetuous manner, bringing up with its waters fiſh, and even wild fowl, communicates with another immenſe ſubterranean lake in the mountain Savornick; and according to its filling or emptying, the upper one is alſo filled and emptied. See DUCK.

The grotto Podſpetſchio, in the ſame country, gives another inſtance of ſuch a ſubterranean lake. The people of the neighbouring country enter the ſide of the mountain where this lake is, by a ſmall opening, through which they go to a cavern of a great width and height; and at the end of this is a ſmall opening again, through which they go on to the edge of a vaſt ſubterranean piece of water. They go with torches, and find the water very clear and fine. It is ten cubits deep at the edge, and doubtleſs is much more in the middle. The water runs into this lake by a large channel, and runs out of it again by another, falling down a precipice into another lake, and that with ſuch a noiſe, that the report of a piſtol cannot be heard near it. Stones thrown in every way are heard to fall into water, and there is great reaſon to ſuppoſe the lake a German mile long; for at this diſtance there is another water diſcovered through ſuch another cleft of the rock, which ſtands at the ſame horizontal height as this, and is ſubject to the ſame accidents at the ſame time. This vaſt body of water ſometimes all runs off in a few minutes, and leaves the baſon dry, and after ſome weeks it fills again with a frightful noiſe. As theſe accidents always happen to both the waters above mentioned, at the ſame time, they appear very plainly to be only the two ſides of the ſame lake. Phil. Tranſ. N° 191.

We have in England many of theſe reſervoirs, the water of which is always remarkably clear and cold, and is ſo loaded with ſpar, that it generally incruſts things very quickly that are put into it; and when raiſed into vapours, as a part of it ſometimes is, by the ſubterranean heat, or carried up with other vapours, ſtops at the ceiling of the vaults, and there forms ſtalactitæ, and other ſuch concretions. In many of theſe lakes alſo are found the round balls of ſpar, called *ſtalagmitæ*. They are compoſed of ſeveral cruſts gathering round ſome central nucleus, and often exceed the ſize of a ſchool-boy's marble. Phil. Tranſ. N° 144.

In Pen-Park hole, in Glouceſterſhire, there is a remarkable inſtance of this, that ſtrange cavern containing one of the largeſt of the lakes in our kingdom.

It was accidentally diſcovered by ſome miners: it is twenty-nine fathoms deep from the ſurface, being a vaſt cavern of the ſhape of a horſe-ſhoe, ſurrounded with rugged rocks and rough walls of earth, containing in the midſt of it a river or ſubterranean lake, twenty fathom broad and eight fathom deep, of the ſame cold and petrifying water with the other reſervoirs of this kind.

LAKE, or LAQUE, a preparation of different ſubſtances into a kind of magiſtery for the uſe of painters, dyers, &c. One of the fineſt and firſt invented of which was that of *gum lacca* or *lacque*; from which all the reſt, as made by the ſame proceſs, are called by the common name *lacques*. See LAC or LACCA.

We may obſerve more generally, that all vegetable colours, which are ſoluble in water, are found to have a certain degree of affinity for ſome earths and metallic oxyds. Theſe combinations are called lakes. Thus, if a ſolution of alum is added to an infuſion of madder, a mutual decompoſition takes place, and part of the alumine falls down intimately united with the colouring matter of the madder: the ſeparation is much aſſiſted by the alkali. They are chiefly of two colours only, red and yellow: the red owing their colour to madder, Braſil wood, or cochineal; and the yellow to the different yellow infuſions uſed in dyeing. Both are generally uſed for water colours, and in oil painting as tranſparent colours. Theſe pigments are almoſt invariably compoſed either of alum, or ſometimes the ſolution of tin, and ſome other watery ſolution of a colouring matter.

Of the red lakes, that made with cochineal is the moſt beautiful, and of the greateſt value. It is called *carmine*, from its being applied to imitate the colour of the fleſh. For the method of preparing it, ſee Cochineal. See alſo Carmine.

On the receipt for making carmine, introduced under the article Cochineal, a correſpondent has made the following obſervation.

The carbonat of ſoda and alum, added in the firſt inſtance, would be mutually decompoſed, and the alumine, with the colouring matter, would be precipitated with the dregs, which are afterwards ſeparated from the clear liquor; ſo that when the white of egg came to be added, the earth of the alum and a portion of the colouring matter, ſaid to be carried down by the albumen, cannot be preſent. Should the proceſs here given have any analogy to that which is practiſed, it would appear that the ſolution of cochineal in water has the white of egg added to it, in the firſt inſtance, if it is at all neceſſary, for the purpoſe of clearing the coloured ſolution, a property for which that ſubſtance is remarkable. That after the liquid becomes clear, and is ſeparated from the dregs, the carbonat of ſoda and alum are added, when a precipitate, conſiſting of the alumine united with the finer parts of the colouring matter, may be expected. The remaining colouring matter, which is of leſs beauty, is then uſed for the red lake.

Inſtead of uſing cochineal for making carmine, a much clearer colour may be extracted from the refuſe of ſcarlet cloth. The bits of cloth are boiled in a ſolution of potaſh, which extracts the colour, and holds it in ſolution. If to this a certain portion of alum be added, the colouring matter will be precipitated with the alumine, of a greater or leſs intenſity, proportionate to the quantity of this earthy baſis. In Doſſie's Handmaid to the Arts, we are told that the beſt of the lakes commonly ſold is made from the colour extracted from ſcarlet rags, and depoſited on the cuttle-bone; and that it may be prepared in the following manner: diſſolve a pound of the beſt pearl aſhes in two quarts of water, and filter the liquor through paper; add to this ſolution two more quarts of water, and a pound of clean ſcarlet ſhreds, and boil them in a pewter boiler, till the ſhreds have loſt their ſcarlet colour; take out the ſhreds and preſs them, and put the coloured water yielded by them to the other: in the ſame ſolution boil another pound of the ſhreds, proceeding in the ſame manner; and likewiſe a third and fourth pound. Whilſt this is doing, diſſolve a pound and a half of cuttle-fiſh bone in a pound of ſtrong aqua-fortis, in a glaſs receiver, adding more of the bone, if it appear to produce any ebullition in the aqua-fortis; and pour this ſtrained ſolution gradually into the other; but if any ebullition be occaſioned, more of the cuttle-fiſh bone muſt be diſſolved as before, and added, till no ebullition appears in the mixture. The crimſon ſediment depoſited by the liquor thus prepared is the lake: pour off the water, and ſtir the lake in two gallons of hard ſpring water, and mix the ſediment in two gallons of freſh water; let this method be repeated four or five times. If no hard water can be procured, or the lake appears too purple, half an ounce of alum ſhould be added to each quantity of water before it be uſed. Having thus ſufficiently freed the lake from the ſalts, drain off the water through a filter, covered with a worn linen cloth. When it has been drained to a proper dryneſs, let it be dropped through a proper funnel on clean boards, and the drops will become ſmall cones or pyramids, in which form the lake muſt be ſuffered to dry, and the preparation is completed.

Lakes are alſo made from madder and Braſil wood. The former is much more permanent than the latter, but does not poſſeſs the ſame beauty of tint. In order to make theſe lakes, ſtrong infuſions of theſe ſubſtances are firſt obtained. The Braſil wood infuſion is beſt made by boiling the chips in pure water, and filtering the ſolution. (See Brasil *Wood*.) The infuſion of madder (ſee Madder) is beſt made in cold water, by which the pureſt part of the colour is only diſſolved. To each of theſe ſolutions are added a clear ſolution of alum, and then as much of an alkali as will precipitate ſo much of the alumine as will make the colour of the precipitate of proper intenſity. A ſmall quantity of muriate of tin increaſes the brilliancy of theſe lakes.

A beautiful lake, it is ſaid (*ubi infra*), may be prepared from Braſil wood, by boiling three pounds of it, for an hour, in a ſolution of three pounds of common ſalt, in three gallons of water; and filtering the hot fluid through paper, add to this a ſolution of five pounds of alum in three gallons of water. Diſſolve three pounds of the beſt pearl aſhes in a gallon and a half of water, and purify it by filtering; put this gradually to the other, till the whole of the colour appear to be precipitated, and the fluid be left clear and colourleſs. But if any appearance of purple be ſeen, add a freſh quantity of the ſolution of alum by degrees, till a ſcarlet hue be produced. Then purſue the directions given in the firſt proceſs with regard to the ſediment. If half a pound of ſeed-lac be added to the ſolution of pearl aſhes, and diſſolved in it before its purification by the filtre, and two pounds of the wood, and a proportional quantity of the common ſalt and water be uſed in the coloured ſolution, lake will be produced that will ſtand well in oil or water, but it is not ſo tranſparent in oil as without the ſeed-lac. The lake with Braſil wood may be alſo made by adding half an ounce of anotto to each pound of the wood; but the anotto muſt be diſſolved in the ſolution of pearl aſhes. There is a kind of beautiful lake brought from China; but as it does not mix well with either water or oil, though it diſſolves entirely in ſpirit of wine, it is not of any uſe in our kinds of painting. This has been erroneouſly called ſafflower. Handmaid to the Arts, vol. i. p. 61, &c.

In making yellow lakes, the coloured infuſions muſt be ſuch as to make the moſt permanent dye. (See Dyeing.) The precipitation of the colour is performed preciſely in the ſame way, and by the ſame ſubſtances, as the red lakes. A very excellent yellow lake may be made from the infuſion of *quercitron bark*. That from *turmeric* is very beautiful, but is not permanent. The proceſs for the making of this is as follows: take a pound of turmeric-root in fine powder, three pints of water, and an ounce of ſalt of tartar; put all into an earthen glazed veſſel, and let them boil together over a clear, gentle fire, till the water appears highly impregnated with the root, and will ſtain a paper to a beautiful yellow. Filtre this liquor, and gradually add to it a ſtrong ſolution of roch-alum in water, till the yellow matter is all curdled together, and precipitated; after this pour the whole into a filtre of paper, and the water will run off and leave the yellow matter behind. It is to be waſhed many times with freſh water, till the water comes off inſipid, and then is obtained the beautiful yellow, called *laque of turmeric*, and uſed in painting.

In this manner may a laque be made of any of the tinging ſubſtances that are of a ſomewhat ſtrong texture, as madder, logwood, &c.; but it will not ſucceed in the more tender ſpecies, as the flowers of roſes, violets, &c. as it deſtroys the nice arrangement of parts in thoſe ſubjects, on which the colour depends.

A yellow lake for painting is to be made from broom-flower in the following manner: make a ley of pot-aſhes and lime reaſonably ſtrong; in this boil, at a gentle fire, freſh broom-flowers till they are white, the ley having extracted all their colour; then take out the flowers, and put the ley to boil in earthen veſſels over the fire; add as much alum as the liquor will diſſolve; then empty this ley into a veſſel of clear water, and it will give a yellow colour at the bottom. Let all ſettle, and decant off the clear liquor. Waſh this powder, which is found at the bottom, with more water, till all the ſalts of the ley are waſhed off; then ſeparate the yellow matter, and dry it in the ſhade. It proves a very valuable yellow.

All the lake colours are changed by acids and alkalies. An acid renders the red lake more ſcarlet, and the yellow paler; while an alkali gives a purple tint to the red, and an orange or brown tint to the yellow. Artiſts ſometimes take advantage of this property to change their colours. The acid uſed for this purpoſe ſhould be the muriatic diluted, and the alkali aqua ammonia.

LAKE, *Orange*, is the tinging part of anotto precipitated together with the earth of alum. This pigment, which is of a bright orange colour, and fit for varniſh painting, where there is no fear of flying, and alſo for putting under cryſtal to imitate the vinegar garnet, may be prepared by boiling four ounces of the beſt anotto and one pound of pearl-aſhes half an hour in a gallon of water; and ſtraining the ſolution through paper. Mix gradually with this a ſolution of a pound and a half of alum in another gallon of water; deſiſting, when no ebullition attends the commixture. Treat the ſediment in the manner already directed for other kinds of lake, and dry it in ſquare bits or round lozenges. Handmaid to the Arts, vol. i. p. 119.

LAKE, *Roſe*. See *Roſe* PINK.

LAKE *of Madder*. See MADDER.

LAKE-*fiſheries*, in *Rural Economy*, a common name applied to ſuch as are carried on in lakes, or other ſtagnant waters. See FISH and PONDS.

LAKE-*weed*, in *Botany*. See ARSMART.

LAKEN, in *Geography*, a town of Pruſſia, in the province of Oberland; eight miles E. of Mulhauſen.

LAKSHIMAN, in *Hindoo Mythology*, an incarnation of the mighty ſerpent *Seſha*, (which ſee,) born of Sumitra, ſecond wife of Daſaratha, raja, or king of Ayadeha (Oude): Lakſhiman was thus the half brother of Rama, and became incarnate for the purpoſe of aſſiſting him in his wars againſt Ravana, the tyrant of Lanka. (See LANKA, RAVANA, and RAMA.) Lakſhiman was farther connected with Rama by eſpouſing Urmila, daughter of Janaka, the adoptive parent of Rama's wife Sita. See JANAKA and SITA.

LAKSHMENI, one of the eight regular wives of Kriſhna; and he being the Apollo of the Hindoos, theſe *eight* wives may poſſibly be only a perſonification of the natural notes. (See KRISHNA.) Her name is ſometimes written Lakſhmany.

LAKSHMI, is the ſakti or conſort of Viſhnu, the preſervative power of the deity. (See SAKTI and VISHNU.) The extenſive ſect of Vaiſhnava, or worſhippers of Viſhnu, eſteem Lakſhmi as mother of the world, and then call her Ada Maya; and ſuch Vaiſhnavas as are ſaktas, that is, adorers of the ſupremacy of the female energy, or nature-active, worſhip her extenſively as the type of the eternal Being, and endow her with ſuitable attributes. (See farther hereon under LINGA, MAYA, and SAKTA, SECTS of Hindoos; VAISHNAVA, and the articles before referred to.) She is repreſented by the poets and painters as of perfect beauty. Hindoo females are now commonly named after her: and there are few in the long catalogue of their deities whoſe various names and functions are ſo frequently alluded to in converſation and writing, either on theogony, mythology, poetry, or philoſophy. Her terreſtrial manifeſtations have been frequent, and her origin various. As Rhemba, the ſea-born goddeſs, ſhe aroſe one of the fourteen gems from the ocean when churned by the good and evil beings for the amrita or beverage of immortality. (See RHEMBA.) She then aſſumes the character of Venus Marina, or Aphrodites of the Greeks; who, as Heſiod and Homer ſing, aroſe from the ſea, aſcended to Olympus, and captivated all the gods. The operation of churning the ocean is noticed under Kurmavatara, and the production of Rhemba, Sri, or Lakſhmi is thus deſcribed in the 36th ſection of the firſt book of the Ramayana. (See RAMAYANA.) "The gods, the aſuras, and the gandharvas, again agitating the ſea, after a long time appeared the great goddeſs, inhabiting the lotus; clothed with ſuperlative beauty, in the firſt bloom of youth, covered with ornaments, and bearing every auſpicious ſign; adorned with a crown, with bracelets on her arms, her jetty locks flowing in ringlets, and her body, which reſembled burning gold, adorned with ornaments of pearl. Thus was produced the goddeſs Padma, or Sri, adored by the whole univerſe, Padma by name. She took up her abode in the boſom of Padma-nabha, even of Heri," that is, of Viſhnu, of whom theſe are names. Sri, as this deity is frequently called, diſtinguiſhes her more particularly as the goddeſs of fortune, the word meaning *proſperity*; but it is not given excluſively to Lakſhmi. (See SRI, PADMA, and KAMALA.) Others of her names are derived from the lotus, which is the emblem of female beauty, and eſpecially applicable to this goddeſs. (See under theſe articles.) Heripriya denotes the wife of Heri or Viſhnu. As the deity of riches or fortune Lakſhmi would be invoked for increaſe of wealth, by a deſiring Hindoo, rather than Kuvera, the Plutus of their Pantheon. (See KUVERA.) In this character ſhe is ſometimes called Locki, or Laki, meaning *fickle*; and it may be only a ſhortening or rapid pronunciation of Lakſhmi, her moſt common name, which is derived from the Sanſcrit word *lakſh, light, ſplendour*; equivalent to the Latin *lux*, and it means farther *luck, luxury, fortune,* &c. This goddeſs (as the ſakti, or conſort of Viſhnu, or Kriſhna) being the energy of the ſun, is appropriately deſignated by a luminous appellation derived from ſuch a ſource.

In images and pictures of her, which are very common in India, Lakſhmi is generally repreſented as a mere woman; ſometimes, however, four-armed; often holding a *kamal*, or lotus, in an eaſy and elegant attitude, and always very handſome. With her lord Viſhnu ſhe is frequently ſeen on the ſerpent Seſha; he repoſing, ſhe in reſpectful attendance, while a lotus ſpringing from Viſhnu's navel to the ſurface of the ſea (for this ſcene is ſubaqueous) bears in its expanded calyx, Brahma, the creator of the world, about to perform the work of renovation. (See KALPA and SESHA.) Sometimes ſhe is ſeated with her lord on Garuda, or Superna, cleaving the air, of which Viſhnu is a perſonification. (See SUPERNA.)

Superna.) In Viſhnu's moſt ſplendid avatara, or incarnation of Kriſhna, ſhe became manifeſted as Rukmeni, or Radha, the moſt adored of the amorous deities, and mother of Kama, the god of love; here again correſponding with our popular Venus, the mother of Cupid. (See Kama, Krishna, Radha, and Rukmeni.) In the avatara of Rama, Lakſhmi was his faithful ſpouſe in the form of Sita, as noticed under thoſe articles. In that of Narſingha, ſhe was Narſinhi, or Nriſinhi; when Varaha, Varahi; and as the Sakti of Narayana ſhe is by her own ſectaries called Narayani; and in moſt of the many incarnations of Viſhnu ſhe appears to have deſcended with him, frequently under her own celeſtial name: as his conſort generally, ſhe is called Vaiſhnavi. See reſpectively thoſe articles.

The following extract from Moor's Hindoo Pantheon will ſhew the veneration paid to this popular and beneficent deity, of whom a milch-cow ſeems an apt ſymbol. "In the Sradha, or obſequies in honour of deceaſed anceſtors, Lakſhmi is, among other deities, earneſtly invoked, particularly when, as the ritual expreſſes, a votary is deſirous, by gifts to Brahmans, of obtaining celeſtial bliſs for the defunct." A donation of a milch-cow is attended by many appropriate ceremonies, finiſhing with the following prayers; the acceptor holding, during the recital, the ſacred animal by the tail.

1. May the goddeſs, who is the Lakſhmi of all beings, and reſides among the gods, aſſume the ſhape of a milch-cow and procure me comfort.

2. May the goddeſs, who is Rudrani in a corporeal form, and who is the beloved of Siva, aſſume the ſhape of a milch-cow and procure me comfort.

3. May ſhe, who is Lakſhmi repoſing on the boſom of Viſhnu; ſhe, who is the Lakſhmi of the regent of riches; ſhe, who is the Lakſhmi of kings, be a boon-granting cow to me.

4. May ſhe, who is the Lakſhmi of Brahma; ſhe, who is Swaha, the wife of fire; ſhe, who is the exerted power of the ſun, moon, and ſtars, aſſume the ſhape of a milch-cow for my proſperity.

5. Since thou art Swadha, the food of them who are the chief among the manes of anceſtors, and Swaha, the conſuming power of them who eat ſolemn ſacrifices; therefore, being the cow that expiates every ſin, procure me comfort.

6. I invoke the goddeſs, who is endowed with the attributes of all the gods, who confers all happineſs, who beſtows abodes in all the worlds, for the ſake of all people.

7. I pray to that auſpicious goddeſs for immortality and happineſs. P. 138.

Under the following names and words ſome particulars will be found of the mythological perſons mentioned in the preceding extract, not before referred to from this article. Sradha, or obſequies in honour of departed anceſtors. Rudrani, the beloved of Siva, a name of Parvati. Surabhi, the boon-granting cow. Swadha, Swaha, the ſakti, or energy of Pavaka, or fire.

Lakſhmi alſo preſides over marriages, and is conſidered, indeed, among certain ſects of Hindoos, as the general ſource of all happineſs. She is found, by mythologiſts, to have characteriſtic attributes and powers ſimilar to the Ceres of the Greeks (Sri is, in one caſe, Sris, correſponding here, likewiſe, in name), and the Iſis of the Egyptians. On theſe, and other points connected with the ſubject of this article, ſee ſir William Jones, and Mr. Colebroke, Aſiat. Ref. vols. i. iii. and vii. Many plates of her in her various forms, and Puranic legends and anecdotes, are likewiſe given in Moor's Hindoo Pantheon, whence this article is chiefly taken. See alſo Gentoos.

LAKTEA, in *Geography*, a ſea-port of Sweden, in Eaſt Bothnia, at the mouth of a river near the gulf of Bothnia. N. lat. 64° 25'.

LALA, in *Ancient Geography*, a town of Aſia, in the Greater Armenia.

LALADA, in *Geography*, a town of Hindooſtan, in Golconda; 15 miles W.N.W. of Culloor.

LALAMSERAI, a town of Hindooſtan; 28 miles W. of Benares.

LALAND. See Laaland.

LALANDE, James de, in *Biography*, was born at Orleans in 1622, and became diſtinguiſhed in the profeſſion of the law. He was famed as well for his extenſive and very profound erudition, as by the public and private virtues which he manifeſted, in paſſing through a long life, in the exerciſe of various important functions. He attained to the higheſt rank in his profeſſion in his native place, and was made mayor. He died in 1703, ſincerely regretted by all who knew him; he was author of ſeveral works, of which the moſt important were "A Commentary upon the Cuſtom of Orleans;" and "A Treatiſe on the Ban, and Arrierban." His integrity, beneficence, and zeal for the intereſts of his countrymen, obtained for him the honourable title of "father of the people." Moreri.

Lalande, Joseph, Jerome le Français, a celebrated French aſtronomer, was born at Bourg, in the department of l'Ain, on the 11th of July 1732, of very reſpectable parents. His father, who was poſſeſſed of property, intended him for the bar, and accordingly ſent him to Paris to ſtudy the law, to which, for ſome time, he applied with ſo much aſſiduity, as to more than anſwer the moſt ſanguine expectations of his friends, when the ſight of an obſervatory awakened in him a propenſity, which deranged the projects of his parents, and became the ruling paſſion of his life. He put himſelf under the inſtructions of Le Monnier, one of the then moſt celebrated aſtronomers of France, and profited ſo much by the leſſons of his able inſtructor, as to afford him the higheſt degree of ſatisfaction, who, on his part, conceived for the young man a truly paternal affection, and was determined to promote his intereſts. An opportunity ſoon offered; the great aſtronomer Lecaille was preparing to ſet out for the Cape of Good Hope, in order to determine the parallax of the moon, and its diſtance from the earth. To accompliſh this purpoſe, it was neceſſary he ſhould be ſeconded by an obſerver placed under the ſame meridian, and at the greateſt diſtance that could be conveniently choſen on the globe. Berlin was fixed on, and Le Monnier ſignified his intention of undertaking the buſineſs himſelf, but the moment when he ſhould be ready to depart, he had the credit to get his pupil appointed in his ſtead. Frederic, to whom Maupertuis had explained the delicacy and difficulty of the enterprize, could not forbear ſhewing ſome aſtoniſhment when the youthful aſtronomer was preſented to him, "However," ſaid he, "the Academy of Sciences has appointed you, and you will juſtify their choice." From that moment his age, being only eighteen, was an additional recommendation; he was admitted at court, welcomed by the academy, and became intimate with the moſt diſtinguiſhed perſons at Berlin. On his return, the account which he gave of his miſſion procured him free acceſs to the Academy of Sciences, and its Tranſactions were enriched every year by important communications from the young aſtronomer; "the active part which he took in the labours of the academy, was not confined to the aſtronomical ſcience, we have from his pen, a deſcription of ſeven arts, as different from each other, as they are remote from the objects of his habitual meditations." He publiſhed the French edition of Dr. Halley's tables, and the hiſtory of the comet of 1759, and he furniſhed Clairault with immenſe calculations for the theory of that famous comet. Being charged in 1760 with the compilation of the "Connoiſſance des Temps," he entirely changed the form of that work, and of this collection he publiſhed thirty-two volumes, *viz.* from 1775 to 1807.

In 1764, appeared the firſt edition of his "Traité Aſtronomique," which he afterwards completed, and upon which his chief claim to glory reſts. Lalande was the firſt who calculated the perturbations of Mars and Venus, and in the theory of Satellites, in which but little progreſs had been made, he explained a motion which Baillie claimed as his own diſcovery. A literary diſpute aroſe out of this circumſtance, which, however, was conducted with every regard to decency, and the probable reſult, as ſeen by diſintereſted ſpectators, was, that both had been led to the ſame diſcovery. He compoſed all the aſtronomical articles for the "Encyclopædia of Yverdun:" thoſe for the ſupplements to the "Encyclopédie de Paris," and thoſe for the "Encyclopédie Methodique," ſubſtituting for the articles furniſhed by d'Alembert, and which he had compiled from the works of Le Monnier, ſuch as were more complete and more modern, from his own obſervations and improved theories.

To his written works he joined oral inſtructions during a ſpace of forty-ſix years; for from the year 1761 he had replaced the firſt maſter, De Liſle, in the chair of aſtronomy, in the college of France, and gave a new luſtre to this curious part of public inſtruction in a celebrated ſchool, which poſſeſſed the moſt diſtinguiſhed profeſſors of every kind, and which enjoyed and merited the extraordinary privilege of outliving the tremendous ſtorms of a revolution, and eſcaping the almoſt univerſal deſtruction which levelled all around it. As a profeſſor, he taught with ſo much ability that his ſchool became a ſeminary of diſciples who peopled the different obſervatories of the world. In the midſt of his other labours he drew up his "Voyage d'Italie," the moſt complete collection of curious objects that travellers can conſult; his "Traité des Canaux;" and his "Bibliographie Aſtronomique," which is an immenſe catalogue of all the works that have appeared on the ſubject of that ſcience.

In the year 1793, Lalande publiſhed "Abregè de Navigation hiſtorique, theorique, et practique," containing many valuable rules and tables; and in 1802 he publiſhed a new edition of Montucla's hiſtory of mathematics, in 4 vols. 4to. the laſt two volumes being prepared from Montucla's papers, with the aſſiſtance of La Place, La Croix, and other French mathematicians. He publiſhed alſo this year a collection of tables of logarithms, ſines, tangents, &c. adapted to the pocket.

Aſſociated to almoſt all the diſtinguiſhed ſcientific ſocieties in the world, he was their common bond of union by the correſpondences which he maintained; and he promoted a circulation of intelligence from one to another. He employed the credit ariſing from the univerſal reputation which he enjoyed, for the general benefit of the ſciences and their cultivators. To the extraordinary ardour and activity of his character, he joined a love for the truth, which he carried to the borders of fanaticiſm. Every degree of concealment appeared to him unworthy of an honeſt man, and he therefore, without reſerve, uttered his ſentiments on all occaſions, and by the bluntneſs of his manners, he ſometimes made himſelf enemies, who not only called in queſtion his real merits, but who excited againſt him a crowd of detractors, and becauſe they could not rival his high reputation, they attempted to blaſt his well earned fame. He was not without his ſingularities and failings, but they were trifling in compariſon of his commendable qualities, yet his long and important ſervices were frequently forgotten in the recollection of trivial failings.

In a work, not of the moſt liberal caſt, now under publication, in this country, Lalande has been charged with profaneneſs and atheiſm, but no authority is produced to ſupport ſuch charges, which, if true, ought to have been ſanctioned by ſome ſort of proof, or by well aſcertained facts; and if not true, the editors of that work are guilty of a crime againſt ſociety not eaſily obliterated. One of his eulogiſts ſays, "he always manifeſted a benevolent diſpoſition, and approved himſelf a man of honour, probity, courage, full of activity for all uſeful things, and of love and zeal in behalf of his fellow creatures. To imitate the great benefactor is the moſt worthy homage we can pay to the infinite goodneſs; the ſupreme intelligence which governs the univerſe." He rendered ineſtimable ſervice to ſcience during his life, and conſulted its intereſts after his death, by founding an annual prize to the author of the beſt aſtronomical memoir, or moſt curious obſervation. He died April 4th 1807, in the 75th year of his age. Eulogy pronounced over his grave by De-Lambre and Dupont.

Lalande, Michel Richard de, maſter of the king of France's band, maître de chapelle, and compoſer in ordinary of the chapel royal, and chévalier de l'ordre de St. Michel, born in 1657, was the fifteenth ſon of a tailor at Paris, and brought up a choriſter of St. Germain l'Auxerrois. Excited by a ſtrong paſſion for muſic, he ſoon ſurpaſſed his maſter Chaperon. The violin was the firſt inſtrument to which he ſeriouſly applied; but being recommended to Lulli, as a performer in the opera orcheſtra, he was ſo piqued at being rejected, that he broke his fiddle, and renounced the practice of it for ever. The era of his proſperity was, the being employed in teaching mademoiſelle de Noailles, who married the Maréchal de Grammont, and the Maréchal ſaid ſo many kind things of him to the king, that he was appointed muſic-maſter to mademoiſelles de Blois, and de Nantes. In 1683, his majeſty having created two new places of chapel-maſters, gave one of them to Lalande, whoſe compoſitions pleaſed the king ſo much that he appointed him ſucceſſively to the two places of chapel-maſter, that of chamber-muſician to his majeſty, and maſter of his band; and ſoon after conferred on him the order of St. Michel. The king married him to Anne Ribel, who had an admirable voice, and ſang wonderfully. He had only two daughters by this marriage, whom he loſt in 1711 at 24 years of age. In 1721 he loſt his ſpouſe, and the year following, wanting conſolation and a companion, he married the demoiſelle de Cury, daughter of the ſurgeon to the princeſs of Conté, but ſoon after being ſeized with a conſumptive cough, and pain in his cheſt, he died in 1726 at 67; 45 years of which time he had ſpent in the ſervice of Louis XIV. and XV. Lalande left behind him 60 motets, or anthems, which have had the higheſt reputation, and ſet ſeveral operas, but he never would let any of them be performed under his name. It was under this able maſter, (ſays M. Laborde, the zealous defender of French muſic of every kind,) that a new ſpecies of church muſic had birth, which aſtoniſhed and raviſhed the whole court. "He baniſhed the uſual monotony and dryneſs of the choruſſes and recitatives. His fugues were compoſed on lively ſubjects, and mixed with agreeable ſymphonies, and agreeable melodies, which, before his time, had no exiſtence. He was the firſt who had the time beaten by a coryphæus, and compoſed pathetic recitatives, and airs of ſpirit. In ſhort, he was the creator of church muſic, and even foreigners, ſince the time of Lalande, give the French the pre-eminence in this kind of muſic, over all the nations of Europe." Eſſai ſur la Muſique.

The Engliſh, the Germans, and the Italians, we preſume, will diſpute this point with M. Laborde, and remind him of their Purcel, Handel, Leo, &c. We heard ſome of this ſublime muſic, at the Concert Spirituel, in 1770; and in looking back at our memoranda for the effect which it had on our feelings, we found that it was coarſe and noiſy, with ſcarcely a new paſſage to make amends for the worſt ſinging which we had ever heard, in or out of the church.

LALANG, in *Geography*, an iſland near the N. coaſt of Sumatra, in the ſtraits of Malacca. N. lat. 1° 45'. E. long. 99° 20'.

LALASIDE, in *Ancient Geography*, a country of Aſia Minor, which, according to Ptolemy, made part of Cilicia, ſo called from the name of Lalaſis, its capital. In the 4th century of the Chriſtian era, when the province of Iſauria was formed of a part of Cilicia and Cataonia, this country became a part of Iſauria.

LALASIS, a town of Aſia Minor, in Iſauria.

LALBENQUE, in *Geography*, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Cahors. The place contains 1924, and the canton 9750 inhabitants, on a territory of 305 kiliometres, in 13 communes.

LALCOTTA, a town of Hindooſtan, in Golconda; 17 miles N.E. of Rachore.

LALI, a town of Thibet; 90 miles S. of Sarangpour.

LALIBALA, a town of Abyſſinia; 140 miles S.S.E. of Gondar.

Lalibala, a town of Abyſſinia; 90 miles S.S.E. of Gondar.

LALIM, a town of Portugal, in the province of Beira; nine miles S W. of Lamego.

LALINDE, a town of France, in the department of the Dordogne, and chief place of a canton, in the diſtrict of Bergerac. The place contains 1606, and the canton 8208 inhabitants, on a territory of 185 kiliometres, in 16 communes.

LALLARY Point, a cape on the S.W. coaſt of the iſland of Banca. N. lat. 2° 48'. E. long. 106° 2'.

LALM, a town of Sileſia, in the principality of Jauer; 20 miles W. of Jauer.

LALODA, a town on the W. coaſt of the iſland of Gilolo. N. lat. 1° 48'. E. long. 127° 22'.

LALOO, a town of Hindooſtan, in Bengal; 20 miles E. of Silhet.

LALOUETTE, in *Biography*, an elève of Lulli, beat the time at the opera in Paris, and compoſed the muſic of ſeveral ballets and intermedes. He was one of the beſt performers on the violin of his time, was alſo muſic-maſter at Nôtre Dame, and died in 1728, aged about 75.

LALPET, in *Geography*, a town of Hindooſtan, in the Carnatic; 74 miles N. of Arcot.

LALSK, a town of Ruſſia, in the government of Vologda, on the river Luza; 40 miles E. of Uſting. N. lat. 60° 50'. E. long. 47° 14'.

LALSOOND, a town of Hindooſtan, in the ſubah of Agimere; 10 miles N. of Rantampour. N. lat. 26° 44'. E. long. 76° 53'.

LALVITON, a town on the W. coaſt of the iſland of Samar. N. lat. 11° 35'. E. long. 124° 52'.

LAMA, a town on the W. coaſt of the iſland of Celebes. S. lat. 1° 48'. E. long. 119° 15'.—Alſo, a town of Naples, in Abruzzo Citra; 12 miles E. of Sulmona.

Lama, or *Lamas*, the title of an order of prieſts among the weſtern Tartars, on the frontiers of China, and particularly in Thibet, who are held in great veneration. Lama, in their language, is a prieſt or miniſter of religion; and Lamiſſa is the wife of the Lama.

About the year 1426, the bonzes of Thibet aſſumed the title of "Grand Lama." The moſt powerful among them made Laſſa the place of his reſidence, and was acknowledged chief of all the lamas. He eſtabliſhed the law reſpecting the yellow cap; for it muſt be obſerved, that there are two kinds of lamas, diſtinguiſhed by red and yellow caps. His ſucceſſor was the firſt who appointed a "typa," or prime miniſter, whom he entruſted with the government of his ſtates. The next in order was the firſt who took the diſtinguiſhing title of "dalai-lama," by which he was raiſed far above the reſt; for "dalai" ſignifies "morally and phyſically extended, great, and almoſt without bounds." The lama princes, however, were not ſole ſovereigns of Thibet. The dalai-lama was indebted to a prince of the Tartars of Kokonor, named Kouchi, for his ſovereignty over all Thibet: and in order to continue his protection to him, he eſtabliſhed himſelf, together with his troops, in the neighbourhood of Laſſa. In 1714, the Eleuthes made an irruption into Thibet, committed the moſt horrid ravages, put a great number of the lamas to the ſword, and ſent ſeveral of them into Tartary, incloſed in ſacks, and thrown on the backs of camels. Their king pretended to be the only and real ſovereign of Thibet; and ordered the lamas to renounce their authority over the people, to retire to their monaſteries, and to employ themſelves only in ſaying their prayers. The dalai lama loſt no time to implore the protection of the emperor Kang-hi; who aſſembled a numerous army, and cauſed it to march into Kokonor, from whence he drove the king of the Eleuthes, and then entered Thibet; while another body of Chineſe troops penetrated thither alſo by the province of Se-tchuen. The dalai-lama was re-eſtabliſhed, and the reſt of the lamas were put in poſſeſſion of their pagodas. Thoſe that remained of the troops of the Eleuthes made their eſcape through the defiles of the mountains; and as the reigning emperor has ever ſince protected Thibet, the Thibetians have nothing more to fear from the incurſions of the Eleuthes, who, ſince 1759, have been ſubjects of the empire. The tribute which the ſovereign of Thibet ſends to the emperor of China conſiſts generally of gold or copper ſtatues of the god "Fo," perfumes, amber, coral, precious ſtones, woollen ſtuffs, and ſword blades. The emperor alſo requires from the dalai-lama a certain number of veſſels or ſmall pitchers, filled with water from the Ganges. Ever ſince the expulſion of the Eluth Tartars, the kingdom of Thibet is regarded as depending on the emperor of China, which they call Cathay; and at Laſſa, the capital, two mandarins reſide, with a garriſon of 1000 Chineſe to ſupport the government; but their power does not extend far; for in reality the lama, whoſe empire is founded on the ſureſt grounds, perſonal affection and religious reverence, governs every thing internally with unbounded authority. It is well known, that the dalai-lama is the great object of adoration for the various tribes of Heathen Tartars, who roam through the immenſe tract of continent which ſtretches from the banks of the Volga to Corea, on the ſide of Japan:—the moſt extenſive religious dominion, perhaps, on the face of the globe. He is not only the ſovereign pontiff, the vicegerent of the deity on earth; but as ſuperſtition has ever the greateſt influence, where it is removed fartheſt from its object, the more remote Tartars abſolutely regard him as the Deity himſelf. They believe him immortal, and endowed with all knowledge and virtue. They annually aſſemble from different parts to worſhip and make rich offerings at his ſhrine; and even the emperor of China does not fail to make acknowledgments to him in his religious capacity, and actually to entertain at a great expence, in the palace of Pekin, an inferior lama, deputed as his nuncio from Thibet. According to Mr. Turner's account, the Thibetians conceive of him as immaculate, immortal, omnipreſent, and omniſcient. They view him only in the moſt amiable light, as perpetually abſorbed in religious duty; and when called to beſtow attention on mortal beings, as employed only in the benign office of diſtributing conſolation by his bleſſing, and in exerciſing the firſt of all attributes, forgiveneſs and mercy. He is alſo the centre of all civil government, which derives from his authority all its influence. It is the orthodox opinion among the votaries of the grand lama, that when he ſeems to die either of old age or of infirmity, his ſoul only quits a crazy habitation to ſeek another and better; and that it is diſcovered again in the body of ſome child, by certain tokens known only to the lamas or prieſts, in which order he always appears. The dalai-lama, who preſided in Thibet in 1774, when Mr. Bogle was commiſſioned by the governor-general of Bengal to viſit that country, was an infant, and was diſcovered a few years before by the Teeſhoo lama, who, in authority and ſanctity of character, was next to him; and, conſequently, during the other's minority, acted as chief. The reſidence of the dalai-lama is at Pateli, or Pontela, an immenſe palace on a mountain near the banks of the Burrampooter, about ſeven miles from Laſſa. On this mountain there are many pagodas, in the moſt ſumptuous of which he reſides. He paſſes great part of his life on a kind of altar, where he ſits motionleſs, in a croſs-legged poſture, on a large and magnificent cuſhion, and receives with the greateſt gravity the adorations, not only of the Thibetians, but of a great multitude of pilgrims, who undertake long and difficult journies to go and worſhip him on their bended knees, and to receive his benediction. The grand lama ſalutes no one; he neither uncovers nor riſes up to any perſon, whatever his rank may be; with the ſame eyes he beholds at his feet the greateſt princes and the meaneſt of his ſubjects. He contents himſelf with laying his hand on the head of his worſhipper, who imagines that he obtains, by this impoſition alone, the remiſſion of all his ſins. His votaries conceive, that all the divinity of "Fo" reſides in him; and they aſcribe to him all the attributes and prerogatives already mentioned. Their whole care is employed in diſcovering the place where it ſhall pleaſe him to be born again; and even ſome of the Tartar princes themſelves have aſſiſted in this intereſting ſearch; but they are obliged to be directed by certain lamas, who alone are acquainted with the ſigns by which the new-born god may be diſcovered, or rather, they only know what child the preceding dalai-lama appointed to be his ſucceſſor. The Teeſhoo-lama has ſeveral palaces or caſtles. The caſtle in which the lama reſides is built of ſtone or brick, with many courts, lofty halls, terraces, and porticos: and the apartments are in general roomy, and highly finiſhed in the Chineſe ſtile, with gilding, painting, and varniſh. Stair-caſes and windows are conveniences to which they are utter ſtrangers. There is no acceſs to the upper rooms but by a ſort of ladders of wood or iron; and in lieu of windows they have holes in the cielings, with pent-houſe covers, contrived ſo as to ſhut up on the weather-ſide. Firing is ſo ſcarce, that little is uſed except for culinary purpoſes; and they truſt altogether for warmth in their houſes to their furs and other clothing. In the northern parts of Thibet there are gold-mines, which are the reſerved property of the lama, and rented out to thoſe who work them. Particular and diſcriminating reſpect is paid to the ſovereign lamas after their death. The bodies of theſe are depoſited entire in ſhrines prepared for them, which are ever after conſidered as ſacred, and viſited with religious awe; whereas the bodies of inferior lamas are uſually burnt, and their aſhes preſerved with great care in little metallic idols, which have places aſſigned them in their ſacred cabinets.

The lamas, who form the moſt numerous as well as the moſt powerful body in the ſtate, have the prieſthood entirely in their hands; and beſides they fill up many monaſtic orders, which are held in great veneration among them. The inferior gradations, from the preſident of a monaſtery, who is always ſtyled lama, in addition to the name of the ſtation to which he belongs, are Gylong, Tohba, and Tuppa. On the eſtabliſhment of the monaſtery of Teeſhoo Laomboo, there were reckoned at that period no leſs than 3700 gylongs for the performance of daily ſervice in the Goomba, or temple: and four lamas, choſen from among them, ſuperintend and direct their religious ceremonies. (See Gylongs.) Youth intended for the ſervice of the monaſtery are received on the eſtabliſhment at the age of eight or ten years, and then called "Tuppa;" at fifteen they are uſually admitted into the order of "Tohba;" and from that of Tohba, if they are found, upon examination, duly qualified, they are advanced to the claſs of Gylongs, between the age of 21 and 24; and with ſufficient intereſt, they may then be promoted to the ſuperintendence of ſome endowed monaſtery, and obtain the rank of lama. The prieſts are habited in long robes of yellow cloth, with a conical cap of the ſame colour, having flaps to fall down and cover the ears. This peculiarity of colour diſtinguiſhes one of the two religious ſects that divide almoſt the whole of Tartary, from Turkeſtan to the eaſtern limits of this continent. The other colour is red; and the tribes are known as belonging to the red, or yellow cap. The former differ principally from the ſectaries of the yellow, in allowing the marriage of their prieſts. But the latter are conſidered as the moſt orthodox, as well as poſſeſſed of the greateſt influence. The emperor of China is decidedly of this tribe, and has ſanctioned his preference of the yellow colour, by a ſumptuary law, which limits it to the ſervice of religion, and the imperial uſe. The two ſects are diſtinguiſhed by the appellations of Gyllookpa and Shammar; the former having adopted the yellow colour, and the latter the red. Three lamas are placed at the head of each ſect; Dalai-lama, Teeſhoo-lama, and Taranaut-lama, preſide over the Gyllookpa, who have their reſidence at Pootalah, Teſhoo Loomboo, and Kharka. This ſect prevails over the greateſt part of Thibet, and a diviſion of it is eſtabliſhed in a province of the Deccan, called Seurra, or Sirrore. In like manner three lamas alſo preſide over the Shammar, and have their reſidence in Bootan, in ſeparate monaſteries. Great contentions formerly prevailed between theſe ſects; and the Shammar was under a neceſſity of retiring, and of fixing in a tract of country bordering on Thibet, towards the ſouth, marked by a line, inhoſpitable and intemperate in the extreme. Here they eſtabliſhed themſelves, as in a ſecure aſylum; while others, ſtyled Dukba, ſtill live in tents and tend their flocks in a vagrant ſtate. But to return from this digreſſion.—The inhabitants of Thibet are not the only people who may attain to the dignity of lama. Tartars, and even Chineſe, have aſpired to the prieſthood, and repaired to Laſſa in hopes of obtaining it. If they can be admitted among the diſciples of the grand lama, the number of whom is fixed at 200, they conſider their admiſſion as the commencement of their promotion, and the firſt ſtep towards dignity and power; the ſubaltern grand lama being choſen from among theſe diſciples. When they have arrived at this dignity, they live in ſplendour and opulence, and are continually ſurrounded by a crowd of adorers, who load them with preſents. The richeſt and moſt conſiderable of the Tartar lamas, who inhabit Thibet, are thoſe whom the Chineſe call "Mong-fan;" they poſſeſs extenſive domains to the north of the province of Yun-nan, between the beautiful rivers of Kinche-kiang and Vouleang. Theſe lands were granted to them by Ouſan-guei, who became maſter of Yun-nan, when the Mantchew Tartars ſubdued China, in order to bring them over to his party, and that by their means he might gain the ſupport of all the lamas of Thibet. Although the Mantchew Tartars had never any lamas, they no ſooner undertook the conqueſt of China, than they protected them openly through policy; and ſoon after, government cauſed magnificent pagodas to be erected for them. The example was followed by a great number of princes, princeſſes, and wealthy people, who vied with one another in zeal for building temples for them, and thus the lamas greatly multiplied in China. They are alſo rich there; for moſt of theſe lamas appear in public in veſtments of red and yellow ſattin, ornamented with the moſt valuable furs. They are all mounted on excellent horſes, and followed by a number of domeſtics, correſponding to their rank as mandarins; for the emperor permits them to carry a cuſhion and the other badges of dignity which belong to the quality of mandarin. The lamas of Thibet are leſs magnificent in their dreſs; wearing only a napped kind of woollen ſtuff, called in China "poulou," which is uſed for covering ſeats, becauſe it generally laſts long and retains its colour. Beſides a cap, the lamas have ſeveral bonnets, or tiaras, that are the diſtinguiſhing marks of the different degrees of honour to which they have arrived. The cap, which ſtrikes the European moſt, very much reſembles a biſhop's mitre: it is worn by them on horſeback as well as on foot. The obligations which the office of lama impoſes are neither few nor trifling; but there is not one among them who engages to diſcharge them all. They divide and ſhare the burden. One takes the charge of obſerving one precept, and another obliges himſelf to practiſe another. They have alſo certain common prayers, which they chaunt in a very agreeable manner; and they are obliged to renounce the vanities of the world, to live in celibacy, and to have no concern in trade or commerce.

The lamas are extremely ſuperſtitious, and much addicted to magic. Groſier's China, vol. i. Phil. Tranſ. vol. lxvii. part ii. Turner's Account of an Embaſſy to the Court of the Teſhoo Lama, in Thibet, 1806.

LAMALMON, in *Geography*, a lofty mountain and ſpacious diſtrict of Abyſſinia, where is the paſs through which the road of all caravans to Gondar lies; and where they take account of all baggage and merchandize, which they tranſmit to the Nagadé Ras, or chief officer of the cuſtoms at Gondar. Here is alſo levied, with great rigour, and for the moſt part with injuſtice, a payment due to the proprietor of the ground. From its baſe this mountain has the appearance of being ſharp-pointed; but on the top of it is a large plain, called Lama, part laid out in paſture, but the greater part bearing grain. It abounds with ſprings, and ſeems to be the great reſervoir from which ariſe moſt of the rivers that water this part of Abyſſinia. A multitude of ſtreams iſſue from the ſummit in all directions; the ſprings boil out from the earth in large quantities, capable of turning a mill. They plough, ſow, and reap here at all ſeaſons; and the huſbandman muſt blame his own indolence, and not the ſoil, if he has not three harveſts. In one place, ſays Mr. Bruce, we ſaw people buſy cutting down wheat; immediately next to it, others at the plough; and the adjoining field had green corn in the ear, and a little further, it was not an inch above the ground. Lamalmon is on the N.W. part of the mountains of Samen: that of Gingerohha, with two pointed tops, joins it on the north; but neither Lamalmon nor Gingerohha, though higher than the mountains of Tigré, are equal in height to ſome of thoſe of Samen. The mercury in the barometer on the top of Lamalmon ſtood at 20$\frac{7}{8}$ Engliſh inches. The language of Lamalmon is Amharic; but there are many villages where the language of the Falaſha is ſpoken. Theſe are the ancient inhabitants of the mountains, who ſtill preſerve the religion, language, and manners of their anceſtors, and live in villages by themſelves. Their number is conſiderably diminiſhed, and they are now wholly addicted to agriculture, hewers of wood, and carriers of water, and the only potters and maſons in Abyſſinia. In general they live better than the other Abyſſinians, which they, in revenge, attribute to their ſkill in magic, not to ſuperior induſtry. Their villages are generally ſtrongly ſituated out of the reach of marching armies, or otherwiſe they would be conſtantly rifled, partly from hatred, and partly from hopes of finding money. The river Macara is the boundary between Lamalmon and Waggora; and the latitude of ſome ſmall villages called Macara was 13 6′ 8″. Bruce's Travels, vol. iii.

LAMANON, Robert Paul, in *Biography*, a member of the Academy of Sciences at Paris, and member of the Muſeum in the ſame city, was born at Salon, in Provence, in 1752, of an old and reſpectable family. He was deſtined for the church, and ſent to Paris to complete his theological ſtudies. He roſe to the dignity of canon, but by the death of his father and elder brother he came into property, which enabled him to follow the bent of his inclinations, by devoting himſelf to the phyſical ſciences. He travelled through Provence and Dauphiné, and ſcaled the Alps and Pyrenees: "at the ſight of theſe vaſt natural laboratories the bent of his mind burſt forth inſtantaneouſly; he climbed to the ſummit of rocks, and explored the abyſs of caverns, weighed the air, analyſed ſpecimens, and, in this ardent fancy, having attained the ſecrets of creation, he formed a new ſyſtem of the world." Upon his return home, he applied with great ardour to the ſtudy of meteorology, natural philoſophy, and the other branches of the hiſtory of nature. He ſpent three years at Paris, and gave to the learned ſocieties there many very valuable papers, particularly a memoir on the Cretans, a memoir on the theory of the winds, and a treatiſe on the alteration in the courſe of rivers, particularly the Rhone. He again viſited Switzerland and Italy, going firſt to Turin, where he allied himſelf to the learned of that country: after his return, laden with the ſpoils of the countries which he traverſed, he employed himſelf in the arrangement of the intereſting fruits of his journey. It was at the time when Lamanon was preparing for the preſs his great work on the "Theory of the Earth," that the French government conceived the vaſt project of completing the diſcoveries of captain Cook: the Academy of Sciences was entruſted with the care of ſelecting men capable of rectifying the common notions of the ſouthern hemiſphere, of improving hydrography, and advancing the progreſs of natural hiſtory; they invited, at the recommendation of the illuſtrious Condorcet, Lamanon to ſhare the danger, and to partake in the glory, of this great enterprize. He eagerly catched at the offer, haſtened to Paris, refuſed, in a conference with the miniſter, the ſalary offered him, and taking a haſty leave of his friends, departed for Breſt. On the 1ſt of Auguſt, 1785, the armament ſet ſail under the orders of La Perouſe, an experienced commander: the commencement of the voyage was highly proſperous. After ſome delays, and having embraced every opportunity of making obſervations, the veſſels arrived at the iſland of Maouna, one of the ſouthern Archipelago. Lamanon, eager to aſſure himſelf of the truth of the accounts of that country, debarked with Langle, the ſecond in command. Having explored the place, and being upon the point of returning, they were attacked by the natives; a combat enſued, and they, with ſeveral of the boat's crew, fell a ſacrifice to the fury of theſe barbarians. Thus periſhed Lamanon, a young man ardent in the purſuits of ſcience, diſintereſted in his principles, and a zealous advocate for the intereſts of freedom. His eulogiſt, M. Ponce, ſaid of him, "that he ſeemed born to bring about a revolution in ſcience; the depth of his ideas, the energy of his character, the ſagacity of his mind, united to that lively curioſity, that can draw inſtruction out of every thing which he ſaw, and which leaves nothing unexplored, would have led him to the moſt valuable diſcoveries."

LAMANTEA, in *Geography*, a town of Naples, in Calabria Citra; 12 miles S.W. of Coſenza.

LAMARCKIA, in *Botany*, is a cryptogamic, and, in every ſenſe, very obſcure genus of marine plants, founded by the Abbate Joſeph Olivi, in his *Zoologia Adriatica*, an Italian work in quarto, publiſhed at Baſſano in 1792, and treating of various matters relative to the natural hiſtory of the gulf of Venice. What relates to the preſent genus is copied into Uſteri's *Annalen*, faſc. 7. 76. It was named in honour of the celebrated French botaniſt John Baptiſt Monet, Chevalier de la Marck, who, ſince the French revolution, has adopted *Lamarck* as his ſurname. His indefatigable application and ſkill in the ſcience of botany, are evinced by his *Dictionaire*, and his *Illuſtration des Genres*, ſo often quoted by us. He has, however, for ſome time withdrawn himſelf from the former work, devoting his attention to conchology. Of his claims to botanical commemoration, there can be no doubt; but he has already received this reward of his labours, in the *Monetia* of L'Heritier, adopted in Willdenow, Sp. Pl. v. 1. 669, and the new edition of Hort. Kew. v. 1. 264; nor can we on any occaſion conſent to the unauthorized and truly fooliſh contrivance, of naming two different genera after one and the ſame perſon. If we retain the *Butea* of Koenig, for inſtance, it muſt be in honour of the late marchioneſs of Bute, not of the firſt earl, already juſtly immortalized in the *Stuartia* of Linnæus. It is however extremely probable that Olivi might be ignorant of the *Monetia*; or he might prefer for it the name *Azima*, ſubſequently given by Lamarck himſelf, but whoſe meaning we know not. See his Dict. v. 1. 343.

The *Burſa marina* of Cæſalpinus and Bauhin, and the *Vermilara retuſa* of Imperato, have given occaſion to the eſtabliſhment of the preſent genus, whoſe character is thus given by Olivi.

Plant rooted, ſomewhat coriaceous, ſoft, compoſed of minute bladders, perpendicular to the axis, which are membranous, green, cylindrical, approximated, terminating at each end in very ſlender, tubular, connecting filaments. *Fructification* conſiſting of ſmall globes, ſcattered among the bladders and filaments.

The ſpecies are

1. L. *Burſa*. Pouch Lamarckia. (Alcyonium Burſa; Linn. Syſt. Nat. v. 1. 1295. Pallas Zooph. 352. Burſa marina; Cæſalp. 608. Bauh. Pin. 368. Fucus Burſa; Turn. Hiſt. Fucor. v. 3. 6. t 136. Engl. Bot. t. 2183.)—Globoſe, depreſſed, hollow, with fine, ſcattered, internal threads.—Found in the ſea in various places, eſpecially upon limeſtone rocks, moſt commonly attached by its roots to ſome ſmall calcareous fragments. "Each plant is a hollow ſpongy ball, from one to ten inches diameter, green, compoſed of entangled, pellucid, jointed fibres, bearing numerous concentric oblong veſicles, whoſe obtuſe ſummits, reaching to the outſide of the ball, give it a papillary or velvety appearance. Such at leaſt was the ſtructure of the ſpecimens deſcribed in Engl. Bot. nor have we found the bladders connected *at each end* with the filaments. The roots were attached to fragments of ſhells. No fructification could be detected, and the plant was referred to *Fucus*, after Mr. Turner's example, merely till the whole ſubject of ſubmarine plants ſhould be better underſtood. Olivi ſays, that when cut it contracts mechanically, by means of the internal fibres, which he ſuppoſes gave riſe to the opinion of its being an animal, or *Alcyonium*.

2. L. *Vermilara*. Branching obtuſe Lamarckia. Vermilara retuſa; Imperat. Hiſt. Nat. 646. Ulva decorticata; Woodw. Tr. of Linn. Soc. v. 3. 55.)—Branched, ſomewhat forked, cylindrical, and obtuſe.—Native of the Mediterranean ſea, in deep water.—This has the form of *Fucus loreus*, with a reſemblance in its ſurface and colour to *F. tomentoſus*. Mr. Woodward, who ſaw but one ſpecimen, brought from the Mediterranean, found great difficulty in ſettling its genus. Its ſtructure reſembles an *Ulva* ſtripped of the cuticle. There can be little doubt of its generic affinity to the above. S.

LAMARCKIA is alſo the name of a genus eſtabliſhed by Moench, and adopted by Decandolle in his new edition of Lamarck's *Flore Françaiſe*, v. 3. 30, as well as by Bivona Bernardi, in his *Sicularum Plantarum*, *Centuria* 1, n. 46. This genus conſiſts of one ſpecies only, as far as we are informed on the ſubject, which is *Cynoſurus aureus* of Linnæus, figured in the *Flora Græca*, t. 79, a beautiful graſs, but we are at a loſs to imagine any character by which it can be ſeparated from *Cynoſurus*; ſee that article.

A New Holland ſhrub, belonging to *Tetrandria Monogynia*, has been called *Lamarckia dentata*, in Donn's *Hort. Cantabr.* ed. 5. 32. We are not acquainted with its characters, but preſume it is what ſome have named *Hoya ſerrata*.

LAMAS, in *Geography*, a town of Portugal, in the province of Tras los Montes; 18 miles S.W. of Braganza.—Alſo, a town of Spain, in Galicia; 15 miles E.S.E. of Lugo.—Alſo, a town of Peru, in the dioceſe of Truxillo; 180 miles E.N.E. of Truxillo.

LAMB, in *Agriculture*, a general name applied to the young of the ſheep kind. When lambs come early in the ſeaſon, great care ſhould be taken to keep them dry and warm, as well as to provide a plentiful ſupply of food for the ewes, and always to let them have the drieſt paſtures, as without due attention to ſuch circumſtances, much loſs will frequently be ſuſtained by their dying, or remaining long in a weakly ſtate, almoſt without growth.

It is obſerved by Mr. Young, that "there is no buſineſs on a farm that demands more care, attention, and aſſiduity," than that of ewes in lambing ſeaſon. "As ſoon as the farmer looks for the ewes beginning to lamb, they ought, he thinks, every night to be folded in the ſtanding littered fold, on one ſide of which there ſhould be a ſmall cottage hut, built to be warm, with a chimney and ſtove for heating milk, and a bed for the ſhepherd to lie down upon. Here he is to ſleep through the lambing ſeaſon, that he may be ready to watch, aſſiſt, and tend any ewes that he ſees very near lambing, and, if neceſſary, to give the lamb ſome warm cow's milk. Some of the conſiderable Norfolk farmers, have, he obſerves, theſe huts on four wheels, to draw about with the flock wherever they may be; but to have one littered and well ſheltered ſtanding-fold, on a moderate farm, and two or three conveniently placed on a large one, to take the flock to, without any diſtant driving, is, he ſuppoſes, far preferable to that method. And he adviſes, that upon incloſed farms, where the reſerve of rouen may be ſuppoſed to be much greater than is generally poſſible on flock-farms, the ſheep, as they drop their lambs, ſhould be drawn from the flock of ewes, and put to this food, upon which an entire reliance may be had;" and that it ſhould be remembered, that all turnips ſhould be conſumed in February, which circumſtance proves the vaſt importance of reſerved graſs as a ſubſtitute. Towards the cloſe of July the lambs of the flock ſhould be weaned; in this buſineſs, it is noticed, that they are much earlier in Suſſex, than in Suffolk. And that "clover in bloſſom is, of all other food, the moſt forcing; ſaintfoin rouen excellent; and if the farmer has neither, he ought to have made a reſerve of a ſweet good bite of freſh graſs for them;" and that it is eſſential that due proviſion ſhould have been made before this period. See Sheep.

Lamb-*houſe*, in *Rural Economy*, by the farmer the common name of the place where lambs are fattened. It is ſometimes termed ſuckle. A proper rack and trough ſhould be fixed up in it. See Lamb *ſuckling*.

Lamb-*ſuckler*, a common name applied to the perſon who practiſes or carries on the buſineſs of fattening houſe-lamb. See the next article.

Lamb-*ſuckling*, a name uſed to ſignify the art of fattening houſe-lamb.

It has been obſerved by the author of the Agricultural Report of the County of Middleſex, that, in the performance of this buſineſs, the ewes which begin to lamb about Michaelmas, are kept in the cloſe during the day, and in the houſe during the night, until they have produced twenty or thirty lambs. Theſe lambs are then put into a lamb-houſe, which is kept conſtantly well littered with clean wheaten ſtraw; and chalk, previouſly baked in the oven, both in lump and in powder, is provided for them to lick, in order to prevent looſeneſs, and thereby preſerve the lambs in health. As a prevention againſt gnawing the boards, or eating each other's wool, a little wheat ſtraw is placed, with the ears downwards, in a rack within their reach, with which they amuſe themſelves, and of which they eat a ſmall quantity. In this houſe they are kept, with great care and attention, until fit for the butcher. The mothers of the lambs are turned every night, at eight o'clock, into the lamb-houſe to their offſpring. At ſix o'clock in the morning, theſe mothers are ſeparated from their lambs, and turned into the paſtures; and at eight o'clock ſuch ewes as have loſt their own lambs, and thoſe ewes whoſe lambs are ſold, are brought in, and held by the head till the lambs by turn ſuck them clean: they are then turned into the paſture; and at twelve o'clock the mothers of the lambs are driven from the paſture into the lamb-houſe for an hour, in the courſe of which time each lamb is ſuckled by its mother. At four o'clock all the ewes that have not lambs of their own are again brought to the lamb-houſe, and held for the lambs to ſuck; and at eight the mothers of the lambs are brought to them for the night. And where an ewe gives more milk than her lamb will ſuck, the ſuperabundance is given to the twins, or to any other lamb whoſe mother may not be able to furniſh it with ſufficient food. The ſhepherd muſt in this caſe hold the ewe, or ſhe would not ſuffer the ſtrange lamb to ſuck. From their timid nature, it is extremely eſſential that they ſhould be kept free from every ſpecies of unneceſſary diſturbance. This method of ſuckling is, it is obſerved, continued all the year. The breeders ſelect ſuch of the lambs as become fat enough, and of proper age (about eight weeks old) for ſlaughter, and ſend them to market during December, and three or four ſucceeding months, at prices which vary from one guinea to four, and the reſt of the year at about two guineas each. This is ſevere work for the ewes, and ſome of them die under exceſs of exhauſtion. However, care is taken that they have plenty of food: for, when green food, *viz.* turnips, cole, rye, tares, clover, &c. begins to fail, brewer's grains are given them in troughs, and ſecond-crop hay in racks, as well to ſupport the ewes, as to ſupply the lambs with plenty of milk; for if that ſhould not be abundant, the lambs would become ſtunted, in which caſe no food could afterwards fatten them. It is remarked, that grains were firſt given to ewes by the late Mr. Naylor, of this county, and that he alſo was the firſt perſon who pulled out all the remaining front teeth of a broken mouthed ewe; obſerving that they fed much better without teeth than with the loſs of one or two.

The ewes for this purpoſe ſhould be kept free from the foot-rot and ſcab; and if they have any pitch-mark on them when they lamb, it muſt be cut off before the lambs be taken into the houſe, or they will eat it, and thereby greatly prejudice their future growth.

And theſe ewes are always, the author of the Middleſex Report ſays, without exception, of the Dorſetſhire breed; and even of theſe there is not more than one in three that will lamb ſufficiently early for the purpoſe of houſe-lamb. The early lambing ewes are ſought for by the breeders of this county with great diligence throughout the county of Dorſet, and at the fairs where ſuch ſtock is uſually ſold. The prices vary from 35*s.* to 42*s.*

Such lambs as can be warranted of a fair complexion after being butchered, are held in the higheſt eſteem, which thoſe bought promiſcuouſly in Dorſetſhire, or at the fairs, cannot be: this preference induces thoſe breeders and ſucklers who are in the ſecret, to ſelect rams which they can depend on for getting lambs whoſe meat ſhall be of that quality. The ſucklers, ſaleſmen, and butchers of London, he aſſerts, are aware that ſuch lambs as have ſharp barbs on the inſide of their lips are certainly of a deep colour after being butchered; and all thoſe whoſe barbs are naturally blunt do as certainly produce fair meat. This knowledge has been the occaſion of many lambs of the latter kind being kept for rams, and ſent into Dorſetſhire, expreſsly for the purpoſe of improving the colour of the fleſh of the houſe-lambs. The iſſue of ſuch rams can generally be warranted fair, and ſuch meat always ſells at a higher price: hence he ſuppoſes aroſe the miſtaken notion, that Middleſex rams were neceſſary to procure houſe-lambs. And it has been further obſerved, that, "in order to conduct this ſort of fattening with profit and ſucceſs, a lamb-houſe or ſuckle of proper dimenſions muſt be provided." And that, "it is found from practice, that a range of building from ſixty to ſeventy feet in length, and fifteen or eighteen in breadth, with three or more coops or diviſions of different ſizes at each of the ends, for ſeparating the lambs according to their ages, is ſufficient for containing and conducting the buſineſs of from one hundred and ſixty, to one hundred and eighty lambs. That the lambs may be enabled to find their mothers with facility, the ewes, when they are ſeparated from them, ſhould be kept apart with deal hurdles in the middle of the houſe, ſo that they may be convenient for the lambs in the coops at the ends.

But this is a practice which can only be undertaken with advantage, in ſituations at no great diſtance from large towns, where there is great demand for early lamb; as upon their being ready at an early period, as towards the latter end of December, depends the great profit to be derived from the ſyſtem.

The principal objects in this ſort of management are thoſe of attending to the regular feeding of the ewes, the varying of their food with propriety, and keeping the houſe perfectly warm, clean, and ſweet, ſo that the proceſs of fattening may proceed in a regular manner without any check being ſuſtained.

The writer of the Middleſex Report obſerves, that a friend of his, who is well acquainted with the ſubject, ſays, the farmers of Middleſex do not now rear half ſo many houſe-lambs as they did about forty years ago. In Surrey they are likewiſe falling off. The ſuckling ſyſtem is removing to a greater diſtance from the metropolis, to which place many fat lambs are now ſent alive, in light four-wheeled covered carriages.

Lamb, *Graſs*, the name of ſuch lamb as is principally fattened while the ewes are at graſs, or other kinds of green food. In the Report of Middleſex, it is remarked, that the vicinity of Smithfield market, makes early graſs-lambs an object of conſiderable importance to the farmers of that county. The Dorſet ewes are chiefly ſelected for this purpoſe. They are purchaſed at Weyhill, Kingſton, and other fairs, forward enough to drop their lambs in January. The price from 30*s.* to 35*s.* The breeders keep the ewes and lambs principally on turnips and ſecond-crop hay. They ſell the lambs in the months of April and May, fat, at from 25*s.* to upwards of 35*s.* each. The ewes, being dried early, are fattened and brought to market about Michaelmas, and ſold at the ſame prices The wool is about three pounds, which, at 10*d.* amounts to 2*s* 6*d.* The whole of the ſtock is cleared within the year, and the profit or loſs thereby aſcertained. The account in general is as follows:

Statement.

The lamb ſells for - - -	1	10	0
The ewe for - - -	1	10	0
The wool at 2*s.* 6*d.* or - -	0	2	0
Together -	3	2	0
Deduct prime coſt	1	12	0
Remains the increaſe of a ewe in one year	1	10	0

Lamb, *Houſe*, a term applied to that ſort of lamb that is fed and fattened in houſes conſtructed for the purpoſe. The principal art in this buſineſs, as has been ſeen above, is to have the lambs ſuch as will turn out of a fair delicate colour on being killed, and having them ready at an early period of the ſeaſon. See Lamb-*ſuckling*.

Lamb-*Earth*, in *Huſbandry*, is a whitiſh ſtony loam. The name ſeems only a corruption of the word *loam-earth.*

Lamb *Head*, in *Geography*, a cape of Ireland, forming the northern point of the entrance to Kenmare river, in the county of Kerry. N. lat. 51 41. W. long. 10 1'.

Lamb *Head*, a cape on the S E. coaſt of the iſland of Stronſa, one of the Orkneys. N. lat. 58° 57'. W. long. 2° 25'.

Lamb *Iſland*, a ſmall iſland of Scotland, in the mouth of the Forth; one mile N.N.W. from North Berwick.

Lamb's *Lettuce*, in *Gardening*, the common name of an early, well-known, herbaceous plant. See Valeriana.

Lamb, *Paſchal.* See Paschal.

LAMBA, in *Geography*, one of the ſmaller Shetland iſlands, between Shetland and Yelle. N. lat. 60° 45'. W. long. 1° 39'.

LAMBALE, a town of Africa, in the country of the Foulis, on the Senegal; 75 miles S.E. of Goumal.

LAMBALLE, a town of France, in the department of the Northern Coaſts, and chief place of a canton, in the diſtrict of S^t^. Brieuc. The place contains 3803, and the canton 12,685 inhabitants, on a territory of 225 kiliometres, in 14 communes.

LAMBAN, a town of Aſia, in the country of Guriel, on the Black ſea; 50 miles S.W. of Cotatis.

LAMBANESS, a cape on the N.E. coaſt of the iſland of Unſt. N. lat. 61° 10'. E. long. 1 4'.

LAMBANLAOTE, a ſmall iſland on the eaſt ſide of the gulf of Bothnia. N. lat. 61° 39'. E. long. 21 15'.

LAMBASSA, in *Ancient Geography*, a town of Africa, in Numidia, which became an epiſcopal ſee.

LAMBATIVES, or rather Lambitives, in the *Materia Medica*, a form of medicine to be licked off the end of a liquorice-ſtick.

Lambatives amount to the ſame with *linctuſes*, *lohocks*, and *eclegmas.*

LAMBAY,, in *Geography*, an iſland belonging to the county of Dublin, Ireland, ſituated in the Iriſh ſea; 2 miles eaſt from the Mainland. It is about three miles in length, and 1 mile in breadth, and is remarkable for vaſt quantities of rabbits and ſea-fowl. Crabs, lobſters, and oyſters are taken in great plenty; and abundance of kelp is made on it. N. lat. 53 30'. W. long. 6'. Carliſle, &c.

LAMBAYEQUE, a town of the vice-royalty of Peru, and capital of the juriſdiction of Sana, in the dioceſe of Truxillo, in a pleaſant and fertile ſituation, and containing about 1500 houſes, ſome of which are built of brick, ſome of cane and plaiſter, and others altogether of cane. The inhabitants amount to about 8000; ſome are opulent; but the greater number conſiſts of poor Spaniards, Mulattoes, Meſtizos, and Indians. The pariſh church, conſtructed of ſtone, is large and beautiful, and ſplendidly adorned. It has four chapels, called "Ramos," with an equal number of prieſts. This town is the reſidence of a corregidor, who has many other towns under his juriſdiction. It is waſhed by a river of the ſame name, 95 miles W.N.W. of Truxillo. The high road from Piura to Lima paſſes through this town. Some wine is made in the vicinity, and the poor are occupied in weaving coarſe cotton cloths. S. lat. 6° 40'. W. long. 79° 56'.

LAMBDOIDES, in *Anatomy*, the ſuture connecting the occipital to the two parietal bones, and ſo named becauſe it conſiſts of two lateral divergent branches like thoſe which compoſe the Greek capital lambda. See Cranium.

LAMBECIUS, Peter, in *Biography*, was born at Hamburgh in 1628, where he received the early part of his education, and from whence he proceeded to the univerſities of Holland and France to purſue and complete his ſtudies. He made great progreſs in polite literature and the law, and at the age of nineteen he became known by a work on Aulus Gellius. He was elected licentiate-in-law at Toulouſe; he ſpent two years at Rome with cardinal Barberini; and on his return to Hamburgh he was appointed to the profeſſorſhip of hiſtory in 1652; and in 1660 was made rector of the college in that city. He was rendered extremely uneaſy by being charged with ſcepticiſm, and by the temper of his wife, whom he had married probably becauſe ſhe was rich, but who refuſed to let him ſhare in her abundance. In 1662, he therefore abandoned his family and country, and went firſt to Vienna, and from thence to Rome, where he was favourably received by Chriſtina, queen of Sweden, and pope Alexander VII. He now openly abjured Lutheraniſm, and declared himſelf a Catholic, to which religion he had been converted many years before. Returning to Vienna, he was appointed ſub-librarian, and then librarian-in-chief to the emperor, in which poſt he died in 1680. Lambecius was author of many works, as "Origines Hamburgenſes," in 4to.; "Codini et alterius anonymi excerpta de Antiquitatibus Conſtantinopol." Greek, with a Latin verſion and remarks, fol. 1655: "Prodromus Hiſtoriæ Litterariæ," fol.; "A Collection of Latin Diſcourſes on various Occaſions," 4to. 1660; but the moſt laborious of his performances was entitled "Commentariorum de Auguſta Bibliotheca Cæſaria Vindobonenſi," in eight volumes, folio. This work contains a hiſtory of the imperial library at Vienna, with a deſcriptive catalogue of its numerous MSS. upon a critical and hiſtorical plan. Moreri. Bayle.

LAMBENT Fire. See Fire.

LAMBERT, Anna-Theresa de Marguenot de Courcelles, *Marchioneſs of*, in *Biography*, a celebrated literary lady, was born at Paris in 1647. Her father died while ſhe was an infant, and her mother took for a ſecond huſband M. Bachaumont, who was exceedingly careful to cultivate the promiſing talents of his daughter-in-law. She married Henry Lambert, marquis of St. Brie, in 1666, who died in 1686, leaving her with one ſon, and a daughter. She was involved in tedious law-ſuits, which, by her great addreſs, were brought to a happy concluſion. When ſhe felt herſelf unembarraſſed, and miſtreſs of a conſiderable eſtate, ſhe fixed her reſidence at Paris, and devoted herſelf to letters, and the ſociety which cultivated them. The latter days of this lady were crowded with ſufferings, which the conſolations of religion enabled her to endure with fortitude. She died at a very advanced age in 1733, Her principal works are "Les Avis d'une Mere à ſon Fils: et d'une Mère à ſa Fille;" "Nouvelles Reflections ſur les Femmes, ou Metaphyſique d'Amour;" "Traité de l'Amitie." Of theſe, and of her other works, the ſtyle is elegant, and the thoughts ingenious. The "Advice" to her children breathes all the tenderneſs of a parent, joined to the correctneſs of ſentiment of a philoſophical moraliſt. The heart of Madame de Lambert was as warm as her underſtanding was enlarged; ſhe ſerved her friends with zeal, and delighted in acts of generoſity.

Lambert, Francis, a French monk, who quitted his convent to embrace the reformed religion, deſcended from a noble family, was born at Avignon in the year 1487. At the age of fifteen he entered himſelf among the Franciſcan friars, and continued in the community twenty years; during which time he acquired celebrity as a preacher, and was made general of the order. He was a thoughtful man, and a diligent enquirer after the truth; and in the courſe of his inveſtigations he ſaw reaſon to renounce the doctrines of the Catholic church, and to adopt thoſe of the Reformation. He, of courſe, found it neceſſary to withdraw from his native country, and in 1522 he went into Switzerland. He became a popular preacher among the Proteſtants, and having continued ſome time at Baſil, he ſet out for Wittemberg to viſit Luther, in the year 1523. With that eminent reformer he grew into high eſteem, and it was determined he ſhould go to Zurich, to aſſiſt in diſſeminating the principles of the reformation through France. The project was abandoned, and he was ſettled in ſome employment in the univerſity of Wittemberg, where he moſt probably continued till the year 1526. In the following year he was appointed divinity-profeſſor at the univerſity of Marpurg, and in 1530 he died at the age of forty-three. He was author of commentaries on almoſt all the parts of the Old and New Teſtament, and of many theological and controverſial pieces. Bayle. Moreri.

Lambert, John Henry, an eminent mathematician and aſtronomer, was born at Muhlhauſen, in the Sundgaw, a town in alliance with the Swiſs cantons, Aug. 29th, 1728. His father was by trade a ſtay-maker, and with difficulty provided for the wants of his family. Having no better proſpects for his ſon than by bringing him up to his own buſineſs, he endeavoured to obtain for him an education ſuitable to his ſituation, and ſent him to a public ſchool, where he was taught the rudiments of learning, at the expence of the corporation, till he was twelve years old. Here he diſtinguiſhed himſelf among his ſchool-fellows, and ſome attempts were made to provide him with the means of ſtudying theology as a profeſſion. Encouragement ſufficient for the purpoſe could not be obtained, and he was under the neceſſity of relinquiſhing all thoughts of a ſtudious life, and obliged to begin learning his father's trade. Though occupied all the day, yet he devoted a conſiderable part of the night to the proſecution of his ſtudies; and to furniſh himſelf with candles, he ſold for half-pence or farthings ſmall drawings which he delineated while employed in rocking his infant ſiſter in a cradle. He met with an old book on the mathematics which gave him inexpreſſible pleaſure, and which proved that he had a genius for ſcientific purſuits. Seeing the turn which the young man had for knowledge, ſeveral learned men afforded him aſſiſtance and advice, and they had the pleaſure of finding him improve, under their patronage, with a rapidity beyond their moſt ſanguine expectations. He was now taken from the drudgery of the ſhop-board, and M. Iſelin, of Baſil, engaged him as his amanuenſis, a ſituation which afforded him an opportunity of making further progreſs in the belles-lettres, as well as philoſophy and mathematics. In 1748, his patron recommended him to baron Salis, preſident of the Swiſs confederacy, to become tutor to his children, in which office he gladly engaged. His talents as a philoſopher and mechanician began to diſplay themſelves in his inventions and compoſitions. After living eight years at Coire, he repaired, in 1756, with his pupils, to the univerſity of Gottingen, where he was nominated a correſponding member of the Scientific Society in that place, and from thence he removed, in the following year, to Utrecht, where he continued twelve months. In 1758, he went with his pupils to Paris, where he acquired the eſteem and friendſhip of D'Alembert and Meſſier; and from thence he travelled to Marſeilles, where he formed the plan of his work "On Perſpective," which he publiſhed in the following year at Zurich. In 1760, he publiſhed his "Photometry," and was elected a member of the Electoral Bavarian Scientific Society. Lambert was author of many other pieces beſides thoſe which have been already mentioned: among theſe were his "Letters on the Conſtruction of the Univerſe," which were afterwards digeſted, tranſlated, and publiſhed under the title of "The Syſtem of the World." In the year 1764, he made an excurſion to Berlin, where he was introduced to Frederick II., who, ſenſible of his great ſervices to ſcience, gave directions to have him admitted a regular member of the academy; this appointment enabled him to devote himſelf wholly to the purſuit of his favourite ſtudies. He enriched the tranſactions of ſeveral learned ſocieties with his papers and treatiſes, ſome of which he publiſhed ſeparately. He died Sept. 25th, 1777, when he was in the 50th year of his age. Moſt of his mathematical pieces were publiſhed in a collective form by himſelf in three volumes, in which almoſt every branch of mathematical ſcience has been enriched with additions and improvements. Eulogy prefixed to "The Syſtem of the World." London, 1800.

Lambert, John, a diſtinguiſhed general on the ſide of parliament during the civil wars of Charles I., was deſcended of a good family, and was, at the commencement of the troubles, a ſtudent of law. He had a ſuperior command at the famous battle of Naſeby, and on account of his ſkill and proweſs he became a favourite of the independent party, who endeavoured to obtain for him the lieutenancy of Ireland, but the Preſbyterians carried it againſt him in favour of Waller. He was conſided in by Cromwell, to whom he was conſidered as ſecond in rigour and military talents, and whom, it is ſaid, he equalled in ambition. He oppoſed the project of making Cromwell king, though he had a great hand in placing him protector at the head of the ſtate. He fell into diſgrace, and retired with a penſion to Wimbledon, where he employed himſelf in cultivating his garden; but upon the death of the protector he returned to public life, and was extremely uſeful to the party of Richard. Monk was the great rival of Lambert, and as the former was ſucceſsful, the latter was not only humbled, but made priſoner and committed to the Tower. At the reſtoration, he and ſir Henry Vane were excepted from the act of indemnity: he was brought to trial and condemned, but by humble ſubmiſſion he was reprieved at the bar. He was baniſhed to Guernſey, where he ſurvived forty years. Hume.

Lambert, George, was among the firſt Engliſh artiſts who obtained celebrity upon the revival, (if it may be ſo called,) of painting in this country; which now ſtands ſo juſtly exalted in arts as well as arms, among the nations of Europe.

Lambert's taſte led him to admire and to imitate the ſtyle of Gaſpar Pouſſin in landſcape; and he has produced ſeveral works of conſiderable merit; which, if they have not the brilliancy and force of Gaſpar, are rich, and abound with beauties of a gentler kind. He alſo painted ſcenes from common nature, and at the Foundling hoſpital may be ſeen one he preſented to that inſtitution, which is deſerving of very great praiſe. He was engaged to paint ſcenes for the play-houſes, for which his pencil was peculiarly qualified, and, in concert with Scott, painted ſix large pictures of their ſettlements for the Eaſt India Company, which are placed at their houſe in Leadenhall-ſtreet. He died in 1765.

Lambert, Michel, was the favourite ſinging maſter, and compoſer of ſongs in France, about the middle of the ſeventeenth century. He had ſo many ſcholars, that he was obliged to teach a conſiderable number at a time, and at his own houſe, where he formed a kind of academy, and where he finiſhed every leſſon with ſinging, to his own accompaniment, ſeveral ſongs to a brilliant and enraptured audience. Marcel, the celebrated dancing-maſter, did the ſame, dancing with his beſt ſcholars at the end of the leſſons which he gave at home on his public days. The reputation of Lambert, like that of Abelard, was ſo great, that his pupils followed him into the country as far as Puteaux, where he had a villa. Lulli married the daughter of this muſician, who was born in 1610, and died in 1696.

Lambert, Abbé de St. Bertin, in 1095 taught grammar, dialectics, theology, and muſic.

Theſe ſciences, at that time, were equally reſpected, muſic having no other object than the praiſes of the divinity.

Lambert, de, *Saint*, publiſhed, in 1702, "Les Principes du Clavecin," or Inſtructions for the Harpſichord, containing a clear explanation of all that concerns the clavier, or keys, in their rotation on that inſtrument; and "A Treatiſe of Accompaniment," for many inſtruments. St. Lambert, in his inſtructions for the harpſichord, propoſes the reducing all clefs to one, in order that the two hands ſhould play from the ſame clef. Monticlair has new-modelled this ſyſtem, to adapt it to the five lines, or ſtaff, and general compaſs of the voice; and the abbé de la Caſſagne, in his Elements of Singing, has adopted this ſyſtem and extended it. The baſis of which being nothing more than tranſpoſition, it is now become wholly uſeleſs, by the clear and ſimple manner in which muſic is taught, that is, without tranſpoſition, and by playing every thing juſt as it is written. This is M. Laborde's account of theſe publications, in which he ſeems not to know, that the plan of aboliſhing all clefs but one, belongs not to any of the gentlemen who have publiſhed it in France, but to our countryman Salmon, who, in the time of Charles II. publiſhed "An Eſſay to the Advancement of Muſic, by caſting away the Perplexity of different Clefs, &c." and when M. Laborde ſays, that ſuch a reformation is not wanted, becauſe muſic is now taught in ſo clear and ſimple a manner, as to render all clefs but the treble and baſe uſed in harpſichord pieces unneceſſary; that intelligent author forgets to tell us how performers on keyed inſtruments are to be enabled to play, from the ſcore of a chorus for voices and inſtruments, in which the vocal parts and many of the inſtrumental are all written in different clefs. But for a further diſcuſſion of this ſubject, ſee the article Clef.

Lambert, in *Geography*, a town of Canada, on the river St. Lawrence. N. lat. 45° 34′. W. long. 73° 14′.

Lambert *Bay*, a bay on the N.E. coaſt of the iſland of St. Chriſtopher; two miles S.W. of Muddy Point.

Lambert's *Point*, a cape of the iſland of Barbadoes, on the W.S.W. coaſt.

Lambert's *Blue*. See Azure, and Blue *ultramarine*.

LAMBERTIA, in *Botany*, received its name from the writer of the preſent article, in honour of his highly valued friend Aylmer Bourke Lambert, eſq. F.R.S. and F.A.S. a vice-preſident of the Linnæan Society, one of the moſt ardent and experienced botaniſts of the preſent age, whoſe ample herbarium and library are ever open to the cultivators of his favourite ſcience, as his heart is to the beſt feelings of friendſhip.—His botanical treatiſe on *Cinchona*, his ſumptuous work on the Fir tribe, and his various eſſays in the Tranſactions of the Linnæan Society, are amply ſufficient to aſſert his claim to the honour in queſtion.—Sm. Tr. of Linn. Soc. v. 4. 214. t 20. Cavan. Ic. v. 6. 31. Brown Tr. of Linn. Soc. v. 10. 187. Prodr. Nov. Holl. v. 1. 386. Ait. Hort. Kew. ed. 2. v. 1. 211.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Aggregatæ*, Linn. *Proteæ*, Juſſ.

Gen. Ch. *Cal.* Involucrum of many oblong, imbricated, coloured leaves, the inner ones gradually the largeſt, containing from one to ſeven flowers, deciduous. Perianth none. *Cor.* Petals four, cohering at the baſe, linear-lanceolate, equal, revolute from above their point of union, bearing the ſtamens. Nectary of four glandular ſcales at the baſe of the germen, ſometimes united. *Stam.* Filaments none; anthers four, ſeſſile at the inner ſide of the revolute part of each petal, linear, at length recurved. *Piſt.* Germen ſuperior, turbinate, fringed at the top; ſtyle thread-ſhaped; ſtigma rather thicker, prominent, awl-ſhaped, furrowed. *Peric.* Follicle roundiſh-wedge-ſhaped, ſomewhat woody, more or leſs horned or tubercular, of one cell. *Seeds* two, orbicular, compreſſed, each encompaſſed with a rounded wing. *Common receptacle* flat, without ſcales.

Eſſ. Ch. Petals four, cohering, ſpirally revolute, bearing the ſtamens. Nectary of four ſcales. Stigma awl-ſhaped. Follicle woody. Seeds two, bordered. Involucrum of many leaves, imbricated, coloured, deciduous. Receptacle flat.

Obs. We have borrowed ſeveral corrections of the original characters of this genus, from the able performance of our friend Mr. R. Brown, publiſhed in the Tranſactions of the Linnæan Society, v. 10, illuſtrative of this whole natural order of *Proteaceæ*. If we differ from him in terming *corolla* what he calls *calyx*, it is a matter of opinion, attended with much doubt. The late Mr. Dryander, however, agreed in this point with us.

One ſpecies of *Lambertia* only was originally known, the *formoſa*, to which Mr. Brown adds three others. We ſhall give them in the order he has choſen. He remarks, that "they are all very beautiful ſhrubs, with whorled branches. The leaves are three in a whorl, moſtly undivided, entire. Involucrums terminal, ſolitary, coloured, moſtly ſeven-flowered, rarely ſingle-flowered; in the former caſe the flowers are ranged in two whorls, correſponding with the diſpoſition of the foliage, and having an odd terminal one; hence it is probable ſome ſpecies with four flowers only may exiſt. The follicle is almoſt wedge-ſhaped, furniſhed at the edges, upwards, with points, ſometimes elongated into horns, and ſometimes the ſides are armed with prominences."

1. L. *uniflora*. Brown Tr. of Linn. Soc. v. 10. 188.—"Flowers ſolitary in each involucrum. Leaves obovate, with a point, ſmooth, reticulated. Follicle pointed at one ſide, without horns."—Gathered by Mr. Brown in Lewin's Land, on the ſouth coaſt of New Holland, growing about rocky inlets, near the ſhore.

2. L. *inermis*. Ibid.—"Flowers ſeven in each involucrum; twice as long as its inner leaves. Style ſmooth. Follicles pointed at one ſide, without horns. Leaves oblanceolate or obovate, pointleſs"—Native of the ſtony ſides of hills in Lewin's Land.—L. *formoſa, var. longifolia*, Andr. Repoſ. t. 69, agrees in moſt reſpects with this, though not cited in Mr. Brown's *Prodromus*, where he has omitted it as a ſynonym of true *formoſa*. The *fruit* drawn in this plate may belong to the latter. The *involucrum* is repreſented green.

3. L. *formoſa*. Sm. Tr. of Linn. Soc. v. 4. 223. t. 20. Cavan. Ic. v. 6. 32. t. 547. (Protea nectarina; Wendl. Sert. Hannov. faſc. 4. 5. t. 21.)—"Flowers ſeven in each involucrum; the length of its inner leaves. Style hairy. Follicle pointed at one ſide, two-horned at the other. Leaves linear-lanceolate, ſharp-pointed, recurved at the edges."—Native of ſtony heaths near Port Jackſon, New South Wales, from whence we received ſpecimens among the firſt that were ſent to Europe by Dr. John White. The *leaves* are green and ſmooth above; white, and reticulated with veins, beneath. *Involucrum* and *flowers* of a fine roſe-colour or crimſon.

4. L? *echinata*. Brown n. 4.—"Leaves linear, ſmooth, reticulated; dilated, lobed and pointed at their extremities. Follicles two-horned, thorny all over."—Native of the ſtony ſides of hills in Lewin's Land, where Mr. Brown gathered it in fruit, but never ſaw the flowers. Hence its genus remains doubtful, eſpecially, as that intelligent writer obſerves, on account of the leaves being lobed, which is contrary to the nature of the other ſpecies.

LAMBESA, or LAMBESE, in *Ancient Geography*, (*Tezzoute*), a town of Mauritania Sitifenſis, ſituated on mount Audus. It was the moſt conſiderable town of the country, and the third legion of Auguſtus was quartered in it. Its ruins and inſcriptions are ſtill noticed.

LAMBESC, in *Geography*, a town of France, in the department of the mouths of the Rhone, and chief place of a canton, in the diſtrict of Aix; 12 miles N.W of Aix. The place contains 4000, and the canton 10,530 inhabitants, on a territory of 257½ kiliometres, in 7 communes.

LAMBESE, a town of Algiers, in which are magnificent ruins of an amphitheatre, a temple of Eſculapius, &c.; 45 miles S. of Conſtantine. See LAMBESA.

LAMBETH, an extenſive pariſh, ſeated on the ſouthern bank of the river Thames, in the hundred of Brixton, and county of Surrey, England. It is directly oppoſite to Weſtminſter, to which city it is connected by a handſome ſtone bridge acroſs the river. The whole is bounded by Southwark to the eaſt, Newington Butts and Camberwell to the ſouth, and Batterſea to the weſt. The circumference is about 16 miles. In Domeſday-book, it is ſaid to contain 20½ plough-lands. At the beginning of the ſeventeenth century, it appears, by the churchwardens accounts, to have conſiſted of 1262 acres of arable land, 1026 of paſture, 125 of meadow, 13 of ozier, 27 of garden ground, and 150 of wood, making in the whole 2603; the commons and waſte land, ſuppoſed to be about 330 acres, not being charged, will increaſe it to 2933 acres. At preſent, the whole extent is about 4000 acres; of which about 1390 are occupied by houſes and other buildings, wharfs, manufactories, ſtreets, and roads; 415 by pleaſure gardens, including thoſe of Vauxhall; 80 by market gardens; 300 by farming gardens; 40 by nurſeries; 250 are now incloſing from common; and 30 are to remain common. The pariſh is divided into ſix liberties or precincts, reſpectively called the Biſhop's, the Prince's, Vauxhall, Marſh and Wall, Lambeth-Dean, and Stockwell; the whole containing, according to the return to parliament in the year 1800, 5009 houſes, and 27,985 inhabitants, of whom 5148 were ſtated to be employed in various trades and manufactures, and 955 in agriculture. Archbiſhop Hubert Walter obtained from king John a grant of a weekly market, and a fair of fifteen days, upon condition that the ſame ſhould not be detrimental to the intereſts of the city of London. In the archbiſhop's MS. library, is a charter from the city, ſignifying their conſent, ſtipulating only, that the fair ſhould begin on the morrow after the anniverſary of St. Peter ad vincula. The market and fair are both diſcontinued. The earlieſt hiſtorical fact on record relating to Lambeth, is the death of Hardicanute, which happened here in the year 1041, while he was celebrating the marriage feaſt of a noble Dane. Here alſo, Harold, who uſurped the throne on the death of Edward the Confeſſor, is ſaid to have placed the crown on his head with his own hands. Henry III. held a ſolemn Chriſtmas here in the year 1231; and a parliament on September 14, in the year following. A moſt violent outrage was committed in Lambeth church, on Sunday February 19, 1642–3. The ſtory is variouſly told by the different parties; but it ſtands on record as an inſtance of the fatal effects of civil diſcord, from the outrages of which no place, however ſacred, is exempt.

Of the archbiſhop's palace, the chief object of note in the pariſh, it will be proper to ſtate a few particulars. It is ſituated near the river; and is certainly a very large pile of building, exhibiting the architectural ſtyles of various ages. It appears that this palace was, in a great meaſure, if not wholly, rebuilt by archbiſhop Boniface in the year 1262. If any part of this ſtructure now remains, it is the chapel; the architecture of which might induce one to aſcribe it to a more early period. Under the chapel is a crypt, the arches of which are built with ſtone, as is the chapel; the roof of the latter is of wood and flat; the windows were formerly of painted glaſs, put up by cardinal Morton. In the chapel were interred the remains of archbiſhop Parker. The great hall was rebuilt by archbiſhop Juxton, after the civil wars, at an expence of 10,500*l*. It is 93 feet long by 38 wide; and has a fine carved wooden roof. The guard room, built before the year 1428, has a roof ſimilar to that of the hall. Cardinal Pole is ſaid to have erected the long gallery, which meaſures 90 feet by 16. In this room are ſeveral portraits of archbiſhops, and other illuſtrious characters. In the great dining-room, 38 feet by 19, are alſo portraits of all the archbiſhops from Laud to the preſent time; this ſeries is particularly intereſting, as, among other things, they ſhew the gradual change of the clerical dreſs. Archbiſhop Tillotſon was the firſt to wear a wig; which however reſembled the natural hair, and was worn without powder. A noble library occupies four galleries, over a ſmall quadrangular cloiſter. The firſt collection of books was bequeathed by archbiſhop Bancroft; but theſe were ſeized in the civil wars, and though much injured, and ſome loſt, yet the chief ſtock was reſtored by archbiſhop Juxton, after the reſtoration. Archbiſhops Sheldon, Teniſon, and Secker augmented the library; and the number of books is now ſuppoſed to be, at leaſt, 25,000 volumes. In the windows is ſome fine painted glaſs. (See Brayley and Herbert's Illuſtrations of Lambeth Palace, 4to. 1806, for various views of this palace, and portraits, &c. from the painted glaſs). The MS. library contains a large and valuable collection of records and MSS. At the weſt end of the chapel is a lofty building, called Lollards' tower, built by archbiſhop Chichele in the years 1434 and 1435. At the top is a ſmall room called the priſon, in which it is ſaid the Lollards were confined. The gateway, and the adjoining tower, which are of brick, were built by archbiſhop Morton about the year 1490. The gardens and park, which contain nearly thirteen acres, are laid out with great taſte; they were much improved by the late archbiſhop, who made a convenient acceſs to the houſe, for carriages, through the park. It has been ſaid, but erroneouſly, that Stephen Langton is the firſt archbiſhop upon record who reſided at Lambeth. Hubert Walter was there in 1198; and many of the public acts of the metropolitan were performed at Lambeth prior to that period.

Contiguous to the palace is the pariſh church, which was rebuilt between the years 1374 and 1377. The tower, which is of free-ſtone, ſtill remains; the other parts of the preſent ſtructure appear to be about the age of Henry VII. The church now conſiſts of a nave, two aiſles, and a chancel. Two chapels, called Howard's and Leigh's, were built in 1522; they were incorporated with the church when it was repaired in 1769. Among the numerous ſepulchral memorials in this church, thoſe moſt worthy notice are for the archbiſhops Teniſon, Hutton, and Cornwallis, and a marble ſlab to the memory of the celebrated antiquary Elias Aſhmole.

In this pariſh are ſituated the Aſylum, inſtituted in 1758, for the reception of female orphans; and the Weſtminſter Lying-in-Hoſpital, built in 1765.

About the end of the ſeventeenth century, a manufacture of plate glaſs was eſtabliſhed at Vauxhall, in this pariſh, under the patronage of the duke of Buckingham; the principal artiſt was Roſſetti. It was carried on with great ſucceſs, and the glaſs was thought to excel that made at Venice. (See GLASS and LOOKING-GLASS.) The importation of foreign timber, which for many years has formed a conſiderable and important branch of our commerce, has been a ſource of wealth to this pariſh, where are ſeveral wharfs for that trade, ſupplied with ſtores which are almoſt incredible. At Vauxhall are ſome very large diſtilleries, and ſeveral potteries; the manufacture of ſtone earthenware pots is ſaid to have been firſt introduced here from Holland. On the ſcite of Cuper's gardens (formerly a place of public entertainment,) are Meſſrs. Beaufoy's extenſive vinegar works. Mr. Pennant, who went over the premiſes, mentions a veſſel full of ſweet wine, containing 58,109 gallons, and another full of vinegar, containing 56,799 gallons; beſides theſe enormous veſſels there are ſeveral others which contain from 32,500 to 16,974 gallons each. In the year 1769, Mrs. Coade eſtabliſhed in this pariſh, near Weſtminſter bridge, a manufacture of artificial ſtone, which is caſt in moulds and burnt. It is intended to anſwer the purpoſe of ſtone, for every ſpecies of ornamental architecture, at a much cheaper rate than carving. Where it has been placed in expoſed ſituations it has been found to endure the froſt. Meſſrs. Watts have lately eſtabliſhed a manufacture of patent ſhot in this pariſh: the principle of making this ſhot is, to let it fall from a great height into the water, that it may cool and harden in its paſſage through the air, and thereby better retain its ſpherical ſhape. The height of the tower at this manufactory is about 140 feet; the ſhot falls 123 feet ſix inches. About the ſame time Meſſrs. Bolton, Morgan, and Co. eſtabliſhed a manufacture here under the title of the woollen yarn company; every branch of the clothing manufacture, from ſorting the wool to making the cloth, was carried on entirely by machinery; but the undertaking was ſoon given up. About a century ago, there was a place of entertainment called Lambeth Wells, ſituated in what is now called Lambeth Walk. A riding-ſchool, for the exhibition of feats of horſemanſhip, was opened in this pariſh about the year 1768, by Mr. Philip Aſtley. At firſt it was an open area; in 1780 it was converted into a covered amphitheatre, and divided into boxes, pit, and gallery. Spring Gardens, Vauxhall, (which is mentioned in the Spectator as a place of great reſort,) is open during the greater part of the ſummer, being illuminated with a great number of lamps; the entertainment conſiſts of a concert of muſic, performed, in fine weather, in the open air; the price of admiſſion, till 1796, was one ſhilling; it is now three ſhillings, and open three times each week during the ſummer months. Lyſons's Environs of London, vol. i. 4to.

LAMBIN, DENNIS, in *Biography*, an eminent critic, was born at Montreuil ſur-Mer in the year 1516. He was appointed profeſſor of the belles lettres at Amiens; after this he reſided long in Italy with cardinal de Tournon, and on his return to Paris obtained the Greek profeſſorſhip in the royal college. He acquired a great reputation among the learned by his commentaries on Lucretius, Cicero, Plautus, and Horace. He tranſlated from Greek into the Latin language, the Ethics and Politics of Ariſtotle, and ſeveral orations of Demoſthenes and Æſchines. He died in 1572; the occaſion of his death was the great ſhock which he received from the news of the murder of his friend Ramus in the maſſacre of St. Bartholomew. He was a man of profound erudition and great induſtry. Moreri.

LAMBOURNE, or LAMBORN, in *Geography*, an ancient market town of Berkſhire, England, is about 7 miles N.E. of Hungerford, and 65 W. of London. A market was eſtabliſhed here at a very remote period; and by a charter of 1227, it is called Choping-Lambourn, when a fair was granted to the family of Fitzwarren. In the reign of Henry VI. the charter was renewed, and two additional fairs granted in favour of the dean and chapter of St. Paul's, London. The market is much declined; but here are ſtill held three fairs annually. In the market place is a ſtone croſs of a tall, plain ſhaft, on ſteps. The pariſh is co-extenſive with the hundred to which it gives name. In the year 1800, the population of the town, with its dependant hamlets, was 2045. The pariſh church is a ſpacious and handſome building, in the form of a croſs; on its ſouthern ſide are two chanting-chapels, one of which was founded by John Eſtbury, who died in 1372, and the other by his deſcendant of the ſame name, who died in 1485. Near the church is an alms-houſe, or hoſpital, founded by John Eſtbury, for ten poor men. In the north tranſept of the church is a monument for ſir Thomas Eſſex, who died in 1558, with effigies of himſelf and his lady, in alabaſter. Lyſons's Magna Britannia, vol. i.

LAMBRA, a town of European Turkey, in Livadia; 14 miles S S.E. of Athens.

LAMBSDORFF, a town of Sileſia, in the principality of Neiſſe; 9 miles N.E. of Neiſſe.

LAMCAL, a town of Pegu, on an iſland in the Ava; 56 miles N.E. of Perſaim.

LAME, in the *Manege*, is uſed in ſeveral phraſes of that art; as *lame of an ear*, called in French *boiteux de l'oreille*, is ſaid of a horſe, when he halts upon a walk or trot, and keeps time to his halting with the motions of his head; for all lame horſes do not keep time in that manner. See Halting.

Lame *of the bridle*, is uſed by way of raillery, to ſignify the ſame thing.

LAMECH, in *Scripture Biography*, the ſon of Methuſael, of the race of Cain, the fifth in deſcent from him, and the father of Jabel, Jubal, Tubalcain, and Naamah. He married two wives, Adah and Zillah, and is ſuppoſed to have introduced polygamy. To his wives he ſaid, "Hear my voice, ye wives of Lamech: for I have ſlain a man to my wounding, and a young man to my hurt: if Cain ſhall be avenged ſeven-fold, ſurely Lamech ſeventy and ſeven-fold." (Gen. iv. 24, 25.) Theſe words have perplexed Biblical critics. Some interpretations have been given of this paſſage which muſt be conſidered as founded on mere fables, and they are not worthy of recital. Onkelos, who wrote the firſt Chaldee paraphraſe on the Pentateuch, reads the words with an interrogation: "Have I ſlain a man to my wounding, and a young man to my hurt?" and accordingly he paraphraſes it thus: "I have not killed a man, that I ſhould bear the ſin of it; nor have I deſtroyed a young man, that my offspring ſhould be cut off for it." Dr. Shuckford has improved this interpretation, by ſuppoſing that Lamech was endeavouring to reaſon his wives and family out of their fear of having the death of Abel revenged upon them, who were of the poſterity of Cain. As if he had ſaid, "what have we done, that we ſhould be afraid? We have not killed a man, nor offered any injury to our brethren of any other family; and if God would not allow Cain to be killed, who had murdered his brother, but threatened to take ſeven-fold vengeance on any that ſhould kill him; doubtleſs they muſt expect much greater puniſhment, who ſhould preſume to kill any of us. Therefore we may ſurely look upon ourſelves as ſafe under the protection of the law and of the providence of God."

Lamech was alſo the ſon of Methuſelah, and father of Noah; at whoſe birth he was 182 years of age; and he lived after it 595 years, ſo that his whole life was 777 years, being born A.M. 874, and dying 1651. See Antediluvian.

LAMEGAL, in *Geography*, a town of Portugal, in the province of Beira; 9 miles N.W. of Pinhel.

LAMEGO, a city of Portugal, in the province of Beira, the ſee of a biſhop, ſuffragan of Braga; ſituated on a plain near the Duero, and ſurrounded with mountains. It contains two cathedral churches, an hoſpital, four convents, and about 4500 inhabitants. The adjacent country produces excellent wines; 36 miles E. of Porto. N. lat. 41° 7'. W. long. 7° 27'.

LAMELAN, an iſland in the Baltic, near the S.E. coaſt of the iſland of Aland; eight miles long and four wide. N. lat 60° 5'. E. long. 37° 45'.

LAMELLÆ, derived of *lamina*, and ſignifying as much as *little laminæ;* little, thin plates, or laminæ, whereof the ſcales and ſhells of fiſhes, &c. are compoſed.

Lamellæ, in *Botany*, the gills, or thin vertical plates which compoſe the *hymenium*, or fructifying membrane of that great genus of fungi called *Agaricus*, to which the common eatable muſhroom belongs. (See Hymenium and Agaric.) Schæffer and Hedwig have found the ſeeds to be lodged copiouſly in the ſubſtance of theſe plates.

LAMENESS, Claudicatio, in *Surgery*. Lameneſs ariſes from a variety of cauſes. From native deformity, or from the thigh being put out of joint in the birth; from the bad conformation of the cotyloid cavity of the oſſa innominata; from the weakneſs of the hips; from external accidents; and from diſeaſes. See Leg and Luxation.

LAMENTATIONE, *Ital.* applied to a muſical movement, requires that it ſhould be ſung or played in a plaintive and mournful manner.

LAMENTATIONI, in the plural, implies complaints and lamentations. Between the time of the reformation and Charles I., there was a kind of maudlin piety, which had ſeized Chriſtians of all denominations. Among Calviniſts, it exhaled itſelf in pſalmody, and in others in lamentations. The Scots, among their old pathetic airs, have many laments. The Italians ſung them in Latin, like the Salmi penitentiale; and in their own language. The ſixteenth century was very prolific in lamentationi. But in England even the lute was to weep, and be ſorrowful: for Dowland, the famous luteniſt, publiſhed Lachrimæ, or "ſeven tears, figured in ſeven paſſionate Pavins." The poetry of theſe whimperings ſeems much inferior to that of Sternhold and Hopkins. However, the beſt Engliſh compoſers of the times thought them worthy of the beſt muſic which they could ſet to them, in four and five parts. Sir William Leighton, knt., who ſet many of them himſelf, was the editor of a collection of lamentations to four and five voices, with an accompaniment for the lute; and in the liſt of the compoſers we have Bird, Dr. Bull, Orlando Gibbons, Dowland, Robert Jhonſon, Forde, Hooper, Kinderſley, Nat. Gyles, Coperario, Pilkington, Luſſo, Peirſon, Jones, Alfonſo Ferraboſco, Ward, Weelkes, Wilbye, and Milton, the father of the great poet.

LAMENTATIONS, a canonical book of the Old Teſtament, written by the prophet Jeremiah, according to archbiſhop Uſher and ſome other learned men who follow the opinion of Joſephus and St. Jerom, on occaſion of Joſiah's death. But this opinion does not ſeem to agree with the ſubject of the book, the lamentation compoſed by Jeremiah on that occaſion being probably loſt. Some have ſuppoſed that the fifty-ſecond chapter of the book of Jeremiah was probably added by Ezra, as a preface or introduction to the Lamentations.

The learned biſhop Lowth, in his admirable book entitled "Prælectiones de Sacra Poeſi Hebræorum," has treated at large of this elegiac poem; illuſtrating its general nature and form, its metre or verſification, and its ſubject, ſentiments, and imagery. The Lamentations, he ſays, conſiſt of a number of plaintive effuſions, compoſed upon the plan of the funeral dirges, all upon the ſame ſubject, and uttered without connection as they roſe in the mind, in a long courſe of ſeparate ſtanzas. Theſe were afterwards put together, and formed into a collection, or correſpondent whole. In the character of a mourner he celebrates, in plaintive ſtrains, the obſequies of his ruined country ; whatever preſented itſelf to his mind in the midſt of deſolation and miſery, whatever ſtruck him as particularly wretched and calamitous, whatever the inſtant ſentiment of ſorrow dictated, he pours forth in a kind of ſpontaneous effuſion. He frequently pauſes, and, as it were, ruminates upon the ſame object; frequently varies and illuſtrates the ſame thought with different imagery, and a different choice of language ; ſo that the whole bears rather the appearance of an accumulation of correſponding ſentiments, than an accurate and connected ſeries of different ideas, arranged in the form of a regular treatiſe. The nature and deſign of the poem neither required nor admitted of a methodical arrangement. The whole poem, however, may be divided, according to our author, into five parts ; in the firſt, ſecond, and fourth, the prophet addreſſes the people in his own perſon, or elſe perſonifies Jeruſalem, and introduces that city as a character : the third part is ſuppoſed to be uttered by the chorus of Jews, repreſented by their leader, after the manner of the Greek tragedies ; and in the fifth, the whole nation of the Jews, on being led into captivity, pour forth their united complaints to Almighty God. This laſt, as well as the other, is divided into twenty-two periods, according to the number of the letters of the alphabet with this difference, that in the four other parts the initial letters of each period exactly correſpond with the alphabetical order. The form of compoſition employed in this poem is a ſpecimen of the acroſtic or alphabetical poetry of the Hebrew : and the manner and order of this kind of verſe are as follow : Each of the five parts, or grand diviſions, is ſubdivided into 22 periods, or ſtanzas ; theſe periods in the three firſt parts are all of them triplets, or they conſiſt each of three lines, only in each of the two former parts. There is one period conſiſting of four lines. In the four firſt parts, the initial letter of each period follows the order of the alphabet ; but the third part is ſo very regular, that every line in the ſame period begins with the ſame letter, ſo as neceſſarily to aſcertain the length of every verſe or line in that poem : and though the lines are not thus diſtinctly marked in the other parts, their limits may be aſcertained by reſolving the ſentences into their conſtituent members. By this method of computation it appears, that in the fourth part all the periods conſiſt of diſtichs, as alſo in the fifth, which is not acroſtic ; but in this laſt the lines are extremely ſhort, whereas in all the reſt they are long. In this poem there are lines and verſes which are longer by almoſt one-half than thoſe which occur uſually, and on other occaſions. The length of them ſeems, on an average, to be about twelve ſyllables : and the prophet ſeems intentionally to have adopted this kind of metre, as being more diffuſe, more copious, more tender, in all reſpects better adapted to melancholy ſubjects.

That the ſubject of the Lamentations is the deſtruction of the holy city and temple, the overthrow of the ſtate, the extermination of the people, and that theſe events are deſcribed as actually accompliſhed, and not in the ſtyle of prediction merely, muſt be obvious, as our author conceives, to every reader. The prophet has ſo copiouſly, ſo tenderly, and poetically bewailed the misfortunes of his country, that he ſeems completely to have fulfilled the office and duty of a mourner. In the opinion of the learned prelate, there is not extant any poem, which diſplays ſuch a happy and ſplendid ſelection of imagery in ſo concentrated a ſtate. What can be more elegant and poetical than the deſcription of that once flouriſhing city, lately chief among the nations, ſitting in the character of a female, ſolitary, afflicted, in a ſtate of widowhood, deſerted by her friends, betrayed by her deareſt connections, imploring relief, and ſeeking conſolation in vain ? What a beautiful perſonification is that of "the ways of Sion mourning becauſe none are come to her ſolemn feaſts ?" How tender and pathetic are the complaints that occur in ch. i. 12 and 16 ? But to detail its beauties, ſays Lowth, would be to tranſcribe the entire poem. Gregory's Tranſ. ſect. 22. vol. ii.

Indeed the ſubject of this book is of the moſt moving kind ; and the ſtyle throughout lively, pathetic, and affecting. In this kind of writing the prophet Jeremiah was a great maſter, according to the character which Grotius gives him : "Mirus in affectibus concitandis." See JEREMIAH.

LAMENTIN, LA, in *Geography*, a town of the iſland of Martinico, on the W. coaſt. N. lat. 14° 36′. W. long. 60° 57′.

LAMENTUNG, a town of Thibet ; 25 miles E. of Jhanſi Jeung.

LAMETOUNAH, a town of Africa, in Sahara, about ſeven days' journey S. of Tripoli.

LAMETUK, a town of the ſtate of New Jerſey ; 15 miles N.W. of New Brunſwick.

LAMGI, a petty kingdom of Aſia, that lies to the weſt of Nipal or Napaul ; which ſee.

LAMIA, in *Biography*, the moſt celebrated female flute-player in antiquity. Her beauty, wit, and abilities in her profeſſion made her regarded as a prodigy. The honours ſhe received, which are recorded by ſeveral authors, particularly by Plutarch and Athenæus, are ſufficient teſtimonies of her great power over the paſſions of her hearers. Her claim to admiration from her perſonal allurements, does not entirely depend, at preſent, upon the fidelity of hiſtorians ; ſince an exquiſite engraving of her head, upon an amethyſt, with the veil and bandage of her profeſſion, is preſerved in the late king of France's collection, which, in ſome meaſure, authenticates the account of her beauty.

As ſhe was a great traveller, her reputation ſoon became very extenſive. Her firſt journey from Athens, the place of her birth, was into Egypt, whither ſhe was drawn by the fame of the flute-players of that country. Her perſon and performance were not long unnoticed at the court of Alexandria ; however, in the conflict between Ptolemy Soter, and Demetrius, for the iſland of Cyprus, about 312 years B. C. Ptolemy being defeated in a ſea-engagement, his wives, domeſtics, and military ſtores fell into the hands of Demetrius.

Plutarch, in his life of this prince, tells us, that "the celebrated Lamia was among the female captives taken in this victory. She had been univerſally admired, at firſt, on account of her talents, for ſhe was a wonderful performer on the flute ; but, afterwards, her fortune became more ſplendid, by the charms of her perſon, which procured her many admirers of great rank." The prince whoſe captive ſhe became, and who, though a ſucceſsful warrior, was ſaid to have vanquiſhed as many hearts as cities, conceived ſo violent a paſſion for Lamia, that, from a ſovereign and a conqueror, he was inſtantly transformed into a ſlave ; though her beauty was now on the decline, and Demetrius, the handſomeſt prince of his time, was much younger than herſelf.

At her inſtigation, he conferred ſuch extraordinary benefits upon the Athenians, that they rendered him divine honours ; and as an acknowledgment of the influence, which ſhe had exerciſed in their favour, they dedicated a temple to her, under the name of "Venus Lamia."

Athenæus has recorded the names of a great number of celebrated Tibicinæ, whoſe talents and beauty had captivated the hearts of many of the moſt illuſtrious perſonages of antiquity.

Horace ſpeaks of bands of female flute-players, which he calls *Ambubaïarum collegia* (*Ambubaïa* is ſaid, by the commentators, to be a Syrian word, which, in that language, implies *a flute*, or, *the ſound of a flute*), and of whom there were ſtill colleges in his time. But the followers of this profeſſion became ſo numerous and licentious, that we find their occupation prohibited in the Theodoſian code; however, with little ſucceſs: for Procopius tells us, that in the time of Juſtinian, the ſiſter of the empreſs Theodora, who was a Tibicina, appeared on the ſtage without any other dreſs than a ſlight ſcarf thrown looſely over her. And theſe performers were become ſo common in all private entertainments, as well as at public feaſts, obtruding their company, and placing themſelves at the table, frequently unaſked, that, at the latter end of this reign, their profeſſion was regarded as infamous, and utterly aboliſhed.

Lamia, in *Ancient Geography*, a town of Greece, in Theſſaly, famous for the war which the Greeks waged againſt the Macedonians, after the death of Alexander the Great.

Lamia, in *Ichthyology*. See Squalus *Carcharias*.

LAMIÆ, Λαμιαι, among the *Ancients*, a kind of dæmons, or evil ſpirits, who, under the form of beautiful women, are ſaid to have devoured children.

Horace makes mention of them in his Art of Poetry.—Some authors call them *Laniæ, à laniando*. Philoſtratus ſays, they are alſo called *Larvæ*, or *Lemures*, as if they were all the ſame. Bochart will have the word to be Phœnician, and derives it from להם, *to devour;* alleging, that the fable of the Lamiæ came from Lybia. See Lamium.

LAMINA, in *Anatomy*, a term applied in anatomical deſcriptions to parts which take the form of thin plates. In this ſenſe we ſpeak of laminæ of cellular ſubſtance, of membrane, of bone, &c.

Lamina, in *Botany*, the expanded part of each petal of a polypetalous corolla, ſupported by the *unguis* or claw, and analogous to the limb of a monopetalous one. (See Limbus.) It generally ſpreads, ſo as to form a conſiderable angle with the claw, in order that its upper ſurface may be preſented to the ſtrongeſt light, as in the pink, and wall-flower, or ſtock. The term *lamina* is alſo uſed by Forſkäll, and adopted by ſome others, for the expanded part of a leaf, that is, for the leaf itſelf; ſuch application of the word is therefore altogether ſuperfluous. See Leaf.

LAMINÆ, in *Phyſiology*, thin plates, or tables, whereof any thing conſiſts.

LAMIODONTES, is the name given by Dr. Hill to the gloſſopetræ.

LAMIOLA, in *Ichthyology*, is the name given by the modern Italians to a fiſh called in Cornwall the *tope*. See Squalus *Galeus*.

LAMIRAS, in *Biography*, a famous poet and muſician of Thrace, who, according to ſome authors, was the inventor of the Dorian mode. He lived before Homer, and is ſaid to have been the firſt muſician who united the voice to the ſound of the cithara.

LAMISA, in *Geography*, a town of the principality of Georgia, in the province of Carduel; 60 miles W. of Teflis.

LAMIUM, in *Botany*, a Latin word of diſputed meaning and derivation, uſed by Pliny to deſignate the Dead Nettle, for which it has ever ſince ſerved as the botanical generic name. Some derive it from the ſuppoſed place of growth of the plant or plants in queſtion, *ad lamas*, that is, about ditches or puddles by the way ſide; but this is by no means appropriate. Linnæus in his *Philoſophia Botanica*, p. 167, explains the word by *Lamia larvata*, a maſked ſorcereſs, as if the ſhape of the flower, reſembling a maſk, or rather a gaping mouth beſet with ſharp teeth, had ſuggeſted that idea. Ambroſinus, however, indicates the moſt direct etymology, from λαιμος, *the throat*, alluding to the ſhape of the flower, from which word alſo that of *lamia* itſelf, as the appellation of a certain voracious beaſt or fiſh, or of a ſorcereſs ſuppoſed to devour children, evidently originated.—Linn. Gen. 292. Schreb. 288. Willd. Sp. Pl. v. 3. 86. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 392. Sm. Fl. Brit. 626. Juſſ. 113. Tourn. t. 85. Lamarck Illuſtr. t. 506.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, dilated upwards, with five, nearly equal, awned teeth, permanent. *Cor.* of one petal, ringent; tube cylindrical, very ſhort; limb gaping; throat inflated, compreſſed, gibbous, its margin furniſhed, at each ſide, with one or more little reflexed teeth; upper lip vaulted, roundiſh, obtuſe, undivided or two-lobed; lower lip ſhorter, inverſely heart-ſhaped, emarginate, more or leſs reflexed. *Stam.* Filaments four, awl-ſhaped, concealed by the upper lip, two of them longer than the others; anthers incumbent, oblong, hairy. *Piſt.* Germen in the bottom of the calyx, four-cleft; ſtyle thread-ſhaped, of the ſame length and ſituation as the ſtamens; ſtigma cloven, acute. *Peric.* none, except the open-mouthed calyx, containing the ſeeds at the bottom. *Seeds* four, level-topped, ſhort, triangular, convex at one ſide, abrupt at each end.

Eſſ. Ch. Calyx five-cleft, with ſpreading, briſtle-pointed teeth. Upper lip of the corolla vaulted; lower two-lobed; throat inflated, its margin toothed at each ſide.

A very natural genus, well diſtinguiſhed by its eſſential character, of the mouth of the flower being furniſhed with one or more teeth at each ſide. Theſe are ſometimes ſlender, and almoſt capillary; ſometimes dilated and oblique. Linnæus thought the upper lip was neceſſarily undivided, or at moſt only toothed; but in ſome recently diſcovered ſpecies it has a two-lobed termination, above the vaulted part. The ſpecies of *Lamium* are as yet but imperfectly aſcertained, notwithſtanding what has been done in Willdenow and the new edition of the *Hortus Kewenſis*. The 14th edition of *Syſt. Veg.* enumerates but eight; Willdenow has thirteen. To theſe we have ſome to add, even from the gardens; and many miſtakes to correct, reſpecting ſpecies already eſtabliſhed. A review of the whole is neceſſary, though ſome may be leſs particularly mentioned than others. Our whole liſt amounts to twenty.

1. L. *Orvala*. Great Dead Nettle, or Balm-leaved Archangel.—Linn. Sp. Pl. 808. Curt. Mag. t. 172. (L. pannonicum; Scop. Carn. ed. 2. v. 1. 406. t. 27. L. meliſſæfolium; Mill. Ic. t. 158. Galeopſis maxima pannonica; Cluſ. Hiſt. v. 2. 35.)—Leaves heart-ſhaped, unequally and ſharply ſerrated. Throat of the corolla inflated; upper lip ſharply toothed. Calyx coloured. Stem nearly cylindrical, ſmooth.—Native of Hungary, Carniola, and Italy. We have gathered it, of a very large ſize, near Caſtello Nuovo, 19 miles from Rome. The magnificence of its great crimſon inflated *flowers* entitles it to a place in the flower-garden, where it is a hardy perennial, bloſſoming in April or May, and ſometimes ſuffers from our inclement ſprings. The *ſtem*, two or three feet high, is remarkable for its roundneſs and poliſhed ſmoothneſs. The *leaves* are three or four inches long, and nearly as broad, rugoſe, dark, ſcarcely at all hairy. *Orvala* is an old name for Clary, uſed by Dodonæus; we know not why it was applied to this

plant. If *Lamium montanum, ſaxatile, fermè glabrum, flore amplo, purpureo, cum labio ſuperiori crenato;* Till. Piſ. 92. t. 34. f. 1; quoted with doubt by Linnæus, be this preſent ſpecies, the figure is very bad, yet we know no other to which it is more appropriate.

The *Orvala garganica*, Linn. Sp. Pl. 807. (Papia garganica, foliis urticæ, altiùs et elegantèr inciſis, flore purpureo; Mich. Gen. 20. t. 17.) is now acknowledged to be a variety of *L. Orvala*, differing only in an accidental deeper diviſion of the corolla, as well as of the leaves. Curtis in his ſpecific character of the ſpecies in queſtion, copied from *Syſt. Veg.* ed. 14, retains an error of the tranſcriber or printer, *caulibus coloratis* for *calyce colorato*.

2. L. *lævigatum*. Smooth Dead Nettle.—Linn. Sp. Pl. 808. Krock. Sileſ. n. 926, by the deſcription. Sabbat. Hort. Rom. v. 3. t. 34. *Willden.* (L. purpureum fœtidum, folio parvo acuminato, flore majore; Pluk. Phyt. t. 198. f. 1. L. folio oblongo, flore rubro; Segu. Veron. v. 3. 131. Galeopſis ſive urtica iners, flore purpuraſcente majore, folio non maculato; Bauh. Hiſt. v. 3. 321.)—Leaves heart-ſhaped, pointed, ſtrongly ſerrated, nearly ſmooth as well as the ſtem. Upper lip of the corolla abrupt, entire. Calyx nearly ſmooth, with taper teeth much longer than its tube, and almoſt equal to the corolla.—Native of Italy. Pallas mentions finding it in Siberia, Krocker in Sileſia. The Linnæan ſpecimen was ſent by Seguier, with his own ſynonym and that of J. Bauhin, the latter being verified by the place of growth, near Vicenza. The *root* is perennial, in ſome degree creeping. *Stem* a foot high or more, ſquare, purpliſh, leafy, ſmooth, or ſlightly beſprinkled with ſoft hairs curved downward. *Leaves* broad-heart-ſhaped, ſtrongly and unequally ſerrated, with an elongated entire point, ſcarcely rugoſe, very little downy, rarely if ever ſpotted; the lower ones on long ſtalks, upper on ſhort ones. *Flowers* eight or ten in a whorl. Tube of the *calyx* curved, but little dilated, pale, veiny, ſmooth or ſlightly downy, about a quarter of an inch long; teeth almoſt twice that length, very taper, ſomewhat hairy, extending beyond the full-grown unopened corolla, widely ſpreading. *Corolla* about the ſize of the common *L. album;* upper lip blunt, entire, gibbous, ſlightly downy, and bright purple externally, pale and ſmooth within; throat wide, often ſpotted, with one ſhort narrow tooth, and the rudiment of another, at each ſide; lower lip ſmall, of two rounded ſerrated ſpreading lobes.—Such is the plant of the Linnæan herbarium, but the long deſcription in the *Spec. Plant.* ſeems to agree better with the *moſchatum* hereafter deſcribed, which therefore ſome have taken for the *lævigatum*. Plukenet's figure is totally erroneous as to the calyx. Willdenow retains Boccone's ſynonym, miſapplied to this plant by Linnæus, and repeats it under *rugoſum*, to which it properly belongs! Haller miſtook his own N° 270, which is *L. maculatum*, for *lævigatum*, and tranſcribes from Linnæus *caule brevi* inſtead of *lævi*.

3. L. *rugoſum*. Wrinkled Dead Nettle.—Ait. Hort. Kew. ed. 1. v. 2. 296. Willd. n. 3. (L. hirſutum; Lamarck Dict. v. 3. 410. L. amplo, ſerrato, nigricante, ſubrotundo, rugoſo folio; flore rubro; Bocc. Muſ. 35. t. 23. L. montanum hirſutum, folio oblongo, flore purpureo; Till. Piſ. 93. t. 35. f. 1.)—Leaves heart-ſhaped, acute, roundly ſerrated, rugoſe, hairy as well as the ſtem. Upper lip of the corolla abrupt, notched; lateral teeth ſolitary, briſtle-ſhaped. Calyx ſlightly hairy, with teeth ſhorter than its tube.—Native of Italy, Sicily, and France; cultivated in our more curious gardens for at leaſt 45 years paſt. It is perennial, flowering in July and Auguſt. The whole plant is much more hairy than the laſt. *Leaves* rather crenate than ſerrated, all on longiſh ſtalks, dark, rugoſe, and hairy. *Flowers* purpliſh red; tube of the corolla ſmooth, curved, longer than the calyx-teeth; throat and upper lip hairy; teeth at each ſide of the mouth ſolitary, very long and narrow; lower lip ſmall. There can ſurely be no doubt of Tilli's ſynonym, though hitherto neglected.

4. L. *garganicum*. Woolly Dead Nettle.—Linn. Sp. Pl 808. Trew. Ehret. t. 75. Sm. Exot. Bot. v. 1. 93. t. 48. (L. garganicum ſubincanum, flore purpuraſcente, cum labio ſuperiori crenato; Till Piſ. 93. t. 34. f. 2.)—Leaves heart-ſhaped, bluntly ſerrated, rugoſe, downy as well as the ſtem. Corolla inflated; with a ſtraight tube, much longer than the calyx; orifice with two teeth at each ſide.—Native of Italy. It has been cultivated in Chelſea garden ever ſince 1729, and flowers in May. Its ſoft downy greyiſh aſpect, and finely rugoſe *leaves*, at once diſtinguiſh this ſpecies. The *ſtem* is thick and clumſy, two feet high. *Flowers* large, copious, and handſome, with a pale tube ſtreaked with red, and light purple lips, the upper one cloven at the ſummit; the throat is nearly as much inflated as that of *L. Orvala*. Trew's figure was overlooked, or there would not have been another of this plant given in *Exotic Botany*, the latter work being intended for ſpecies not properly repreſented already. It is much to be wiſhed that other periodical publications would ſo far pay regard to the ſame principle, as to give ſuch plants a preference.

5. L. *maculatum*. Spotted Dead Nettle.—Linn. Sp. Pl. 809. (L. Plinii campoclarenſe et montanum; Column. Ecphr. 190. t. 192. f. 1. L. n. 270; Hall. Hiſt. v. 1. 118.)—Leaves heart-ſhaped, ſtrongly ſerrated, acute, hairy. Tube of the corolla curved, longer than the calyx; upper lip entire; lateral teeth ſolitary, ſlender. Flowers about ten in a whorl.—Native of Italy, France, Greece, Switzerland, and Germany, flowering in the ſpring; it is imperfectly naturalized about Bayſwater, having probably eſcaped formerly from the neighbouring garden of ſir John Hill. Its natural ſituation is in waſte ground, or about banks and hedges, where the radical *leaves*, diſtinguiſhed by a broad irregular central ſtripe, make an elegant appearance through the Italian winter; but this mark commonly diſappears from the upper leaves. The *root* is perennial, ſomewhat creeping. *Stems* a foot high, rather hairy. *Leaves* heart-ſhaped, rather acute but not pointed, ſtrongly but bluntly ſerrated. *Flowers* purpliſh red, downy. *Calyx* tumid, nearly ſmooth, with fringed teeth about its own length, and much ſhorter than the tube of the corolla. The lower *lip* of the flower is concave and finely crenate.

Haller properly, perhaps, quotes the *Galeopſis* of Rivinus for this ſpecies; but the *Galeopſis* of Camerarius, Epit. t. 865, though ſaid to have a red flower, is manifeſtly a repreſentation of *Galeobdolon luteum*, Sm. Fl. Brit. 631. Both theſe are cited by Linnæus under *Lamium album;* Rivinus having confounded *album* and *maculatum*. Pallas, as appears by his herbarium in the hands of A. B. Lambert, eſq. miſtook *maculatum* for *purpureum*.

6. L. *album*. White Dead Nettle.—Linn. Sp. Pl. 809. Curt. Lond. faſc. 2. t. 45. Engl. Bot. t. 768.—Leaves heart-ſhaped, pointed, ſtrongly ſerrated, hairy. Flowers about twenty in a whorl. Tube of the calyx ſhorter than its teeth. Upper lip of the corolla notched; lateral teeth ſolitary, lanceolate.—Native of waſte ground, almoſt throughout Europe, flowering in ſpring, ſummer, and autumn. The *leaves* are more pointed than in the laſt, and unſpotted; the *flowers* white and more numerous, rarely aſſuming a bluſh of pale purple. There is commonly a conſiderable diſtance, or naked part of the ſtem, between the ſtalked lower leaves,

and the more ſeſſile upper ones where the flowers are ſituated. The ſummit is overtopped by one or two pair of leaves without flowers. The tube of the *corolla* is longer than the calyx; its lower lip flattiſh, wavy, ſcarcely crenate.

7. L. *capitatum*. Muſlin Dead Nettle.—Leaves heart-ſhaped, bluntiſh, crenate, hairy, on longiſh ſtalks. Flowers overtopping the ſtem. Tube of the calyx equal to its teeth. Upper lip of the corolla notched; lateral teeth ſolitary, very ſlender.—We know not the native country of this ſpecies, which we obtained from Chelſea garden, and have long cultivated. It is ſometimes overlooked as a variety of the laſt; ſometimes ſold for *L. molle* hereafter mentioned; yet no ſpecies can be more diſtinct. It is perennial, flowering in July; when the copious and delicate ſemitranſparent white *flowers*, which riſe in two whorls above the top of each ſtem, look as if a thin muſlin veil had been thrown over the plant, eſpecially while the dew is upon them. The lateral teeth are peculiarly ſlender; the anthers pale, with ſcarlet pollen. The *leaves* are ſmall, roundiſh, light green, ſpeckled with paler or whitiſh ſpots. *Stems* rather decumbent. We can find no ſynonym for this plant.

8. L. *ſtriatum*. Pencilled Dead Nettle.—Sm. Prodr. Fl. Græc. Sibth. 405. Fl. Græc. ined. t. 557.—Leaves heart-ſhaped, bluntiſh, ſerrated, on longiſh ſtalks. Upper lip of the corolla cloven; its ſegments ſpreading and toothed; lateral teeth double. Found by Dr. J. Sibthorp, (who ſuſpected it to be the Βαλλωτη of Dioſcorides), very plentifully in all the waſte ground of Greece and the Archipelago; yet no other modern botaniſt appears to have noticed this elegant and ſtriking plant. Its habit is not unlike *L. album*, but the *leaves* are rounder, with longer ſtalks, and the *ſtem* is more uninterruptedly leafy. The *flowers* are ſingularly large and handſome, white ſtriped with crimſon, compoſing ſeveral whorls, the upper ones riſing above the top of the ſtem, as in the laſt. Their upper lip ends in two oblong toothed divaricated lobes; the lower is convex and crenate; the lateral teeth are in pairs, acute and ſpreading.

9. L. *bifidum*. Cloven White Dead Nettle.—Cyrill. Rar. faſc. 1. 22. t. 7. *Willden.* (L. parvum, flore albo, cum labio ſuperiori bifido; Till. Piſ. 93. L. æquicolorum; Column. Ecphr. 191. t. 192. f. 2.)—Leaves triangular-heart-ſhaped, deeply cut and crenate; the upper ones crowded. Calyx tumid, with ſhortiſh triangular teeth. Upper lip of the corolla cloven; its ſegments ſpreading, emarginate, lateral teeth ſolitary. Found in waſte ground about Naples, towards the ſea, where the writer of this gathered it in March 1787. Its general habit approaches to *L. purpureum*, but the *flowers* are ſnow-white, with a cloven ſummit, and the floral *leaves*, crowded (as in that ſpecies) about the top of the *ſtem*, whoſe middle part is almoſt naked, are of a triangular heart-ſhape, deeply cut and lobed as well as crenate, hairy, and marked with a narrow central white ſtripe, juſt as Columna repreſents them, concerning whoſe ſynonym we preſume there can be little doubt, though he appears not to have ſeen the corolla. Spirits of wine extract an orange colour from theſe flowers, which we do not perceive in any other *Lamium*.

10. L. *moſchatum*. Muſky White Dead Nettle.—Mill. Dict. ed 8. n 4. Ait. Hort. Kew. ed. 2. v. 3. 394. (L. orientale, nunc moſchatum nunc fœtidum, magno flore; Tourn. Cor. 11.; according to Miller, but the Hort. Kew. rejects this ſynonym, without aſſigning a reaſon.)—Stem very ſmooth. Leaves heart-ſhaped, obtuſe, crenate; the floral ones nearly ſeſſile. Calyx-teeth nearly equal to the corolla. Upper lip of the corolla entire; lateral teeth ſolitary, dilated.—Native of the Levant. Miller cultivated it in 1739, but it found no place in the firſt edition of Hort. Kew. This we believe aroſe from its having been taken for, or confounded with, the *lævigatum*. Into this error we ourſelves have formerly fallen, miſled by the long deſcription in Linn. Sp. Pl. 808, which ſo preciſely accords with the *moſchatum*, rather than with *lævigatum*, that we have no doubt from which of the two it was made. This is an annual ſpecies, cultivated, or rather ſpontaneouſly ſowing itſelf, from time immemorial in Chelſea garden near the entrance, and flowering in the ſpring. The *leaves* of the young plants that come up in autumn remain through winter, and according to Miller, are prettily marked with white like the Cyclamen. The *ſtems*, from 10 to 20 inches high, are remarkably ſmooth, with blunt edges, and purpliſh. *Leaves* of the ſtem heart-ſhaped, approaching to triangular, rather elongated but obtuſe, veiny, of a light glaucous green, ſmooth or finely downy, the margin crenate rather than ſerrated; the floral ones nearly ſeſſile. *Whorls* ſeveral, not reaching to the top of the ſtem, each of about ten white *flowers*, whoſe *calyx* is pale and ſmooth, with very long tapering rough-edged teeth, extending beyond the mouth of the *corolla*. The upper lip of the latter is downy, convex, abrupt, and entire; lower of two rounded, flattiſh, ſlightly crenate lobes; lateral teeth ſolitary, broad, pointing forward. We have not noticed the muſky ſcent.

11. L. *glechomoides*. Ground-ivy-leaved Dead Nettle.—(Moldavica orientalis, hederæ terreſtris folio; Tourn. Cor. 11.)—Leaves heart-ſhaped, ſtrongly crenate, on long ſtalks. Calyx-teeth ſhort, triangular. Corolla longer than the leaves; upper lip notched; lateral teeth in pairs.—Gathered in the Levant by Tournefort, one of whoſe ſpecimens is before us. No recent author ſeems to have known this ſpecies, which is perhaps more akin to our *ſtriatum*, N° 8, than any other. The *leaves* are ſmall, not an inch long, correctly heart-ſhaped, ſtrongly crenate, or ſerrated, ſlightly hairy, on footſtalks moſtly twice their own length, except thoſe of the floral ones, which ſcarcely exceed the calyx. The teeth of the *calyx* are ſhort, triangular, awnleſs, roughiſh. *Corolla* purple, downy; tube full twice the length of the calyx; throat inflated; lateral teeth ſmall, double; upper lip abrupt and deeply notched; lower of two rounded wavy lobes. *Anthers* very hairy.

12. L. *tomentoſum*. Downy Dead Nettle.—Willd. n. 11. (L. orientale incanum, flore albo, vel purpuraſcente, cum labio ſuperiori crenato; Tourn. Cor. 11.)—Leaves roundiſh-heart-ſhaped, ſtrongly crenate, downy on both ſides, ſtalked. Calyx-teeth lanceolate, very hairy. Upper lip of the corolla crenate, very hairy; lateral teeth ſolitary, awl-ſhaped, narrow.—Gathered by Tournefort in Armenia. This is remarkably downy and hoary, eſpecially the younger *foliage*, the *calyx*, and the upper lip of the *corolla*. The *leaves* are much under an inch in length, very deeply and ſharply crenate, the upper ones moſt pointed, all denſely villous, on ſtalks of various proportions. Teeth of the *calyx* as long as its tube, lanceolate, narrow, acute, denſely villous. *Corolla* about the ſize of *L. album*, purpliſh or white; its tube as long as the calyx, ſmooth; throat but little inflated; lateral teeth ſolitary, long and ſlender; upper lip much arched, minutely crenate, villous; lower of two rounded, flat, entire lobes.

13. L. *molle*. Pellitory-leaved White Dead Nettle.—Ait. Hort. Kew. ed. 1. v. 2. 297. ed. 2. v. 3. 394. (L. parietariæ facie; Moris. Hort. Blæs. 278. L. album, parietariæ folio, virginianum; Pluk. Almag. 203. Phyt. t. 41. f. 1.)—Leaves pointed, ſtalked, nearly entire; the lower ones heart-ſhaped, the upper ovate. Calyx-teeth briſtle-ſhaped. Upper lip of the corolla crenate, hairy; lateral

teeth ſolitary, awl-ſhaped.—Native of Virginia, as appears by Plukenet's ſynonym, overlooked by ſucceeding writers. This plant ſeems to have been early in our gardens, but is now little known, if not totally loſt. Another ſpecies, hereafter deſcribed by the name of *ocymifolium*, is generally miſtaken for it, and is referred to as *molle* in *Fl. Brit.* under *L. purpureum*. The true *molle* is, however, now well known to us, by dried ſpecimens from the French gardens. Its habit and ſize approach to the *album*, but the *leaves* are remarkable for being either quite entire, or very ſlightly toothed about the middle part only; they are an inch and a half long, broad at the baſe, and often heart-ſhaped, the extremity pointed and acute, both ſides ſomewhat downy, veiny, even, not rugoſe. The *ſtalks* of the floral leaves are very ſhort; thoſe of the reſt longer. *Flowers* the ſize of *L. album*, white; their tube as long as the calyx-teeth, which are briſtle-ſhaped, narrow and hairy. *Seeds* very ſmooth.

14. L. *ocymifolium*. Baſil-leaved Red Dead Nettle.—(L. puſillum rubrum, parietariæ facie, americanum; Pluk. Almag. 204. Phyt. t. 41. f. 2)—Leaves ovate, obtuſe, entire, ſtalked; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate.—This has long been in Chelſea garden, where it is almoſt a weed. From Plukenet's ſynonym it appears to have come from America. No ſucceeding author has noticed the plant. The *root* is ſmall and annual. *Stem* a foot high, or ſomething leſs, ſimple, except a ſmall branch or two near the baſe, erect, ſquare, ſmooth, leafy at the bottom and top only, being for the greater part of its length entirely naked, like the ſtem of L. *purpureum*, but ſtill more remarkably ſo. The lower *leaves* are few, roundiſh-ovate, ſlightly crenate, on longiſh ſtalks, and nearly ſmooth; floral ones about ſix or eight pairs, croſſing each other, crowded together at the top of the ſtem, compoſing a ſort of pyramid, each leaf about three quarters of an inch long, ſtalked, ovate, obtuſe, tapering at the baſe, entire, except here and there a caſual notch in ſome of them, all ſlightly hairy, paler underneath. *Whorls* crowded, of numerous ſmall purple *flowers*, much like thoſe of L. *purpureum*. *Calyx* nearly ſmooth, its teeth as long as the body, ſpreading, broad at their baſe, with taper rigid points. *Seeds* curiouſly beſprinkled with pale, prominent, minute, tubercles, as is more or leſs the caſe in the three following.

15. L. *purpureum*. Common Red Dead Nettle.—Linn. Sp. Pl. 809. Curt. Lond. faſc. 1. t. 42. Engl. Bot. t. 769. Fl. Dan. t. 523.—Leaves heart-ſhaped, obtuſe, unequally crenate, ſtalked; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate. Tube of the corolla cloſed with hairs near the bottom.—Very common, in waſte as well as cultivated ground, thoughout moſt parts of Europe, flowering at various ſeaſons. The *root* is annual. *Stem* from ſix to twelve inches high, ſquare, aſcending, often branched at the bottom, naked in the middle, crowded with leaves and flowers at the top. *Leaves* broad-heart-ſhaped, bluntiſh, rugoſe, unequally crenate, downy, on ſtalks of various lengths. *Flowers* in whorls among the upper leaves, reddiſh-purple, variegated with white, and ſpotted with dark purple, their lateral teeth ſmall, in pairs, very near the under lip. The inſide of their tube was found by Mr. J. D. Sowerby to be cloſed near its baſe with a denſe circle of hairs; ſee Engl. Bot. t. 1933. The *calyx* is like the laſt ſpecies.—A curious variety was found near Sudbury, by Mr. Joſeph Andrews, who communicated it to the late profeſſor Martyn, ſen., and whoſe original ſpecimen is in our hands. In this the margin of all the *leaves* is perfectly entire. The *flowers* are rather ſmaller than ordinary, and were ſaid to produce no ſeed. This variety is in Engl. Bot. p. 769, at the end, miſtaken for our *ocymifolium* laſt deſcribed.

16. L. *inciſum*. Cut-leaved Red Dead Nettle.—Willd. n. 9. Engl. Bot. t. 1933. (L. diſſectum; With. 527. L. purpureum β; Sm. Fl. Brit. 627. L. rubrum minus, foliis profundè inciſis; Raii Syn. 240. Pluk. Phyt. t. 41. f. 3.)—Leaves heart-ſhaped, dilated, obtuſe, ſtalked, irregularly cut; the upper ones crowded. Stem naked in the middle. Calyx-teeth lanceolate. Tube of the corolla pervious.—Found in cultivated ground in France and England. We have it from Norfolk and Suffolk. This is ſo like the laſt, except the *leaves* being more deeply cut, that we ſhould have ſtill conſidered it as a variety, but for the want of hairs in the tube of the flower. The whole ſhape of the *corolla*, indeed, is more ſlender, approaching to that of L. *ocymifolium*, or of the following *amplexicaule*.

17 L. *amplexicaule*. Common Henbit Dead Nettle.—Linn. Sp. Pl. 809. Curt. Lond. faſc. 2. t. 46. Engl. Bot. t. 770. Fl. Dan. t. 752. (Galeopſis folio caulem ambiente, major et minor; Rivin. Monop. Irr. t. 63.)—Floral leaves ſeſſile, kidney-ſhaped, obtuſe, ſtrongly crenate, or ſomewhat lobed, embracing the ſtem. Teeth of the calyx linear-awl-ſhaped, as long as its tube.—Native of ſandy fields of Europe, flowering in the ſpring. Eaſily diſtinguiſhed by the rounded, ſeſſile, ſtrongly crenate, and often in ſome degree lobed, *leaves* of the ſtem, in which it eſſentially differs from the two laſt. The *calyx*, moreover, differs in being extremely hairy, with more upright teeth, as long as the body, and of a very narrow awl-ſhaped, almoſt linear, figure, by which latter character it is alſo diſtinguiſhed from two hereafter deſcribed. The little red *flowers* are ſingularly pretty, the bright crimſon of their downy upper lip, while the reſt of the corolla is ſmooth and paler, gliſtens, like minute rubies, when moiſt with dew, and attracts the eye at a conſiderable diſtance. A ſmall undivided tooth ſtands at each ſide of the mouth, though Willdenow once thought otherwiſe, and on account of that ſuppoſed deficiency, founded a new genus on this plant and *Galeobdolon luteum*, by the name of *Pollichia*; a meaſure now happily abandoned, as thoſe two plants have ſcarcely any character in common. Some of the earlier flowers of L. *amplexicaule* never expand, but the internal organs are perfect, and produce good ſeed. Linnæus ſays all its flowers are generally thus cloſed in Sweden, owing, probably, to the coldneſs of the ſeaſon when it bloſſoms.

18. L. *palmatum*. Palmate Henbit Dead Nettle.—(L. multifidum; Pallas. It. v. 1. 168.)—Floral leaves ſeſſile, embracing the ſtem, palmate; lobes three or five-cleft. Teeth of the calyx lanceolate, pointed, as long as its tube.—Gathered on the banks of the Wolga by Pallas, who, as appears from his ſpecimens lent us by Mr. Lambert, firſt took it for *amplexicaule*, which it moſt nearly reſembles, and afterwards for *multifidum*, under which name it is mentioned in his travels, quoted by Willdenow. From the latter it differs totally in ſize and aſpect, as well as in the character of its *leaves* and *calyx*. From the former it is ſatisfactorily diſtinguiſhed, however like at firſt ſight, by the deeply palmate *floral leaves*, whoſe lobes are ſubdivided into three or five broad ſpreading ſegments; and ſtill more decidedly by the broad baſe of the *calyx-teeth*, which contract ſuddenly into a ſharp point.. The *corolla* varies in ſize, or degree of expanſion, as in the preceding. The *root*, like that, appears to be annual, throwing up ſeveral *ſtems* about a ſpan high. The lower *leaves* are ſtalked, but otherwiſe reſemble the upper ones, except, indeed, thoſe near the root, which are ſmaller and leſs cut.

19. L. *multifidum*. Finely-cut Oriental Dead Nettle.—

Linn. Sp. Pl. 809. (L. orientale, foliis elegantèr laciniatis; Tourn. Cor. 11. Commel. Rar. 26. t. 26.)—Floral leaves ſeſſile, divided to the baſe, into many lobed or pinnatifid ſegments. Teeth of the calyx triangular, pointed, one-fourth the length of its tube.—Gathered by Tournefort in the Levant. He probably brought home ſeeds, by which it was introduced to the gardens of France, Holland, and, if Miller be correct, Chelſea phyſic-garden. On his authority this ſpecies has found a place in the new edition of Hort. Kew. though long ſince a ſtranger amongſt us. Indeed the plant is very little known to botaniſts. We have an indubitable ſpecimen, but whether wild or cultivated we know not. It is in all its parts thrice the ſize of the two laſt. The *root* ſeems to be annual, throwing up ſeveral ſquare, leafy, finely downy, often branched *ſtems*. The floral *leaves* are an inch or inch and half long, ſeſſile, nearly ſmooth, divided almoſt, or quite, to the bottom into five ſegments, the middle one being the largeſt, all narrow at the baſe, dilated outwards, deeply lobed or pinnatifid, the lobes rounded or bluntiſh. *Flowers* many in each whorl, as large as thoſe of *L. album*, or larger, of a fine red, with ſo very hairy an upper lip as to reſemble ſome kind of *Phlomis*. The lateral teeth are ſolitary and acute. *Calyx* denſely clothed with ſilky hairs, its teeth broad, about a quarter as long as its tube, pointed, one rather wider than the reſt.

20. L? *hiſpidulum*. Rough-ſtalked American Dead Nettle.—Michaux Boreal-Amer. v. 2. 4.—Stem rather briſtly. Leaves on long ſtalks, broad-heart-ſhaped, ſlightly downy. Flowers axillary, ſolitary.—Found in ſhady woods about the river *Tennaſſée*, by Michaux, who mentions that the *corolla* is moderately large and white. The *flowers* being ſolitary in the boſom of each floral leaf, excites a great doubt of its genus, but having no other information reſpecting this ſpecies, we here ſubjoin it to the reſt, till further information can be procured. S.

LAMJUNGH, in *Geography*, a country of Aſia, dependent on Thibet, N. of Gorkah.

LAMLASH, or HOLY ISLAND, an iſland ſituated before the bay of Lamlaſh, about two miles long and half a mile wide; the whole being a mountain covered with heath, but having ſufficient paſture and arable land to feed a few cows, ſheep, and goats, and to raiſe a ſmall quantity of corn, and few potatoes. N. lat. 55° 34′. W. long. 4° 58′.

LAMLASH, a town or village of Scotland, on the E. coaſt of the iſland of Arran, ſituated on a bay to which it gives name, and which, according to Pennant, forms the ſafeſt harbour in the globe, with depth of water for the largeſt ſhips. N. lat. 55° 35′. W. long. 5° 59′.

LAMMAS-DAY, the firſt of Auguſt; ſo called, as ſome will have it, becauſe lambs then grow out of ſeaſon, as being too big. Others derive it from a Saxon word, ſignifying *loaf-maſs*, becauſe on that day our forefathers made an offering of bread prepared with new wheat.

On this day the tenants who formerly held lands of the cathedral church in York, were bound by their tenure to bring a lamb alive into the church at high maſs.

It is celebrated by the Romiſh church in memory of St. Peter's impriſonment.

LAMMERMUIR, in *Geography*, a mountainous diſtrict of Scotland, forming the N. part of the county of Berwick, about 16 miles long and ſix broad.

LAMNE, in *Ichthyology*, a name given by Appian, and ſome other of the old Greek authors, to the common ſhark, or, as we uſually call it, the *white ſhark*, the lamia and canis carcharias of authors. See SQUALUS *Carcharias*.

LAMNICKH, in *Geography*, a town of the duchy of Stiria; 10 miles N. of Cilley.

LAMO, a ſea-port of Africa, on a ſmall iſland formed by a river on the coaſt of Zanguebar, dependent on the Portugueſe. S. lat. 1° 55′. E. long. 41° 27′.

LAMOIGNON, WILLIAM DE, in *Biography*, marquis of Baſville, deſcended from an honourable family, was born at Nivernois in 1617. He was admitted a counſellor of Paris in 1635, made maſter of requeſts in 1644, and in 1658, on account of his great probity and honour, he was raiſed to the office of firſt preſident of the parliament. Upon his nomination to the preſidentſhip, cardinal Mazarin ſaid to him, "If the king had known a worthier and fitter man, he would not have appointed you;" but he paid him a much higher compliment, by refuſing a large ſum of money, offered by another perſon for the ſituation, at the ſame time obſerving, "Whatever occaſion his majeſty may have for money, it would be better to expend it for a good preſident, than receive it." Lamoignon did not diſappoint the expectations formed of him: he fulfilled all the duties of the ſituation with equal zeal and prudence, ſupporting the dignity and privileges of the body over which he preſided, diſcouraging the chicanery of the bar, raiſing his voice for the people, and devoting his health and life to the public ſervice. He was once ſounded with regard to his opinion of a criminal, over whoſe trial he was to preſide as judge, by Colbert the miniſter, to which he replied, "A judge gives his opinion but once, and that is from the bench." He died at the age of ſixty, in the year 1677. His "Arretès," on various important points of French law, were firſt publiſhed in 1702, and again reprinted in 1781. In his manners he was ſimple, in his conduct rather auſtere, but to the widow, the orphan, and the friendleſs, he was the mildeſt of all human creatures. He relaxed from the toils of his office, in the pleaſures of literature, and literary men. Boileau, Racine, Bourdalouè, &c. were his particular friends. Moreri.

LAMOIGNON, CHRISTIAN FRANCIS DE, eldeſt ſon of the preceding, was born at Paris in 1644: of his education the moſt exact care was taken by his father, and at a proper age he was placed in the Jeſuits' college, under the particular tuition of the celebrated father Rapin, whoſe favourite diſciple he was. Having finiſhed his ſtudies, he travelled through different countries for the improvement of his mind, and in 1666 he was admitted a counſellor of parliament. In 1674, he was appointed to the office of advocate-general, which he held during the ſpace of 25 years, with the higheſt and moſt unblemiſhed reputation, diſtinguiſhed as much for his eloquence, as by his zeal for juſtice and the public good. In 1690 the king nominated him to a poſt of more eaſe, and better adapted to his health, but his love of employment retained him ſeveral years longer at the bar, till at length, being urged as well by his own feelings, as the repreſentations of his family and friends, he ſought for an honourable repoſe. He then indulged in the love of letters, and, in 1704, was admitted a member of the Academy of Inſcriptions, of which he was ſoon appointed the preſident. In this ſtation he diſplayed as much talent and readineſs in diſcuſſing a literary queſtion, as he had formerly done a point of juriſprudence. He died in 1709. Many of his ſpeeches were publiſhed, but the only work which he ſent to the preſs was "A Letter on the Death of Father Bourdalouè." Moreri.

LAMOILLE, in *Geography*, a river, which runs into lake Champlain, 28 miles N. of Newhaven, N. lat. 44° 37′. W. long. 73° 14′.

LAMORRAN CREEK, a creek in the Engliſh channel, on the coaſt of Cornwall, at the mouth of a ſmall river, which joins the Fale; 3 miles S. of Truro.

LAMOTIS, in *Ancient Geography*, a ſmall country of Aſia, in Cilicia, which took its name from the town of Lamus. Ptolemy.

LA MOTTE, in *Biography*, an admirable violiniſt, born in Flanders: when very young, he was regarded as the firſt ſolo player at Vienna. In 1777 he came to England. He had his firſt regular inſtructions from Giardini, and it is related of him, that when he quitted Giardini, he travelled through Italy, ſtill in ſearch of another maſter; and being arrived at Leghorn, where Nardini then lived, he would have become his ſcholar; but after hearing that celebrated performer execute one of his own ſolos, of the moſt difficult kind, and being, in his turn, aſked to play, he deſired leave to perform the ſame ſolo which he had juſt heard, and which was new and in MS. ſo that he never could have practiſed it; however, he acquitted himſelf ſo well, that Nardini declined taking as a *ſcholar* one who was already ſo able a *maſter* of his inſtrument.

The concertos which he played at the Pantheon concerts were full of new difficulties of execution, expreſſion, and double ſtops, which he performed with ſuch grace and ſeeming facility, that none but fiddle-players, who know the finger-board of the violin, and the difficulty of bowing certain paſſages, would imagine that he had any difficulties to encounter. His tone was not very powerful, but perfectly ſweet and even, from the loweſt note on the violin, to the end of the finger-board. His high notes were of the flute kind, nearly as ſweet as the *ſons harmoniques*.

This performer, whoſe conſtitution was very delicate, ſeemed conſumptive, when he left England in 1779, at which time he returned to the continent, where he died.

LAMOTTE, WILLIAM, an eminent French ſurgeon and accoucheur, was of Valogne, in Normandy. He ſtudied his profeſſion at Paris, where he attended the practice of the celebrated hoſpital, l'Hotel-Dieu, during five years. He was diſtinguiſhed particularly by his ſkill and ſucceſs as an accoucheur, not only at his native town, but throughout the neighbouring country, during a long period. He left three ſons, two of whom were phyſicians, and the third ſucceeded him in his own department.

His firſt publication, entitled "Traité des accouchemens naturels, non naturels, et contre nature," was firſt publiſhed in 1715. It went through many editions, and was tranſlated into ſeveral languages; and was generally deemed the beſt treatiſe of the time, after that of Mauriceau, which Lamotte cenſured. It contained an account of four hundred caſes, with judicious practical reflections, the reſult of thirty years' practice. His next publication was a "Diſſertation ſur la Generation, et ſur la Superfœtation;" containing alſo an anſwer to a book, entitled "De l'Indecence aux Hommes d'accoucher les Femmes, et ſur l'Obligations aux Mères de nourrir leurs Enfans," Paris, 1718. He denied the occurrence of ſuperfœtation, and combated the opinions of the ovariſts, and the doctrine of animalcules: and in his reply to Hecquet, he relates a number of untoward accidents, occaſioned by the ignorance of midwives. In 1722, he publiſhed, "Traité complet de Chirurgie, contenant des Obſervations ſur toutes les Maladies chirurgicales, et ſur la Manière de les traiter," which has been ſeveral times reprinted. The laſt edition was publiſhed in 1771, with notes by profeſſor Sabatier. This was a valuable practical work, but disfigured by the egotiſm of the author, and his contempt for his profeſſional brethren; whence Haller obſerves, "laudes ſuas non negligit, neu perinde famæ collegarum ſtudioſus." Haller Bibl. Chir. Eloy. Dict. Hiſt. de Med.

LAMP, an inſtrument uſed for the combuſtion of liquid inflammable bodies, for the purpoſe of producing artificial light.

The moſt ſimple lamp conſiſts of a veſſel of almoſt any ſhape, containing oil or alcohol, with a tube projecting a little above the ſurface of the liquid, and containing any fibrous ſubſtance capable of raiſing the liquid to the top of the tube, by capillary attraction. The oil, thus raiſed and diffuſed through the fibrous ſubſtance, is ſo detached from the main body of the liquid, as to admit of being heated to a temperature ſufficient to volatilize the oil, the vapour of which, in a ſtate of combuſtion, conſtitutes the flame of the lamp.

In the management of the lamp of the moſt ſimple kind, ſo far as relates to the ſupply of oil, three things are neceſſary to be obſerved. 1. The wick muſt be of ſuch a ſubſtance as beſt to promote capillary attraction. 2. It ſhould not be twiſted too much, in which caſe its capacity for the oil is too little; nor ſhould it be ſo looſe as to diminiſh materially its capillary attractive power. This is frequently the caſe, when the wick has been too long immerſed in the oil. 3. With regard to the diſtance of the flame from the ſurface of the oil.—If the flame be too near the ſurface, a leſſer quantity of oil will acquire the intenſe heat neceſſary to raiſe it into vapour, ſince the heat communicates with the fluid. On the contrary, when the flame is too high above the oil, the capillary attraction, which decreaſes in ſome ratio of the diſtance, is inſufficient to ſupply the neceſſary quantity of oil.

Experience has long ago eſtabliſhed, that cotton is the beſt medium for the tranſmiſſion of the oil, which is prepared in a particular way for the purpoſe.

During the ſlow combuſtion of oil, as obſerved in the common lamp, as well as that of tallow in candles, the fatty matter is decompoſed, producing a quantity of vapour, which inflames in contact with oxygen; and a cloudy exhalation in the form of ſmoke, conſiſting of numerous ſmall particles of carbonaceous matter, which, if collected, conſtitute the article called lamp-black. Beſides the offenſive ſmell and appearance of this ſubſtance, there is an evident waſte of combuſtible matter, capable of producing both light and heat.

The evil ariſing from the ſmoke and ſmell of lamps was formerly ſo great, as to prevent their introduction into domeſtic uſe, notwithſtanding the ſtrong inducement of convenience and economy.

The public have long been in poſſeſſion of a complete remedy for this, and ſeveral other diſadvantages in lamps, by the invention of the Argand lamp. This invention embraces ſo many improvements upon the common lamp, and has become ſo general throughout Europe, that it may be juſtly ranked among the greateſt diſcoveries of the age. As a ſubſtitute for the candle, it has the advantage of great economy and convenience, with much greater brilliance; and for the purpoſe of producing heat, it is an important inſtrument in the hands of the chemiſt.

We may with ſome propriety compare the common lamp and the candle to fire made in the open air, without any forced method of ſupplying it with oxygen; while the Argand lamp may be compared to a fire in a furnace, in which a rapid ſupply of oxygen is furniſhed by the velocity of the aſcending current. This, however, is not the only advantage of this valuable invention. It is obvious that if the combuſtible vapour occupies a conſiderable area, the oxygen of the atmoſphere cannot combine with the vapour in the middle part of the aſcending column. The outſide, therefore, is the only part which enters into combuſtion; the middle conſtituting ſmoke. This evil is obviated in the Argand lamp, by directing a current of atmoſpheric air through the flame, which, inſtead of being raiſed from a ſolid wick, is produced from a circular one, which ſurrounds the tube through which the air aſcends. Before we enter more fully into the merits of the Argand lamp, we ſhall give a deſcription of it, with reference to drawings of its different parts. Theſe drawings are taken from the lamps of modern conſtruction, which have recently been much improved. The wick is now raiſed by a ſcrew, inſtead of the rack and pinion; which is ſo great an improvement upon the latter, both in ſimplicity and convenience, that it is becoming general.

Fig. 1. (*Plate Lamps*) is a view of the lamp complete, to a ſcale of one-third the real ſize. A is a reſervoir, which is on the principle of the bird-fountain, keeping the oil always at the ſame height in the burner B, through the communication C.

The burner B is compoſed of three tubes, *a*, *b*, and *c*. The two firſt are ſeen in ſection only; while the whole of one ſide of *c* is ſeen.

Fig. 2. The tube *c* is ſoldered into the bottom of the tube *a*, and open throughout, communicating with the receptacle D, which ſcrews on the outſide of the tube *a*, and ſerves at once to catch the oil which may accidentally run over the tube *a*, and admit the air through the apertures *n*, *p*, which has to aſcend through the tube *c*.

The oil which comes in through C will occupy the cavity *g h*, between the exterior ſurface of the tube *c*, and the interior of *a*, which muſt, of courſe, riſe to the height of the aperture *t*, in the reſervoir A, as ſeen in *fig.* 3. The part *de*, *fig.* 2, called the bucket, is a ſhort tube to receive the circular wick. This part is ſeen in *fig.* 4, with the wick upon it, *d f*. It is made to work freely upon the tube *c*. The latter has a ſpiral groove cut upon it, into which a pin at *o* enters; ſo that when the bucket is turned round by a catch *r*, which works in a longitudinal ſlit in *b*, it will be raiſed or lowered by turning the tube *b* in different directions, and is, therefore, the means of raiſing or lowering the wick.

A wire, *s*, is attached to the tube *b*, which bends down parallel to, and touching the outſide of, the tube *a*. The part *k l x z y* fits upon the tube *a*. The part *k l* is provided with ſhallow ſides to receive the glaſs E, and is connected with a ring *y*, by wires *x*, *z*, *fig.* 1. The whole of this part turns with the glaſs E, and at the ſame time carries round the tube *b*, by means of the wire *s*, which is connected to *k l* and *y*, for the purpoſe of raiſing or lowering the wick. When oil is to be introduced into the reſervoir, A is ſcrewed off, and inverted. The aperture *t*, *fig.* 3, is then opened, by puſhing down the ſliding ſocket *v*, which ought to fit the interior cylinder pretty accurately. The globe muſt now be filled at the hole *t*: the ſocket *v* is next pulled over the hole. The ball may now be held in an erect poſition, and replaced in the lamp; after which the ſocket *v* may be puſhed below the hole *t*, by means of the handle *w*. The oil will now riſe to a height in F, and in B, till it reaches the higher part of the aperture *t*, *fig.* 3, and will maintain the ſame height till the oil in the globe gets to the ſame level. The reaſon of this hydroſtatical phenomenon will be eaſily perceived. When the oil in B and F gets a little below the aperture *t*, a bubble of air enters and aſcends into the globe, the ſame quantity of oil deſcending to give it place.

This reſervoir, although it is fully fitted for giving a regular ſupply of oil, is attended with one diſagreeable property. The air in the upper part of the globe being much more expanſible by heat than liquid bodies in a warm room, its ſpring becomes greater than the preſſure of the exterior air; in conſequence of which, the oil is apt to flow over the tube *a*, and liable ſometimes to overflow the veſſel D. Another diſadvantage is alſo attendant on this bulky reſervoir. When the lamp is uſed on a table, the ſhadow renders one ſide of it uſeleſs. The above inconveniences in the Argand-lamp have been, in ſome meaſure, obviated by the invention of Mr. Peter Kier of Kentiſh Town. He raiſed the oil by means of a column of a heavier fluid. In the plate, *figs.* 5 and 6, are exhibited an elevation and ſection of one of theſe lamps; the ſection only requires to be explained. From the ſlender figure of the vaſe, it is evident that the flame is permitted to throw its light in all directions, downwards and upwards, nearly in the ſame manner as a candle. The interior part is divided into ſeveral compartments by the diaphragms at F and C. The ſpace A A above F is open to the atmoſphere; but the ſpace B B, beneath C, is cloſe. A tube F G proceeds from the ſpace A A to the ſpace B B, ſo as to reach nearly to the bottom at G, and another tube, C D, proceeds from B B upwards through A A, without communicating with this laſt ſpace, and is enlarged at the upper part, ſo as to receive a wick with the apparatus of Argand, or any other. A ſolution of ſea-ſalt, or the mother water of ſalt, being firſt poured in, by meaſure, at E, flows down the tube into B B, and fills that ſpace. A like meaſure of oil is next poured, which alſo deſcends into B B, and forces the denſe ſaline liquor upwards through G F into the ſpace A A. The ſpecific gravity of this laſt is adjuſted by dilution; ſo that when the ſpace A A is properly filled, the oil ſhall ſtand in equilibrio at the requiſite height near E, *viz.* the ſurfaces in A and at E are elevated above the lower orifice at G, in the inverſe proportion of the ſpecific gravities.

This proportion is uſually about three to four; ſo that if any of the oil be taken away from E by combuſtion, or otherwiſe, there will be a ſubſidence of the heavy fluid in A A to preſerve the equilibrium; and during the whole ſubſidence in A A, there will be a correſpondent depreſſion of the upper ſurface of oil, near E, which will be meaſured by four-third parts of the firſt elevation of the denſe fluid above the partition F D. Now, the fall in A A may be rendered very ſmall, by enlarging the diameter of the veſſel at that part, and at B B; and the elevation of E above A, and, conſequently, the inſulation of the radiant flame, may be governed at pleaſure by prolonging the interval D C.

It is poſſible, in the manipulation of this lamp, that ſome oil, or pieces of ſnuff, may fall into the ſpace A A, and float upon the liquid. This effect is, to a certain extent, beneficial, becauſe the covering of oil prevents evaporation; but if this ſhould require to be remedied, it is eaſily done, by pouring the whole contents of the lamp into a baſin, and after a few moments repoſe, or ſtraining, returning the liquids again into the lamp at E by a ſyphon, or funnel, in which they will take their proper places by means of their relative weights. We may recapitulate the good qualities of this lamp in a few words. 1. It is capable of any form or apparatus for the burners. 2. It preſents no obſtacle to intercept the emitted light. And, 3. As it raiſes the oil by the mere gravitation of a non-elaſtic fluid, it cannot, in any caſe, like the fountain lamp, raiſe more than is wanted.

A great variety of other lamps are at preſent expoſed for ſale, having different means of ſupplying the oil, but none ſo ſufficiently ſtriking as to merit minute deſcription.

The grand and moſt eſſential properties of the lamp are confined to the means of ſupplying the flame with oxygen, ſo as to produce the moſt perfect combuſtion, and for which we are almoſt entirely indebted to *Argand*. We ſhall therefore conclude this article with ſome remarks upon the merits of this valuable invention, and ſhew in what inſtances it has been improved in its moſt eſſential points.

In the original lamp of Argand, a perpendicular column of air was perpetually aſcending through the glaſs chimney of the lamp; one part of it paſſing through the central tube *c*, *figs.* 1 and 2; and the reſt through the holes *q* and *m*; round the circular plate *k l*. This part was formerly a cylinder extending down to the receptacle D.

With this perpendicular current alone, it is well known that the Argand lamp would not burn *whale oil*, and the purification of this oil, to render it fit for the purpoſe, became a deſideratum, on account of the high price of the ſpermaceti oil. This great object was not accompliſhed by purifying the oil, but an improvement was made in the lamp itſelf, which effectually anſwered the deſired purpoſe. For this diſcovery we are indebted to an ingenious and ſcientific manufacturer of Derby. It is curious to obſerve, however, that no advantage was taken of this invention for twenty years, during which time it had been uſed in the cotton mills of this diſcoverer, and now the ſame end is accompliſhed by a ſimpler contrivance. The above improvement conſiſted in placing over the mouth of the tube *c* a plate of metal about the diameter of the tube, and at ſuch a height as to be a little ſhort of the apex of the flame. By this means the aſcending column of air was turned out of its perpendicular courſe, and thrown immediately into that part of the flame where the ſmoke was formed, and which, by this means, was completely conſumed, producing at the ſame time a more than ordinary brilliant light.

The ſame effect is now produced by the ſhape of the lamp glaſs E, in the figures already alluded to. The exterior current of air which enters the holes *q*, *m*, &c. riſes with a velocity proportioned to the length of the glaſs chimney, and to the rarefaction of air in the ſame, ſtrikes upon the ſhoulders N and O, by which it is propelled into the upper part of the flame. This happy form in the glaſs appears to have been the reſult of accident. Had the manufacturer been aware of its importance, it would have either been the ſubject of a patent, or at leaſt ſtrongly recommended to the public in the way of puffing. We ſee at the preſent time different ſhaped glaſſes, ſome of which are rather worſe than the original plan, inſtead of improvements.

The theory of the action of the chimney lamp, is ſo nearly allied to the principles of furnaces, which we have given under that article, that the reader will no doubt get ſome uſeful hints, relative to the conſtruction of lamps, by peruſing the ſame.

The hydro-pneumatic lamp is conſtructed upon ſimilar principles to the celebrated water engine erected by father Hell, at Chremnitz, in Hungary; the deſcent of one-half of the fluid to a certain depth below the ſource, raiſes the other half an equal height above the ſource. This principle has been, with great ſucceſs, applied to the lamp, we believe at firſt by the French, but has lately been brought to perfection by Mr. R. W. King, of Holborn, who manufactures theſe articles. *Figs.* 1, 2, and 3, of *Plate* II. explain the conſtruction of this ingenious contrivance. *Figs.* 1 and 3 are ſections to which our deſcription will principally apply; A A is a cylindrical veſſel, divided by horizontal partitions into four chambers, *viz.* B, C, D, and E. The upper one, B, is to contain the oil which is for the immediate ſupply of the flame: the next, C, is for the portion of oil which deſcends into the inferior chamber E, through the pipe *a*, and forces the contained air up through the pipe *b*, into the upper chamber B, and preſſing upon the ſurface of the oil contained therein, cauſes it to aſcend the pipe *d*, to the lamp F, which is on Argand's principle, and of the ſame conſtruction as before explained: *e* is a pipe to conduct the external air down into the chamber C; and *f* is a pipe to convey the waſte oil, which may drip down from the lamp, into the middle chamber D, which is merely a reſervoir for ſuch waſte oil. G is a tube paſſing down to the ſecond chamber C, to fill it with oil; it is cloſed at pleaſure by an air-tight plug *h*, fitting into the end of it; the lower orifice of the pipe *a* is cloſed by a piece of hat *i*, acting as a valve, which is ſhut by a ſpiral ſpring beneath it, but opened by a wire paſſing down the tube *a*, and alſo through the filling tube G, the plug of which, when in its place, preſſes down the wire, and opens the valve: ſuppoſe the plug removed, the ſpring will cloſe the valve *i*. Oil is now poured in at the end of the pipe G; it runs down into the chamber C, and fills it, then riſes in the pipe, which having a hole in one ſide, near its upper end, the oil alſo flows into, and fills, the upper chamber B. The plug *h* is now inſerted into its place; this ſhuts off the communication of the open air, both with the chambers B and C, but depreſſing the wire, as before explained, opens the valve *i*, and the oil in the middle chamber C deſcends, by its gravity, through *a*, as ſhewn by the arrow, and enters the lower chamber E, from which it expels the air by the pipe *b*, into the chamber B. The end of this pipe being covered by an inverted hood, the air aſcends by bubbles, through the oil, into the top of the chamber, and preſſing on the ſurface of the oil, forces it up the pipe *d*, to the lamp in which it ſtands at the level of the dotted line *k*, at which level it will evidently continue, till the upper chamber is exhauſted, and the contents of C deſcended into E. The lamp is now repleniſhed by the following means; the whole apparatus is inverted, as ſhewn in *fig.* 3; the oil now runs down the pipe *b*, and filling its hood, flows over into the upper chamber B, which it fills, the atmoſpheric air entering the pipe *e* into the chamber C, and thence by the pipe *a* into the chamber E, the air contained in the chamber B eſcaping at the pipe *d*. The lamp is held inverted for about a minute, and is then ſet upright. Freſh oil is now poured in at the plug *h*, to fill the ſecond chamber C, and then the plug being put in, the above operation is repeated.

By this ingenious application of the principles of hydroſtatics, the lamp F is conſtantly ſupplied with oil at preciſely the ſame level, which does not vary by any diminution of the quantity of oil, or by the expanſion of the air by heat, as in the fountain lamp, the included air being only applied as the medium to tranſmit the preſſure of one column of oil, from C to E to act upon, and raiſe a ſimilar column from B to the dotted line *k*. The lamp is furniſhed with a glaſs chimney H, ſimilar to that before deſcribed, and for ſome purpoſes this is ſurrounded by a glaſs globe K, ground withinſide to take off the glare of the light. The cylindric veſſel A A is included in an elegant columnar pedeſtal, ſhewn in *fig.* 2, where the ring L is that which is turned round to elevate the wick. *Fig.* 4. is a cap to cover the top, when the glaſs chimney is removed. The principal objection to this lamp, as originally conſtructed, was, that after inverting it, the oil would, in certain poſitions of the lamp, return down the pipe, and fill the lower chamber again, in which ſtate it would not burn. Mr. King has completely remedied this, by bringing all the tubes, except the air and filling tubes, as near as poſſible into the centre of the lamp. Lamps of this kind have been made to contain a ſufficiency of oil to laſt two months, the veſſel having the appearance of an elegant pedeſtal to ornament a hall or ſtaircaſe.

A patent lamp, invented by John Barton, eſq. is delineated in *fig.* 5. of our plate; it is contrived ſo as to always have a ſupply of oil maintained at a level, very near the point of combuſtion, by floating the oil upon a fluid of greater ſpecific gravity. The oil is contained in a cylindrical veſſel A, *fig.* 5, having a pipe, B, extending upwards from it to the burners at *a*, *a*, *a*, where the wicks are placed. The bottom of the veſſel takes off with a ſcrew joint, ſimilar to a ſnuff-box, that the inſide of the veſſel may be cleaned; and in the centre of the bottom is an aperture of about half an inch in diameter always open. This oil-veſſel is immerſed in a heavier fluid, contained within the external veſſel D E F G. A float is attached to the oil-veſſel at H, and another, in addition to it, is fixed to the tube B at I. In this ſituation of things, the column of heavy fluid, (which may be ſalt water,) from its ſurface at *c* to *d*, where the oil preſſes upon it, (through the hole in the bottom of the oil-veſſel,) will ſupport a column of oil, of a greater height, in proportion to the difference of their ſpecific gravities, from *d* up to *e* for inſtance, within an inch of the burners *a*, *a*, which is a ſufficiently ſmall diſtance for the capillary attraction to draw up a ſupply of oil to the wick. As the oil diminiſhes by burning, the water enters the hole in the bottom of the oil-veſſel, and ſtill continues to ſupport the column of oil, as at firſt, the oil-veſſel floating in the water by the floats at H and I. By this means it is freed from the inconvenience we have before aſcribed to Mr. Kier's lamp, becauſe the burners deſcend as the oil is conſumed; and therefore, though the oil is not maintained at the ſame identical level, yet, with reſpect to the burners, it is always at the ſame diſtance below their wicks. The external veſſel unſcrews at F, to get in the oil-veſſel A. The enlarged part or vaſe D, at the top, ſhould contain very nearly, but not quite, as much as the oil-veſſel. In preparing the lamp, the external veſſel is firſt filled with the water (poured in at the top of the vaſe D) as high as E: the oil-veſſel is now full of water, and reſts upon the bottom, becauſe the upper float I is not ſupported. The oil, being poured in at the top of the tube B, expels the water from the veſſel, and fills it at the ſame time, raiſing the water in the vaſe D, and floating the oil-veſſel. In this ſtate the lamp will continue, with the oil ſtanding at *e*, until it is all conſumed.

A very ſimple and efficacious lamp has been lately preſented to the public, under the title of the Automaton lamp, having ſomething ingenious in the manner of ſupplying it with oil. We have given three figures of it at *figs.* 6, 7, 8, of the laſt plate; it conſiſts of a tin box, *a b c d*, with a burner conſiſting of two wicks of cotton at *a*. The box is ſuſpended upon pivots at *e*, entering eyes in the wire *f*, which is ſimilar to the ſuſpenſion part of a ſcale-beam. When this lamp is full of oil, which is poured in at *d*, it aſſumes the horizontal poſition *fig.* 6, becauſe the maſs of oil, *a b c d*, is chiefly ſituated behind the centre *e*, and balances the weight of the wick at *d*; but as the oil diminiſhes by burning, the weight behind the centre is leſſened, whilſt that of the wick continues without alteration. This occaſions the lamp to librate, as in *figs.* 7 and 8, ſo that the oil is always kept very near the wick, by which means it will burn oil which is too impure for the capillary action of a common lamp. The nicety of its performance depends upon the figure of the veſſel, and the place of the centre *e* correſponding with the weight of the tubes at *d*. This the makers have by experience determined to the greateſt accuracy.

The Automaton lamp is in very general uſe in the north of England in cotton-mills, and other manufactories where the gas-lights are not introduced, which is undoubtedly the beſt method.

Lamp, *Cardan's*, is a contrivance of an author of that name, which furniſhes itſelf with its own oil.

It conſiſts of a little column of braſs, tin, or the like, well cloſed every where, excepting a ſmall aperture at bottom, in the middle of a little gullet or canal, where the wick is placed.

Here the oil cannot get out, but in proportion as it waſtes, and ſo opens the paſſage of that little aperture.

This kind of lamp was much in uſe ſome years ago; but it has ſeveral inconveniences: ſuch as that the air gets into it by ſtarts and gluts; and that when the air in the cavity comes to be much rarefied by heat, it drives out too much oil, ſo as ſometimes to extinguiſh the lamp.

Dr. Hook, and Mr. Boyle, have invented other lamps that have all the conveniences of Cardan's without the inconveniences.

The flame in a lamp never conſumes the wick, till the wick be expoſed to the air by the flame's falling downward; and from thence it may be inferred, that a way found out to keep the fuel, and conſequently the flame, at the ſame height upon the wick, would make it laſt a long time. Many ways have been deviſed to arrive at this, but it ſeems only poſſible to be done, in any degree of perfection, by hydroſtatics. Thus, let a lamp be made two or three inches deep, with a pipe coming from the bottom almoſt as high as the top of the veſſel; let it be filled ſo high with water, as to cover the hole of the pipe at the bottom, to the end that the oil may not get in at the pipe, and ſo be loſt. Then let the oil be poured in, ſo as to fill the veſſel almoſt brimful, which muſt have a cover, pierced with as many holes as there are wicks deſigned. When the veſſel is thus filled, and the wicks are lighted, if water falls in by drops at the pipes, it will always keep the oil at the ſame height, or very near; the weight of the water being to that of the oil as $20\frac{8}{61}$ to 19, which in two or three inches makes no great difference. If the water runs faſter than the oil waſtes, it will only run over at the top of the pipe, and what does not run over will come under the oil, and keep it at the ſame height. Phil. Tranſ. No. 245, p. 388.

The acceſs of air is of the greateſt importance in every proceſs of combuſtion. When a lamp is fitted up with a very ſlender wick, the flame is ſmall and of a very brilliant white colour: if the wick be larger, the combuſtion is leſs perfect, and the flame is brown: a ſtill larger wick not only exhibits a brown flame, but the lower internal part appears dark, and is occupied by a portion of volatilized matter, which does not become ignited until it has aſcended towards the point. When the wick is either very large or very long, part of this matter eſcapes combuſtion, and ſhews itſelf in the form of coal or ſmoke. The different intenſity of the ignition of flame, according to a greater or leſs ſupply of air, is remarkably ſeen by placing a lamp with a ſmall wick beneath a ſhade of glaſs, not perfectly cloſed below, and more or leſs covered above. While the current of air through the glaſs ſhade is perfectly free, the flame is white; but in proportion as the aperture above is diminiſhed, the flames become brown, long, wavering, and ſmoky; it inſtantly recovers its original whiteneſs when the opening is again enlarged. The inconvenience of a thick wick has been long ſince obſerved, and attempts have been made to remove it; in ſome inſtances by ſubſtituting a number of ſmall wicks inſtead of a larger; and in others, by making the wick flat inſtead of cylindrical. The moſt ſcientific improvement of this kind is the lamp of Argand, deſcribed in the preceding part of this article. In this the wick forms a hollow cylinder or tube, which ſlides over another tube of metal, ſo as to afford an adjuſtment with regard to its length: when this wick is lighted, the flame itſelf has the figure of a thin tube, to the inner as well as the outer ſurface of which the air has acceſs from below. And a cylindrical ſhade of glaſs ſerves to keep the flame ſteady, and in a certain degree to accelerate the current of air. The inconvenience of a long wick, which ſupplies more oil than the volume of flame is capable of burning, and which conſequently emits ſmoke, is ſeen at once by raiſing the wick; and on the other hand, the effect of a ſhort wick, which affords a diminutive flame merely for want of a ſufficient ſupply of combuſtible matter, is obſervable by the contrary proceſs. The moſt obvious inconvenience of lamps in general, ariſes from the fluidity of the combuſtible material, which requires a veſſel adapted to contain it, and even in the beſt conſtructed lamps is more or leſs liable to be ſpilled. When the wick of a lamp is once adjuſted as to its length, the flame continues nearly in the ſame ſtate for a very conſiderable time. Nicholſon's Journal, vol. i. 4to.

By 17 Geo. II. cap. 29. a convenient number of glaſs lamps ſhall be put in ſuch places of the city of London, as the mayor, aldermen, and commonalty ſhall think fit; to be kept lighted and burning from ſun ſet to ſun-riſing throughout the year; and rates ſhall be made not exceeding *6d.* in the pound, nor above 50*s.* a year on any one perſon, for defraying the charges of them. Every alderman, with conſent of his deputy and common council, may contract yearly for the ſetting up lamps, and their lighting, trimming, &c. and perſons maliciouſly breaking down or extinguiſhing the lamp, ſhall forfeit 40*s.* for the firſt offence; 50*s.* for the ſecond; and 3*l.* for the third, leviable by juſtices, or to be ſent to the houſe of correction. By ſtat. 11 Geo. III. c. 29 for paving and lighting London, the wilfully breaking or extinguiſhing of any lamp incurs the penalty of 20*s.* for each lamp or light deſtroyed or extinguiſhed. None but Britiſh oil is to be uſed for lamps in private houſes, under penalty of 40*s.* 8 Ann. cap. 9.

The uſe of lighted lamps in churches, and places of devotion, is very ancient. In the city of Fez is a moſque, wherein are 900 brazen lamps burning every night. In Turkey, all the illuminations are made only with lamps. Polydore Virgil aſcribes the firſt invention of lamps to the Egyptians; and Herodotus deſcribes a feaſt of lamps held annually in Egypt.

Kircher ſhews the manner of preparing lamps, which ſhall diffuſe a light ſo diſpoſed, as to make the faces of thoſe preſent appear black, blue, red, or of any other colour.

There has been a great diſpute among the learned about the ſepulchral lamps of the ancients: ſome maintain, they had the ſecret of making lamps that were inextinguiſhable, alleging ſeveral that have been found burning, at the opening of tombs fifteen or ſixteen hundred years old. But others treat theſe relations as fables; and others think, that the lamps, which were before extinguiſhed, took light afreſh upon the admiſſion of freſh air.

Dr. Plott, however, is of opinion, ſuch perpetual lamps are things practicable, and has himſelf made ſome propoſals of this kind. The linum aſbeſtinum, he thinks, may do pretty well for the wick, and that the naphtha, or liquid bitumen, conſtantly ſpringing into ſome of the coal-mines, would anſwer for the oil.

If the aſbeſtos will not make a perpetual wick, he thinks there is no matter in the world that will; and argues, that the tradition of ſuch lamps muſt be fabulous, or elſe that they made them without wicks.

Such a lamp he thinks it poſſible to make of the bitumen ſpringing into the coal-mines at Pitchford, in Shropſhire; which, he ſays, like other liquid bitumen, will burn without a wick.

Thoſe lamps that kindle on the immiſſion of freſh air, the ſame author thinks, might be imitated by incloſing ſome of the liquid phoſphorus in the recipient of an air-pump; which, under thoſe circumſtances, will not ſhine at all; but on letting the air into the recipient, there will poſſibly, ſays he, appear as good a perpetual lamp as ſome that have been found in the ſepulchres of the ancients.

LAMP, *Rolling*, in *Mechanics*, is a lamp A B (*Plate* I. *Lamps, fig.* 7.) that has within it the two moveable circles D E and F G, whoſe common centre of motion is at K, where their axes of motion croſs one another, in which point alſo is their common centre of gravity. If to the inward circle you join withinſide the lamp K C, made pretty heavy, and moveable about its axis H I, whoſe centre of gravity is at C, the common centre of gravity of the whole machine will fall between K and C, and by reaſon of the pivots A, B, D, E, H, I, will be always at liberty to deſcend; and, therefore, let the whole lamp be rolled along the ground, or moved in any manner, the flame will always be uppermoſt, and the oil cannot be ſpilt. In this manner the compaſs is hung at ſea; and thus ſhould all the moon-lanthorns be made that are carried upon a pole before coaches or carriages which travel in the night. Deſag. Exp. Phil. vol. i. p. 57.

LAMP-*black*. Of this kind there are two ſorts; one of which is the light ſoot, obtained from burning pine and other reſinous wood; and another, which is the heavy black, obtained by calcining bones in cloſe veſſels. See BLACK. See alſo BONE and CHARCOAL.

LAMP-*blowers* are perſons who form various articles of glaſs for toys, and for more important philoſophical purpoſes, from tubes, &c. by means of the *blow-pipe;* which ſee.

The apparatus of theſe artiſts conſiſts of a ſolid table, to the bottom of which is fixed a double bellows with a foot-board, from which proceeds a pipe that conducts the blaſt to the lamp. This lamp is a large bundle of cotton threads, placed in a tin veſſel in the ſhape of a horſe-ſhoe, and ſupplied by lumps of tallow depoſited by it, and puſhed into the flame as the continued combuſtion requires. The ſmoke is conveyed away by a ſmall chimney ſuſpended over the lamp. The blaſt-pipe in front of the table, at which the artiſt is ſeated, drives the jet of flame away from him, ſo that he ſuffers no inconvenience from it.

The other articles of his apparatus are glaſs tubes of various dimenſions, and two or three very ſimple iron tools, ſuch as a ſmall forceps, files, &c. The flame in full vigour is about four inches in length, which near its extremity is of a clear light blue, when it is the hotteſt, and beyond of a pale yellow. The tubes, before the operation commences, are well dried, ſo as to be quite free from moiſture. They are then gradually heated by being firſt held in the flame of the lamp without blowing, and then at the edge of the outer yellow part of the jet of flame, and ſlowly brought to a ſtate of fuſion. The flame is ſufficiently ſtrong to bring to a very white-red heat a ſolid maſs of glaſs, about the ſize of a playing marble, or even larger; and this, when blown out very thin, will make a bulb of the capacity of three ounces, which is nearly the extent of the power of the common lamp-blowing. The bulbs for thermometers and other philoſophical purpoſes are much leſs. (Aikin's Dict. vol. i. art. *Glaſs.*) For an account of the operation of hermetical ſealing, performed by the lamp-blowers, ſee Hermetical *Sealing.* For bending and joining glaſs-tubes, forming bulbs to tubes, and ſpinning out glaſs-threads, ſee Tube, Thermometer, and Threads.

Lamp *furnace*, is a furnace, in which the heat is produced and maintained by the flame of a lamp introduced within it. This furnace has no occaſion for an aſh-hole, a grate, or a fire-place. It has only one opening below, through which the lamp is introduced, and a kind of ſmall chimney in its upper and lateral part, for circulation of air, to keep up the flame of the lamp, and to give vent to the ſmoke. For the deſcription of an improved furnace of this kind, ſee Lewis's Com. Phil. Techn. p. 29. See Furnace.

LAMPA, in *Geography*, a town of Chili, ſituated on a lake; 20 miles N. of Valparaiſo.—Alſo, a town of Peru, and capital of a juriſdiction of the ſame name; in the biſhopric of Cuſco, 90 miles S. of Cuſco. The ſoil is partly fertile and partly unproductive: the vicinity abounds with ſilver mines. S. lat. 14° 55′. W. long. 81° 44′.

LAMPACAN, a ſmall iſland in the Eaſt Indian ſea, a little S. of Junkſeilon.

LAMPADARIUS, Emanuel, in *Biography*, an author who has written on the muſic of the Greek church. "De Pſallendi arte, et ipſius et aliorum Poemata Eccleſiaſtica, ad notas Muſicas accommodata." The Abbate Martini of Venice, to whom we have aſſigned an article, found this book, and made extracts from it, in Greece; but we never met with it in any public library, either at home or on the continent, except the royal library at Turin. The title of the Greek treatiſe, by Lampadarius, is the following: "Τεχνολωγεια της μȣσικης τεκνης." The extract from it by the Abbate Martini, which is in our poſſeſſion, is too long for inſertion here, nor would it be of much uſe could we allow it room, as no equivalents to the Greek characters are given in modern notation; but with reſpect to the author, we find among the memoranda made in the king of Sardinia's library at Turin, in 1770, an account of a Greek MS. of the 15th century, No. 353. b. i. 24. in which Lampadarius is often mentioned as author of the muſic to the hymns and prayers it contains. Fabricius, likewiſe, Bibl. Græc. vol. ii. p. 269. 564. and 586, ſpeaks of a MS. in the Selden Collection at Oxford, and another in the Jeſuits' library at Louvain, in which there are explanations of the notes uſed by the modern Greeks, and muſical compoſitions by ſeveral authors, particularly Lampadarius.

LAMPADARY, Lampadarius, an officer in the ancient church of Conſtantinople, whoſe buſineſs was to ſee the church well lighted, and to bear a taper before the emperor, the empreſs, and the patriarch, when they went to church, or in proceſſion. The taper borne by the lampadary before the emperor was encompaſſed with divers circles of gold, in manner of crowns; thoſe held before the empreſs and patriarch had but one. It ſeems they were of emblematical uſe, and were intended to keep thoſe great perſons in mind, that their light was to illumine thoſe in inferior ſtations.

There were alſo lampadaries in the emperor's palaces; and others in the houſes of the grandees. At firſt, the privilege of having a lampadary, or torch-bearer, was only granted to the principal officers of the crown, and the chief magiſtrates; but afterwards the emperor allowed it to other inferior officers, as queſtors, treaſurers, &c. They alſo bore before the magiſtrates the emperor's image, &c. And it was probably on account of this image, that they were firſt permitted to have a lampadary.

LAMPADIAS is uſed by ſome authors for a kind of bearded comet, which, as they pretend, reſembles a burning lamp, being of ſeveral ſhapes; its flame or blaze tapering upward ſometimes like unto a ſword, and being at other times double or triple pointed.

LAMPADIUS, in *Biography*, a chantor of the church at Luneberg, publiſhed a ſmall work in Latin, intitled "Compendium Muſicæ," 12mo. 1537. This ſhort tract, which is in dialogue, and a kind of muſical catechiſm deſigned for incipients, has, at the end, a few ſhort rules for compoſition, with examples.

LAMPAS, or Lampers, a kind of ſwelling in the palate of a horſe; ſo called, becauſe it is cured by burning with a lamp, or a hot iron; and ariſing from abundance of blood reſorting to the firſt furrow of the mouth, near the fore-teeth, which cauſes that furrow to ſwell as high as his gatherers; it hinders the beaſt's feeding, and makes him let his meat fall, half chewed, out of his mouth.

LAMPASKE, in *Geography*, a town of Pruſſia, in Natangen; 20 miles S.S.E. of Konigſberg.

LAMPE, Fredericus Adolphus, in *Biography*, paſtor of St. Stephen's church in Bremen, became an antiquary at 15 years of age; and in 1703 publiſhed, in 12mo., a work of great learning and reſearch, intitled "De Cymbalis veterum, Libri tres, in quibus quæcunque ad eorum Nomina, Differentiam, Originem, Hiſtoriam, Miniſtros, Ritus pertinent, elucidantur, cum Figuris æreis Trajecti ad Rhenum," 1703.

This author, in a way ſimilar to Bartholinus, in treating of the flutes of the ancients, has given us all the information which could be gleaned from antiquity on the ſubject of the cymbal, which is hardly a muſical inſtrument, but rather a *chronometer* to meaſure and mark the time, in its military uſe. In its religious employment, indeed, before large bells were caſt, it ſerved both Pagans and Chriſtians as a ſignal and call to temple worſhip. Its claſhing tone in the field may regulate the ſteps of the ſoldiery in their march; but even this purpoſe ſeems better performed in China by the gong and *pierre ſonore*, or muſical ſtone, uſed in proceſſions, as well as in the army: for theſe have real muſical tones, to which there is no difficulty in tuning other inſtruments. Our author, by his claſſical knowledge and diligence, has nearly found as many names in ancient authors for the different kinds of cymbals, as the Perſian language furniſhes for a horſe or lion. As nothing on the ſubject has eſcaped the notice of the author, this little book will be found to contain much precious information for a claſſical antiquary in muſic. Its learned author died of a hæmorrhage at Bremen, in 1729, at the age of 46.

Lampe, John Frederic, a Saxon, who arrived in England about the year 1726, began firſt to be noticed as a compoſer about the year 1732. On the 25th of February of that year, the following paragraph was inſerted in the "Daily Poſt:" "We hear that there is a ſubſcription for a new Engliſh opera, called "Amelia," which will ſhortly be performed at the new theatre in the Haymarket, by a ſet of performers who never yet appeared in public." This opera, written by Harry Carey, and ſet to muſic by Lampe, was firſt performed March 15th, 1732; in the principal character of which, Miſs Arne, afterwards ſo celebrated as a tragic actreſs, by the name of Mrs. Cibber, firſt appeared on the ſtage as a ſinger. The muſic, which, according to the advertiſement, was ſet in the Italian manner, having been much applauded, was ſoon avowed by Lampe; and Miſs Arne's performance intereſted every hearer. The year 1737 was rendered memorable at Covent-Garden theatre by the ſucceſs of the burleſque opera of the "Dragon of Wantley," written by Carey, and ſet by Lampe, "after the Italian manner." This excellent piece of humour had run twenty-two nights, when it was ſtopped, with all other public amuſements, by the death of her majeſty queen Caroline, November 20th; but was reſumed again on the opening of the theatres in January following, and ſupported as many repreſentations as the "Beggar's Opera" had done, ten years before. And if Gay's original intention in writing his muſical drama was to ridicule the opera, the execution of his plan was not ſo happy as that of Carey; in which the mock heroic, tuneful monſter, recitative, ſplendid habits, and ſtyle of muſic, all conſpired to remind the audience of what they had ſeen and heard at the lyric theatre, more effectually than the moſt vulgar ſtreet tunes could do; and much more innocently than the tricks and tranſactions of the moſt abandoned thieves and proſtitutes. Lampe's muſic to this farcical drama was not only excellent fifty years ago, but is ſtill modern and in good taſte.

In 1741, his wife, (the ſecond daughter of Charles Young, ſiſter to Mrs. Arne,) with Miſs Young, Sullivan, the two Meſſings, and Jemmy Worſdale, went to Preſton Gild, and afterwards to Cheſter, where they performed the "Dragon of Wantley," "Margery," the "Sequel to the Dragon of Wantley," &c. all compoſed by Lampe. He ſet "Nancy, or the parting Lover," "Pyramus and Thiſbe," which had great ſucceſs; and publiſhed, in an octavo volume, a tract, intitled "The Art of Muſic," in 1740. But in 1737 he had publiſhed a treatiſe, under the title of "A plain and compendious Method of teaching Thorough-Baſe," &c. 4to.; a work of great merit, and the firſt in our language, by which a ſtudent can profit much without a maſter, as the chords, engraved on copper-plates, are all placed over the figured baſe, and the examples tranſpoſed into different keys.

Lampe was a truly ingenious man, well verſed in the theory of the art, with a moſt happy turn for humour, without buffoonery, in his comic operas; and, moreover, a man of probity, with great ſimplicity of manners, and poſſeſſed of a kind and benevolent heart. This excellent muſician and worthy man, quitting London, with his family, in 1748, reſided two years in Dublin; and in 1750 went to Edinburgh, where he was ſettled very much to the ſatisfaction of the patrons of muſic in that city, and of himſelf; but in July 1751, he was ſeized with a fever, which put an end to his exiſtence at the age of fifty-nine.

Lampe, in *Geography*, a town of Sweden, in the government of Waſa; 28 miles E. of Gamla Karleby.

LAMPEDOSA, an uninhabited but pleaſant and fertile iſland in the Mediterranean. The Catholics and Mahometans viſit a building upon it, which is divided into a church and a moſque. Near it is a magazine, containing the depoſits of the viſitants, which are taken up by ſome Sicilian monks, and applied to the hoſpital at Trapani. The iſland is about 12 miles in circumference, has a good port, is well ſupplied with freſh water, and has, on the coaſt, an excellent fiſhery; 63 miles W. of Malta. N. lat. 35° 40'. E. long. 12° 24'.

LAMPERN, in *Ichthyology*, a river fiſh, being the petromyzon branchialis of Linnæus, found in many parts of England, particularly in Oxfordſhire, and the neighbouring counties, and there called the *pride of the Iſis*. The Latin authors call it the lampetra minima and muſtela fluviatilis. See Petromyzon *Branchialis*.

The word lampern is uſed by the common people in England for one ſpecies of the lampetra, and is not to be confounded with the other called the lamprey, or the lamprey-eel. See Petromyzon.

No lamperns are to be taken in the river Thames and Medway, except from Auguſt 24 to March 30. 30 Geo. II. cap. 21.

LAMPETER, in *Geography*, a townſhip of America, in Lancaſter county, Pennſylvania, containing 2028 inhabitants.

Lampeter. See Llanbeder.

LAMPETIA, in *Ancient Geography*, a town of Italy, in Magna Græcia, in the country of the Brutii.

LAMPETIANS, Lampetiani, in *Eccleſiaſtical Hiſtory*, a ſect of ancient heretics, in the ſeventh century, who fell in with ſome of the opinions of the Aerians.

Their founder, Lampetius, is ſaid to have been one of the chief of the Marcionites. They condemned all kinds of vows, particularly that of obedience, as inconſiſtent with the liberty of the ſons of God.

LAMPETRA, Lamprey, *à lambendo petras*, becauſe this ſpecies is ſuppoſed to lick the rocks, in *Ichthyology*, belongs, in the Artedian and Linnæan ſyſtems, to the genus of petromyzon. See Petromyzon *Marinus*.

This is a fiſh that equally lives in ſalt and freſh water. In the month of March it commonly runs up into the rivers, and is then moſt valuable for the table, as being fat and full of eggs; ſo that the beſt ſeaſon for lampreys is in the months of March, April, and May, becauſe they are moſt firm when they firſt leave the ſalt water, and become waſted and flabby at the approach of hot weather; they are found in ſeveral of our rivers, but the Severn is the moſt noted for them. They are taken in nets along with ſalmon and ſhad, and ſometimes in weels laid in the bottom of the river. It has been an old cuſtom for the city of Glouceſter, annually, to preſent his majeſty with a lamprey pye, covered with a large raiſed cruſt; and as the gift is made at Chriſtmas, the corporation procure freſh lampreys at that time with great difficulty. They are reckoned a great delicacy, either potted or ſtewed; but are a ſurfeiting food, as one of our monarchs fatally experienced, Henry the Firſt's death being occaſioned by a too full meal of this fiſh. They are ſometimes found ſo large as to weigh four or five pounds. The leſſer lamprey, or petromyzon fluviatilis of Linnæus, ſometimes grows to the length of ten inches. Theſe are found in the Thames, Severn, and Dee, and are potted with the large ſpecies, and are reckoned of a milder taſte. They are ſold to the Dutch as bait for their cod-fiſhery. Above 450,000 have been ſold in a ſeaſon at 40*s. per* thouſand. Of late, above 100,000 have been ſent to Harwich for the ſame purpoſe. It is ſaid the Dutch have the ſecret of preſerving them till the turbot fiſhery. Another ſpecies is the *lampern*, which ſee.

Lampetra *Indica*, the name of an Eaſt Indian fiſh of the lamprey kind, caught in ſtanding waters, and called by the Dutch there *bont ael*, and *negen oog*, or *nine eyes*.

LAMPI, in *Geography*, a diſtrict or country of Guinea, governed by a king, ſubject to Aquambo.

LAMPICHELEON, a town of Hindooſtan, in the circar of Adoni; 10 miles E. of Candanore.

LAMPIS, a town of Sweden, in Tavaſtland; 25 miles E. of Tavaſthus.

LAMPO, a town on the weſt coaſt of Celebes. S. lat. 3° 55'. E. long. 120° 4'.

LAMPOCARYA, in *Botany*, ſo denominated by Mr. Robert Brown, from λαμπω, *to ſhine*, and καρυον, *a nut, or any fruit with a hard ſhell*, alluding to the hard and poliſhed ſeeds.—Brown. Prodr. Nov. Holl. v. 1. 238.—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ.

Eſſ. Ch. Spikelets imbricated on all ſides, ſingle-flowered, the outer ſcales being empty. Stamens four, ſometimes three or ſix, with permanent elongated filaments. Style awl-ſhaped, three-cleft. Stigmas undivided. Nut bony, ſhining, pointed with the permanent baſe of the ſtyle, its ſhell thickened upwards; the kernel ſmooth.

Obſ. This genus is intermediate between *Cladium* of Browne's Jamaica, and *Gahnia* of Forſter, differing from the former in having the filaments elongated after flowering, and a ſharp-pointed nut; from the latter in having a ſmooth or even kernel. *Gahnia ſchœnoides* of Forſter appears, by a ſpecimen in the Bankſian herbarium, to be a *Lampocarya*.

1. L. *aſpera.* Stamens four. Spike compound, leafy; the partial ones ſcarcely divided. Spikelets cluſtered. Inner ſcales obtuſe, ſmooth.—Gathered by Mr. Brown near Port Jackſon, as well as in the tropical part of New Holland. The four ſtamens are a very unuſual number in this family.

2. L. *hexandra.* (Gahnia trifida; La Billard. Nov. Holl. v. 1. 89. t. 116.)—Stamens ſix. Panicle cloſe; branches ſlightly divided. Spikelets collected into round heads. Scales all ſharp-pointed. Gathered by La Billardiere in Van Diemen's land. The *ſtems* are two feet high, round, leafy, ſmooth. *Leaves* ſheathing, awl-ſhaped, long, and ſlender. *Panicle* ſlender, erect, compoſed of ſeveral ſtalked heads of flowers, with two or three lanceolate bracteas at the baſe of each. Mr. Brown doubts whether this ſecond ſpecies be properly referred to the genus in queſtion. We ſhould be much inclined to reduce both of them to *Gahnia*.

LAMPOL, in *Geography*, a town of Poland, in the palatinate of Braclaw, near the Dnieſter; 56 miles S.S.W. of Braclaw.

LAMPON, in *Biography*, a performer on the cithara, who taught Socrates muſic in his old age, and who ſung at a feſtival which Xenophon gave to the philoſophers. Socrates tells us, that he only began to compoſe verſes, after he was impriſoned, on account of the many dreams, in which he was adviſed to attach himſelf to muſic; believing that it was impoſſible to arrive at one without the other.

He compoſed hymns in praiſe of Apollo, and ſet them to muſic; but he was put to death ſome days after. Others tell us, that Damon was the muſic-maſter of Socrates. See DAMON.

LAMPON, or *Lampoon*, in *Geography*, a country of Sumatra, which is a portion of the ſouthern extremity of the iſland, beginning, on the weſt coaſt, at the river of Padang-goochie, dividing it from Paſſummah, and extending acroſs as far as Palembung, on the north-eaſt ſide, at which laſt place the ſettlers are moſtly Javans. On the ſouth and eaſt ſides it is waſhed by the ſea, having ſeveral ports in the ſtraits of Sunda, particularly Keyſen and Lampoon bays; and the great river *Toolang-bouang* runs through the heart of it, riſing from a conſiderable lake between the ranges of mountains. That diviſion of Lampoon, which is included by Padang-goochie and a place called Naſſall, is diſtinguiſhed by the name of *Briuran*; and from thence ſouthward to Flat-point, by that of *Laout-cawour*, although *Cawour*, properly ſo called, lies in the northern diviſion. The country of Lampoon is beſt inhabited in the central and mountainous parts, where the people live independent, and in ſome meaſure ſecure from the inroads of their eaſtern neighbours, the Javans, who, from about Palembung and the ſtraits, frequently attempt to moleſt them. If you aſk the Lampoon people of theſe parts, whence they originally came? they anſwer, from the hills, and point out an inland place near the great lake, whence, they ſay, their forefathers emigrated. Theſe, of all the Sumatrans, have the ſtrongeſt reſemblance to the Chineſe, particularly in the roundneſs of face, and conſtruction of the eyes. They are alſo the faireſt people of the iſland; and the women are the talleſt, and eſteemed the moſt handſome. Their language differs conſiderably from that of the *Rejangs*, and they uſe characters peculiar to themſelves. The titles of government are *Pangeran* (from the Javans), *Careeoo*, and *Kiddimang* or *Nebeehee*; the latter anſwering nearly to *Dupatty* among the Rejangs. The diſtrict of *Croee*, near mount Poogong, is governed by five magiſtrates, called *Pangow-lemo*, and a ſixth, ſuperior, called by way of eminence *Pangow*; but their authority is ſaid to be uſurped, and often diſputed. The word, in common, ſignifies a gladiator, or prize-fighter. The *Paogaran* of *Sooko* in the hills is computed to have four or five thouſand dependants; and ſometimes, on going a journey, he levies a *tallee*, or eighth part of a dollar, on each family; which ſhews that his government is more arbitrary, and more ſtrictly feudal, than among the Rejangs, where the government is rather patriarchal. The Javaneſe banditti often advance into the country, and make depredations upon the inhabitants, who are not, in general, a match for them. They do not uſe fire-arms, though in the northern part of the iſland they are manufactured. Beſide the common weapon of the country, they fight with a long lance, carried by three men; the foremoſt guiding the point, and covering himſelf and his companions with a large ſhield. Inland of *Samanka*, in the ſtraits of Sunda, there is a diſtrict, as the Lampoons ſay, inhabited by a ferocious people, who are a terror to the neighbouring country. Their mode of atoning for offences againſt their own community is by bringing to their dooſoon the heads of ſtrangers. Theſe reports, however, depend on the credibility of a people who are fond of the marvellous, and addicted to exaggeration. The manners of the Lampoons are more free, or rather licentious, than thoſe of any other native Sumatrans. An extraordinary liberty of intercourſe is allowed between the young people of different ſexes, and the loſs of female chaſtity is not a very uncommon conſequence. Both men and women anoint themſelves before company, when they prepare to dance; the women their necks and arms, and the men their breaſts. They alſo paint each others' faces, making fantaſtic ſpots with the finger on the forehead, temples, and cheeks, of white, red, yellow, and other hues. In every dooſoon there is appointed a youth, well fitted by nature and education for the office, who acts as maſter of the ceremonies, regulating every circumſtance that pertains to the dances and the aſſembly.' The Lampoons eat almoſt all kinds of fleſh indiſcriminately; and their goolies (curries or made diſhes) are ſaid by connoiſſeurs to have no flavour. They entertain ſtrangers with greater profuſion than any that is met with in the reſt of the iſland. One man has been known to entertain a perſon of rank and his ſuite for ſixteen days, during which time there were not leſs than 100 diſhes of rice ſpread each day. Their diſhes of china or earthen ware are very coſtly, being valued at 40 dollars a-piece. The terms of the *joojoor*, or equivalent for wives, is here the ſame nearly as with the Rejangs. The father of the girl never admits of the *pootoos tallee kooloo*, or whole ſum being paid; and thus withholds from the huſband, in every caſe, the right of ſelling his wife, who, in the event of a divorce, returns to her relations. Where the *pootoos tallee* is allowed, he has a property in her little differing from that of a ſlave. The value of the maiden's golden trinkets is nicely eſtimated, and her *joojour* regulated according to that, and the rank of her parents. The fines and compenſation for murder are, in every reſpect, the ſame as in other countries of the iſland. The Mahometan religion has made conſiderable progreſs among the Lampoons, and moſt of their villages have moſques; nevertheleſs, an attachment to the original ſuperſtition of the country induces them to regard with particular veneration the *crammats*, or burying-places of their fathers, which they piouſly adorn, and cover in from the weather. The Dutch have a reſident here. S. lat. 5° 40′. E. long. 105° 15′. Marſden's Sumatra.

Lampon *Bay*, a bay on the eaſt coaſt of the iſland of Luçon. N. lat. 14° 46′. E. long. 122° 14′.

LAMPREY, Blind. See Einblinder and Petromyzon *branchialis*.

LAMPRIDIO, Benedict, in *Biography*, a diſtinguiſhed Latin poet, who flouriſhed at the commencement of the fifteenth century, was born at Cremona. He went to Rome in his youth, and was firſt domeſticated with Paul Coteſi. He then became a teacher in the Greek college, inſtituted by John Laſcaris, in the pontificate of Leo X. After this he went to Padua, and was employed many years as private teacher of the learned languages, and much eſteemed by perſons of eminence. He was afterwards appointed, with a liberal ſalary, to undertake the education of the ſon of the duke of Mantua. Lampridio died in the year 1540: he is known as an author by his Greek and Latin poems, conſiſting of epigrams and odes: in the latter he was an imitator of Pindar. There are extant three Italian letters written by him to cardinal Bembo, and one to cardinal Pole. An edition of his Latin poems, together with thoſe of J. Bapt. Amaltheus, was printed at Venice in 1550.

LAMPRIDIUS Ælius, was a Roman hiſtorian in the fourth century under Diocleſian and Conſtantine. He is ſuppoſed to have been the author of the lives of Commodus, Antoninus, Diadumenus, Heliogabalus, and Alexander Severus. The ſtyle and arrangement of Lampridius will not allow him a place among hiſtorians of the ſuperior claſs, but he is valuable for his facts. His lives make a part of the "Hiſtoriæ Auguſtæ Scriptores." Moreri.

LAMPRILLON, or Lamprelon, a name by which ſome authors have called the particular ſpecies of lamprey, which we, by way of diſtinction, call *lampern*.

LAMPROPHORUS, an appellation anciently given to the neophytes, during the ſeven days that ſucceeded their baptiſm.

In the ceremony of baptiſm, the new Chriſtian was clothed with a white robe, which he wore for the week following; and was thence called *lamprophorus*, which ſignifies a perſon *wearing a ſhining garment*; from λαμπρος, *ſhining*, and φερω, *I bear*.

The Greeks alſo gave this name to the day of the reſurrection, becauſe their houſes were adorned and illuminated on that day with a great number of torches, as a ſymbol of the light which that myſtery diffuſed in the world.

LAMPSACUS, in *Ancient Geography*, a town of Aſia, on the banks of the Helleſpont, more anciently called *Pityouſa*, which was founded by the Phocæans. The object of worſhip in this place was Priapus, the god of the gardens. This town roſe from the ruins of Pæſos, whoſe inhabitants eſtabliſhed themſelves here. Its territory was fertile; and it was aſſigned by Artaxerxes to Themiſtocles, in order to furniſh his table with wine.

LAMPSAKI, in *Geography*, a town of Natolia, celebrated for its wine, anciently *Lampſacus*; 40 miles W. of Artaki. N. lat. 40° 20′ E. long. 26° 44′.

LAMPSAMANDUS, in *Ancient Geography*, a ſmall iſland of Aſia, on the coaſt of Caria, in the Ceramic gulf. Pliny.

LAMPSANA, in *Botany*. See Lapsana.

LAMPUGA, in *Ichthyology*, a name given by ſome authors to the fiſh more uſually known by the name of *ſtromateus*.

LAMPUGNANI, John Baptist, in *Biography*, of Milan, an opera compoſer of great fancy and ſpirit. He was not a deep contrapuntiſt, but there was a certain gaiety and ſpirit in his ſtyle, which amuſed his hearers and engaged attention. He came into England in 1742, during the regency of lord Middleſex, and while Monticelli was the chief ſinger, for whom he compoſed ſome very captivating airs. The Engliſh, long accuſtomed to a more ſolid, grave, and learned ſtyle, thought him inaccurate, wild, and frivolous, and his ſtyle was only taſted by ſuch of our nobility and gentry as had been in Italy, and had been initiated into the new opera ſtyle. The character of this compoſer is drawn with ſo much judgment, taſte, and diſcrimination in M. Laborde's "Eſſai ſur la Muſique," and ſo exempt from the national prejudices with which that work abounds, that we ſhall venture to tranſlate it, and gueſs at the name of the author.

"Lampugnani was a profeſſor much eſteemed among the moderns. He excelled much in his melodies, and owed more to nature than to ſtudy. He applied with great perſeverance to produce new effects from inſtruments. Conſequently to him has been aſcribed the new manner of uſing the opera orcheſtra. Inſtrumental muſic, and its performers, have doubtleſs greatly increaſed their importance by this innovation. But, how has it been abuſed! It ſometimes happens, that the noiſe of the orcheſtra is all that can be heard, from the beginning of the opera to the end. And that a beautiful paſſage can only now and then penetrate through the inſtrumental phalanx, to convince us that a voice has any concern in the buſineſs. There are certain compoſers, who have no reſource but in noiſe. There are others, likewiſe, who have no time allowed them for any thing elſe." Voiture, in one of his letters, begs pardon of a friend for writing him ſo long a letter, as he has not time to write a ſhorter. But in Italy, an opera muſt be compoſed in a fortnight, ſo that the compoſer loads his inſtruments as much as he can, and leaves the voices at full liberty to do nothing, or to do as much as they pleaſe. In the operas of Lampugnani, the voice governs the orcheſtra, and upon her all the inſtruments wait, as on a ſuperior. He is author of a great number of works, that have had complete ſucceſs in Italy; but it is in vain to name them, as muſic of more than a year old, is as difficult to be found as a coin of the emperor Otho.

We ſaw Lampugnani at Milan, nearly thirty years after he had been in England, where, as a compoſer, he was laid on the ſhelf. He taught ladies to ſing, and had gained great credit from ſome of his ſcholars. He reſided conſtantly in that city, where he played the firſt harpſichord at the opera, in the abſence of the compoſer, and arranged the paſticcios. He was a pleaſant old man, with the ſpirits and good nature of a young one.

LAMPUGO, in *Ichthyology*, a name given by many to the *hippurus*, a ſea fiſh, caught on the coaſt of Spain. See Coryphæna.

LAMPYRIS, in *Entomology*, a genus of the coleoptera order. The moſt familiar ſpecies of this kind, and which may be conſidered as an inſtructive example of the genus in general, is that known in our own language by the name of glow-worm, and in other counties by names of ſimilar tendency, the female being deſtitute of wings, the body elongated, and the poſterior part beneath emitting, during the night time, a brilliant phoſphoric light. The ſpecies of this genus are rather numerous ; the greater part are natives of Africa and America ; a few only inhabit Europe, and of theſe but three kinds are found in Britain, two of which are rare.

The females of the ſpecies moſt commonly known are deſtitute of wings ; all the lampyrides of the latter ſex ſhine during the obſcurity of the evening, or at night, and ſome of the males poſſeſs the ſame ability, while others are in this reſpect deficient. The males throughout all the ſpecies are furniſhed with wings ; the females, on the contrary, are always apterous. The luminous property in the lampyris tribe reſides in the two or three poſterior rings of the abdomen, and is only viſible on the under ſurface. In the day time the luminous ſpace appears paler, and more inclining to yellow than the reſt of the inſect : the light, when emitted, partakes of various hues, being either a clear brilliant white, or white tinged with greeniſh or blueiſh, and this it can vary or heighten in brilliancy at pleaſure, as it does not depend on any external cauſe : it is an inherent ability, governed only by the will or caprice of its poſſeſſor, and, according to the general perſuaſion of naturaliſts, is an ordinance of nature, by means of which the males, in their excurſions through the air, can readily diſcover their apterous crawling mates among the graſs and herbage beneath them.

This luminous appearance of the glow-worm has at various periods excited conſiderable curioſity in the minds of ſpeculative men. Forſter firſt announced that this extraordinary property was ſo ſtrong and retentive, that he could diſtinctly read by the light emitted from glow-worms plunged into oxygen gas. The ſame experiment was verified by Beckerhiem, who proved beſides that they live a long time in other kinds of gas, and continued to ſhed their light vigorouſly, as in the oxygen gas. With the acid, the nitrous, muriatic, and ſulphureous gaſes, he did not however ſucceed ſo well ; when placed in either of thoſe, the inſects died in a few minutes. A variety of other experiments have been made on the lampyrides by Spallanzani, Carradori, and others, the reſult of which proves, among other curious circumſtances, that this luminous property is inherent. Theſe inſects were obſerved to poſſeſs the power of moving various portions of the viſcera, independently of the others ; and it was likewiſe aſcertained that a portion of the luminous rings of the abdomen, when cut out of the inſect, retained its brilliant appearance for ſome ſeconds afterwards. Theſe experiments were made chiefly on the L. italica, the luminous properties of which are more conſpicuouſly brilliant even than that of our common glow-worm.

The lampyrides are found moſt commonly about the months of June and July, appearing among the buſhes, the graſs and herbage on the ſkirts of lanes leading through meadows, and woody ſituations. The males of ſome kinds, as before intimated, are luminous ; and theſe, when on the wing during the night time, exhibit a moſt lively and ſplendid aſpect, like ſo many ſparks of fire darting through the air. The females nearly reſemble the larvæ, being of a lengthened form, divided into a number of diſtinct ſegments, the head ſcaly, and the anterior part of the body furniſhed with ſix ſcaly feet. The larvæ feed on leaves. The eggs, which are numerous, are uſually depoſited near the roots of graſs.

Among the ancients, the names lampyris, noctiluca, cicindela, &c. were beſtowed, without diſcrimination, on almoſt every creature of the inſect tribe, poſſeſſing the luminous property of the glow-worm. Geoffroy endeavoured to unite the lampyrides together, but with theſe he confounded ſome other genera. Linnæus alſo blended them with the lycus and pyrochroa ; and Schæffer followed Geoffroy. Fabricius has adopted the lampyris genus, with ſome material deviations from either, and his authority is, in this reſpect, rather generally approved. Linnæus, ſo lately as the 10th edition of Syſt. Nat. confounds the lampyrides under the genus cantharis ; it is in a ſubſequent edition they appear under the name of lampyris, with the following eſſential character. Antennæ filiform ; wing-caſes weak and flexible ; thorax flat, ſemi-orbicular, ſurrounding and concealing the head ; ſegments of the abdomen terminating in folded papillæ ; females in general deſtitute of wings. This is the character admitted by Gmelin, who, beſides the true lampyrides, by this means includes the genera omalyſſus of Geoffroy, coſſyphus of Olivier, pyrochroa of Geoffroy and Fabricius, and the lycus of Olivier and moſt other modern authors. The Fabrician character of the lampyris genus conſiſts in having four ſub-clavated feelers ; jaw bifid ; lip horny and entire ; antennæ filiform.

Species.

NOCTILUCA. Oblong, brown, ſhield cinereous. Linn. *Cantharis noctiluca*, Fn. Suec. *Glow-worm*, Donov. Br. Inſ. &c.

Frequent in meadows, and near woods in Europe : the female is rather larger than the male.

SPLENDIDULA. Oblong, brown ; ſhield hyaline at the tip above the eyes. Marſh. Ent. Brit. *Lampyris ſplendidula*, Linn. Donov. Br. Inſ. *Cantharis noctiluca*, Scop. *Le ver luiſant à femelle ſans ailes*, Geoffr.

" An European ſpecies, very rarely found in Britain ; the ſpecimens recorded (in Brit. Inſ.) were received by Mr. Drury from Yorkſhire, and are preſerved in his cabinet now in our poſſeſſion. It reſembles the common glow-worm in ſize and appearance, but is diſtinguiſhed from that inſect principally by the hyaline ſpot at the anterior apex of the ſhield above the eyes." This kind is obſerved by Fabricius to be moſt reſplendent in ſhowery weather.

CORRUSCA. Dull black ; ſhield with a roſy creſcent each ſide. Linn.

Inhabits North America. Fabricius ſpeaks of a variety twice the ordinary ſize.

OBSCURA. Black ; ſhield with a rufous ſpot each ſide. Fabr.

Deſcribed from a ſpecimen in the Bankſian cabinet, a native of Terra del Fuego. The ſhield is entire, and depreſſed at the ſides ; wing-caſes brown and without ſpots ; abdomen and legs black.

LATICORNIS. Ovate, black ; ſhield with rufous margin ; antennæ compreſſed. Fabr., Olivier, &c.

A ſpecies of moderate ſize ; the ſhield rounded ; wing-caſes ſomewhat ſtriated ; abdomen with two or three white pellucid dots on the left ſegment.

PYRALIS. Shield rufous ; in the middle black ; wing-caſes black, the edges with the abdomen white. Linn.

Native of South America.

CINCTA. Fuſcous ; thorax, edge of the wing-caſes, and tip of the abdomen fulvous. Olivier.

Native of Pulicandor. The head brown ; abdomen black, the laſt ſegment but one fulvous ; legs black ; and thighs fulvous.

From the Bankſian cabinet.

MARGINATA. Oblong, black ; margin round the thorax, wing-caſes, ſcutel, and poſterior part of the abdomen yellow. Linn.

Native of America ; the antennæ fuſcous, with the baſe yellow ; the legs variegated.

PECTINATA. Black ; outer baſe of the ſides of the ſhield, and apex of the abdomen and wing-caſes, white; antennæ pectinated. Fabr.

An American ſpecies. The antennæ nearly as long as the body.

FLABELLICORNIS. Black; ſhield before the margin, with marginal line at the baſe of the wing-caſes and tip of the abdomen, white. Olivier.

Native of the Brazils; the antennæ very large, and fan-ſhaped; wing-caſes ſlightly ſtriated.

HESPERA. Ovate; wing-caſes brown, with a triangular marginal yellow ſpot. Olivier.

Inhabits America.

IGNITA. Ovate; wing-caſes brown, with an ovate marginal yellow ſpot. Linn.

Native of South America.

LUCIDA. Oblong; wing-caſes brown, the outer margin pale yellow; abdomen yellow. Linn.

Inhabits South America, and reſembles the common glow-worm.

NITIDULA. Oblong, fuſcous; thorax yellowiſh, with a black ſpot in the middle; apex of the abdomen with two yellow ſpots.

An African ſpecies.

PHOSPHOREA. Oblong, ſub-teſtaceous; abdomen black, behind fine yellow. Degeer, &c.

Native of America.

JAPONICA. Yellow; laſt ſegment but two of the abdomen black. Thunb. Nov. Sp.

This ſpecies inhabits Japan, and, according to Thunberg, flies about in the evening during the months of May and June, and emits a vivid phoſphoric vapour from two veſicles at the end of the tail. The antennæ, eyes, wings, and laſt ſegments of the tail, except the two at the apex, black.

ATRA. Deep black; margin of the thorax rufous. Fabr. *Lampyris atra*, Olivier.

A North American ſpecies. The antennæ ſerrated.

CAPENSIS. Livid; thorax yellowiſh; poſterior part of the abdomen fine yellow. Olivier.

Antennæ fuſcous; ſcutel yellowiſh.

AUSTRALIS. Yellowiſh; head and wing-caſes brown; tip of the abdomen clear white. Fabr.

Reſembles the following ſpecies; the thorax and ſcutel ferruginous; ends of the legs black, the reſt yellow. Inhabits New Holland.

ITALICA. Black; thorax tranſverſe, and with the legs rufous; abdomen clear white at the tip. Linn.

Inhabits among trees in Italy; the antennæ are black; thorax without ſpots.

VITTATA. Rufous; wing-caſes black, with a yellow margin, and abbreviated fillet in the middle. Olivier.

Found in Guadaloupe.

MAURITANICA. Wing-caſes livid; body yellow. Linn.

Native of Africa.

HEMIPTERA. Black; wing-caſes very ſhort. Geoffr.

A ſmall ſpecies found in France; the antennæ are compreſſed; ſhield rounded, entire, black, and without ſpots; wing-caſes ovate, very ſhort, and black; abdomen flat, and with the legs black.

PUSILLA. Deep black; tip of the antennæ, with the wing-caſes, ſanguineous. Marſh. Ent. Brit. *Lampyris nigro-rubra.* De Geer.

This appertains to the lycus genus of Fabricius, in which it occurs under the ſpecific name minutus; it is alſo pyrochroa minuta of that author's Mantiſſa. The ſpecies is two lines and a half in length.

LAMSPRINGE, in *Geography*, a town of Weſtphalia, in the biſhopric of Hildeſheim, at the ſource of a ſmall river called Lame, which ſoon after runs into the Inner-ſee; 14 miles S. of Hildeſheim.

LAMUS, in *Ancient Geography*, a ſmall river of Greece, in Bœotia, which had its ſource on the ſummit of mount Helicon. Pauſanias.—Alſo, a town and river of Aſia, in Cilicia. Ptolemy places the mouth of the river between Sebaſte and Pompeiopolis, and the town in a canton, which takes from it the name of Lamotide. This town was epiſcopal, and is placed by Leon-le-Sage and Hierocles in Iſauria, under the metropolis of Seleucia.

LAMUZO, in *Geography*, a town of Aſiatic Turkey, in Aladulia, on a river of the ſame name; 24 miles W. of Tarſus.

LAMY, BERNARD, in *Biography*, who flouriſhed in the ſeventeenth and eighteenth centuries, was of noble deſcent, and born at Mans in the year 1640; having been carefully initiated in the elementary parts of learning, he entered among the religious of the congregation of the oratory at Paris; from thence he went to Saumur to ſtudy philoſophy. From 1661 to 1667, he was employed in giving inſtructions in the claſſics and the belles lettres, and in the latter of theſe years he was ordained prieſt. He now taught philoſophy at Saumur and at Angers, till the year 1676, and while inſtructing others, he applied himſelf with the utmoſt intenſeneſs to the ſtudy of every branch of literature and ſcience, and made a very conſiderable proficiency. He was now directed by his ſuperiors to go to Grenoble, where cardinal le Camus had eſtabliſhed a ſeminary, for the education of eccleſiaſtics, in which Lamy was appointed profeſſor of divinity. In every duty in which this excellent prieſt engaged, he was indefatigable; and as an author he publiſhed a great many valuable works; of theſe the moſt valuable, and which engaged his attention for thirty years, was entitled "De Tabernaculo Fœderis de Sancta Civitate Jeruſalem, et de Templo ejus, Lib. ſeptem," illuſtrated with many plates. This work, which was replete with valuable information and very curious diſcuſſion, was not publiſhed till the year 1720, five years after the author's deceaſe. The death of father Lamy was occaſioned by the burſting of a blood-veſſel, though he had been in a declining ſtate ſome years previouſly to that accident. He was much eſteemed for the modeſty of his manners; for his unaffected piety and deep learning. Among the numerous works which he left as memorials of his induſtry, may be mentioned his "Reflections on the Art of Poetry;" "A Treatiſe on the Equilibrium of Solids and Fluids;" "A Treatiſe on Magnitude in general, comprehending Arithmetic, Algebra, and Analyſis;" "Dialogues on the Sciences and the beſt Manner of ſtudying them;" "Elements of Geometry;" and "A Treatiſe on Perſpective."

LAMY, FRANCIS, a French Benedictine monk, born at Montyreau, in the dioceſe of Chartres, in the year 1636, was intended for the military profeſſion, which, at the age of twenty-three, he exchanged for the eccleſiaſtical. He made a rapid progreſs in the ſeveral departments of literature, and his writings ſhew that he was deeply ſkilled in the knowledge of the human heart. He died in the year 1711, at the age of ſeventy-five. His biographers have highly praiſed him for the benevolence which he manifeſted on all occaſions, and likewiſe for his candour, amiableneſs, and extraordinary piety. One of his moſt popular pieces was, "A Treatiſe on Self-knowledge," in ſix volumes, which paſſed through ſeveral editions. Many of his other works were highly eſteemed as good defences of natural and revealed religion; ſuch were his treatiſe "On the evident Truth of the Chriſtian Religion;" "The New Atheiſm overthrown," in anſwer to Spinoza; "The Unbeliever conducted to Religion by Reaſon." Lamy wrote on natural as well as theological ſubjects; ſuch is his work entitled "Phyſical Conjectures on the Effects of Thunder, and on other Subjects in Natural Philoſophy." His ſtyle, though not wholly free from faults, is ſaid to be more correct and poliſhed than that of any writer in the French language of that claſs to which he belonged.

LAN, in *Geography*, a town of Perſia, in Oberland; 14 miles N.N.E. of Joldau.—Alſo, a city of China, of the ſecond rank, in the province of Pe-tcheli, on the river Lan; 113 miles E. of Peking. N. lat. 39° 48′. E. long. 118° 24′.—Alſo, a city of China, of the ſecond rank, in Chen-ſi, on the Hoang. It is ſituated near the great wall, and in the vicinity of the principal ports on the weſtern coaſt, and it is therefore claſſed among the moſt important cities of the empire, and has been made the capital of the weſtern part of the province, and the ſeat of government. The trade of this city conſiſts only in ſkins, which are brought from Tartary, and different kinds of woollen ſtuffs. A coarſe kind of ſtuff is made here of cow's hair, which is uſed by the inhabitants for making great coats to defend themſelves from the ſnow. N. lat. 36° 6′. E. long. 103° 29′.—Alſo, a river of China, in Pe-tcheli, which runs into the gulf of Leao-tong, N. lat. 39° 18′. E. long. 118° 36′.

LANÆ PETRA. See PETRA.

LANAGLA, in *Geography*, a town of the iſland of Fortaventura, ſituated on the E. coaſt.

LANARIA, in *Botany*, ſo called from *lana*, wool, on account of the woollineſs of the flower.—Ait. Hort. Kew. ed. 1. v. 1. 462. v. 3. 510. ed. 2. v. 2. 289. Schreb. 799. Willd. Sp. Pl. v. 2. 181. (Argolaſia; Juſſ. 60. Lamarck. Illuſtr. t. 34.)—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Iridibus affine*, Juſſ.

Gen. Ch. *Cal.* none. *Cor.* ſuperior, of one petal, ſomewhat bell-ſhaped, clothed externally with feathery wool; tube ſhort; limb in ſix deep, linear-lanceolate, ſlightly ſpreading, equal ſegments, coloured within. *Stam.* Filaments ſix, thread-ſhaped, ſhorter than the corolla, inſerted into the baſe of its ſegments; anthers ovate, ſomewhat incumbent. *Piſt.* Germen inferior, turbinate, externally woolly; ſtyle thread-ſhaped, erect, the length of the ſtamens; ſtigma three-cleft. *Peric.* Capſule ovate, of three cells. *Seeds* two or three in each cell.

Eſſ. Ch. Corolla ſuperior, externally woolly, longer than the filaments; its limb in ſix deep ſpreading ſegments. Capſule of three cells.

1. L. *plumoſa*. Woolly Cape Hyacinth.—(Hyacinthus lanatus; Linn. Sp. Pl. 455.)—Native of the Cape of Good Hope, from whence it was ſent to Kew in 1787, by the late Mr. Maſſon, and is kept there in the green-houſe, but has not yet flowered. Its habit is that of a *Dilatris*; ſee that article. *Root* fibrous, perennial. *Stem* erect, angular, hairy, moſt leafy in the lower part, terminating in a denſe corymboſe tuft of numerous *flowers*. The *leaves* are linear, keeled and channelled, ſmooth. The whole infloreſcence is denſely clothed with white feathery hairs.

LANARIA has formerly been applied as a name to ſeveral plants, either on account of their woollineſs, as the larger kinds of *Verbaſcum*; or of their uſe in dyeing, or dreſſing, wool, or woollen cloths. Of the former deſcription is the Dyer's-weed, *Reſeda Luteola*; of the latter the Teaſel, *Dipſacus fullonum*. Perhaps *Saponaria officinalis*, Soapwort, was called *lanaria radix* from its ſcouring quality.

LANARIUS, in *Ancient Geography*, a river of Sicily, placed by Antonine in his Itinerary on the route between Agrigentum and Lilybæa, between Ad aquas and Mazara.

LANARIUS, in *Ornithology*. See FALCO.

LANARK, in *Geography*, a royal borough, and the county-town of Lanarkſhire, in Scotland, is ſituated about 30 miles to the W. of Edinburgh, near the left bank of the river Clyde. It is a place of great antiquity, having received its original charter as early as the reign of Alexander I. The government is veſted in a provoſt, two bailiffs, a dean of guild, thirteen merchant-counſellors, and ſeven deacons of trades. The town conſiſts of one principal ſtreet, which deſcends towards the Clyde, and five inferior ones branching off from it, beſides lanes and cloſes. Many new buildings have been added within theſe few years. The ſtreets are in general well paved with whinſtone, and exhibit, eſpecially near the centre of the town, a conſiderable degree of neatneſs. In early times Lanark appears to have been a place of ſome note. The eminence called Caſtle-hill, which lies between the town and the river, was the ſeite of a caſtle, which, according to tradition, was built by king David I. and was for ſeveral centuries the reſidence of the Scottiſh monarchs. The charter of the town of Ayr, granted by William the Lyon, is dated from this place, and many ſpots in the neighbourhood are diſtinguiſhed by names of royal origin. The firſt aſſembly or parliament mentioned in the hiſtory of Scotland was convened in this town by Kenneth II. in the year 978. It is alſo rendered remarkable as the ſcene of the firſt great military exploit of the celebrated ſir William Wallace, that patriot having here commenced his glorious but unfortunate career by the defeat and death of William de Heſelrig, or Heſliope, the Engliſh ſheriff of Lanarkſhire. It is ſaid that this town was formerly fortified, but no traces of ſuch works can now be diſcovered. The riſing ground, named Caſtle-hill, however, bears ſome reſemblance to an artificial mount, and may probably have been fortified in the time of the Romans, as a fine ſilver coin of Fauſtina was found on it ſeveral years ago. The old pariſh church lies in ruins about a quarter of a mile to the ſouth-eaſt of the town, and retains conſiderable marks of former elegance. The hoſpital of St. Leonard's, which ſtood to the eaſtward of the town, was founded by king Robert I. Upon digging up its ruins ſome time ſince, to prepare the ground for the plough, an urn, together with a variety of carved ſtones and other curioſities, were diſcovered under them. The ſame monarch was alſo the founder of a monaſtery of Franciſcan, or Grey friars, ſituated to the weſt of the preſent church, where a general chapter of all the Grey friars in the kingdom was held on the 11th July, 1400. This town unites with Linlithgow, Selkirk, and Peebles in ſending one member to parliament. The population of the town and pariſh, as aſcertained in the parliamentary cenſus of 1800, was 4692 perſons, who occupied 643 houſes. Sinclair's Statiſtical Account of Scotland.

LANARK, *New*, is deſcribed in the courſe of the following article.

LANARKSHIRE, an inland county in the ſouth of Scotland, is frequently denominated *Clydeſdale*, from the river Clyde, which flows through it longitudinally in a winding courſe of more than ſixty miles. The ſituation of this county is between 55° 22′ and 55° 58′ north latitude, and between 3° 15′ and 4° 19′ weſt longitude. It is bounded by Dumfries-ſhire on the ſouth, by the ſhires of Ayr and Renfrew on the weſt, by the counties of Dunbarton and Stirling on the north, and by thoſe of Linlithgow, Edinburgh, and Peebles on the eaſt. Its length from north to ſouth is about forty-ſeven miles, and its breadth nearly thirty-two. The pariſhes it contains are forty-eight in number, inhabited, according to the parliamentary returns in 1800, by a population of 150,690 perſons. The ſurface contents are 927 ſquare miles, or 593,280 ſtatute acres. Lanarkſhire anciently formed a great portion of one of the principalities into which Scotland was divided at the time of the Roman invaſion. The name given to this kingdom was Strathclyde, which comprehended, beſides the county of Lanark, thoſe of Stirling, Dumbarton, and Renfrew. This ſhire is divided into three diſtricts, or wards, formerly known by the appellations of Clydeſdale, Douglaſdale, and Avondale, but theſe are now more frequently termed the upper, middle, and lower wards. Each of theſe diſtricts is ſubject to the particular juriſdiction of a ſubſtitute appointed by the ſheriff-depute of the county.

With reſpect to the *ſoil* and *appearance* of this county, the upper parts of it, except in the vicinity of the Clyde, are ſo hilly and mooriſh, as ſcarcely to be ſuſceptible of any improvement from agriculture. The elevation of the hills is in general very great; ſome of them riſe to the height of 600 feet above the level of the ſea. Notwithſtanding this, they exhibit but little grandeur, the perception of their ſize and altitude being much modified by the cloſeneſs with which they are crowded together. The chief part of the arable lands in the upper diſtrict, lies in the pariſhes adjoining to the hill of Tintoe, round which the Clyde flows with a ſlow and gentle current, waſhing, in its courſe to Lanark, twelve miles of the fineſt meadow-fields in Scotland. In the neighbourhood of Biggar, one of the towns in this diſtrict, the ſoil is uncommonly rich and fertile. This fertility is in many places principally owing to the inundations of the Clyde, which are likewiſe often the ſource of irreparable damage, by carrying off, not only the crops, but even the very ſoil it had formerly enriched. Proceeding down the river, the ſoil is found to be dry, light, and friable, but leſs productive than in the vicinity of Tintoe. Carlicke pariſh is of a clayey ſoil, but excellent in quality. This pariſh, and indeed all the pariſhes ſituated along the river, are particularly diſtinguiſhed for the richneſs and variety of their ſcenery. Within this diſtrict are the falls of the Clyde, celebrated both by the poet and the painter. Above, as well as below theſe falls, the banks of the river are adorned with numerous country ſeats, and villages filled with induſtrious inhabitants.

The middle ward, or diſtrict of this county, is not nearly ſo elevated as that above mentioned. When viewed from any conſiderable height, indeed, it has the appearance of a level country, though in fact it is much diverſified with hill and dale, the former being much leſs abundant than the latter. The ſoil of this ward is in general of a clayey texture, and within ſix miles of the river extremely fertile. The ſcenery here is no leſs beautiful than that of the upper ward, the banks of the Clyde being covered with hamlets, orchards, and plantations of various kinds: beyond the range of ſix miles, however, the country is of a very different deſcription. It is ſuppoſed that there are not leſs than 40,000 acres of moſs-land within this diſtrict, and ſuch ſpots as are free from that covering, diſplay a ſoft clayey ſoil, formed from a ſort of hard clay, lamellated in a horizontal direction, which is called by the farmers *till*, and is known to mineralogiſts by the name of ſchiſtus.

The lower ward is extremely limited in extent, but may rank as the moſt important of the three, on account of its containing the city of Glaſgow, which is juſtly denominated the Mancheſter of Scotland, and is perhaps ſcarcely inferior to Liverpool in point of commercial importance. The lands in this diſtrict are naturally barren and unproductive, but in the neighbourhood of Glaſgow, the overflowings of a very proſperous commerce have added greatly both to its ſcenery and fertility. See GLASGOW.

The chief towns in Lanarkſhire are Glaſgow, Lanark, Rutherglen, Hamilton, Douglas, Biggar, and Carnwarth. Of theſe the three firſt are royal boroughs, and will be found deſcribed under their reſpective names. Many conſiderable villages are likewiſe ſcattered throughout the county. The moſt worthy of notice among theſe are thoſe of Leadhills and Wilſon-town, which are indebted for their proſperity to the mineral productions of the county. *New Lanark*, which owes its origin to the cotton works eſtabliſhed there by David Dale, eſq. of Glaſgow, is alſo a thriving and populous place. Theſe works were firſt erected in the year 1785, and are perhaps the moſt extenſive of their kind in Scotland. They afford employment to upwards of 1500 perſons, many of whom are children. Great attention is paid to their morals and education. The ſituation of the mills is extremely ſingular and romantic, being nearly ſurrounded by high grounds of very ſteep aſcent. They were built on this ſpot chiefly on account of the great command of water that could be obtained. For this purpoſe a ſubterraneous aqueduct has been cut through the ſolid rocks, for the ſpace of ſeveral hundred yards. Both the works and the ſcenery around are objects of peculiar intereſt and curioſity. One of the mills contains no leſs than 6080 ſpindles.

Beſides the Clyde, already ſo often mentioned, there is a number of other ſtreams in this county, all of which, however, diſcharge themſelves into that river. The chief of thoſe on the northern ſide are, the Elwin, Glengonan, the Little-Clyde, the waters of Duneaten and Coutten, and the two Calders. None of them are remarkable, except that the two latter are well ſhaded with wood, and adorned with a number of neat villas. The ſtreams on the ſouthern ſide of the river are rather more deſerving of attention. The Mouſs-water is particularly remarkable for that part of its banks called Cartlane-Craigs. Theſe form a curious and romantic den, or dell, ſomewhat more than a quarter of a mile in length. The rocks on either ſide riſe to the height of four hundred feet, exhibiting a terrific and rugged appearance in one ſpot, while, in another, the eye is relieved by a pendent covering of coppice wood. At the bottom runs the river Mouſs, ſo cloſely confined as ſcarcely to allow room for the lonely traveller to traverſe the den. At all the windings of this river the ſcenery varies, and whenever a rock is found to project on one bank, a correſponding receſs may be ſeen on the other. One of theſe caverns is ſtill called "Wallace's Cave," from a tradition of its having been for ſome time the place of that hero's concealment. Logan-water, which riſes in the mountain ſeparating the pariſh of Leſmahago, from that of Muirkirk in Ayrſhire, is a beautiful paſtoral river. The Avon, which likewiſe takes its riſe on the confines of Ayrſhire, after being joined by ſeveral minor ſtreams, empties itſelf into the Clyde near the town of Hamilton. In its courſe it paſſes through the incloſures of the duke of Hamilton, where its bold and lofty banks, covered with a variety of ſhrubs and trees, afford many extremely fine and pictureſque views.

No county in Great Britain is more intereſting to the geologiſt, or abounds with a greater variety of *mineral productions*, than Lanarkſhire. The ſurface of the upper diviſion of the county generally reſts upon whinſtone, ſtanding in perpendicular columns. The middle and lower diſtricts, for the moſt part, exhibit ſome kind of freeſtone for their baſe, but are interſected, at different points, by ridges of whinſtone running off from the rocky mountains, downwards, throughout the whole extent of the county. Under the ſtrata of freeſtone immenſe ſtrata, or beds of *coal*, are diſcovered, extending over all the plain country, and branching out, more or leſs, along the courſe of the principal waters. The ſeams of this uſeful mineral are not entirely of one kind. Where the whole ſtrata remain untouched, a variety of thin and leſs valuable ſeams, or ſtrata, preſent themſelves in digging down to what is commonly called the *upper coal*, becauſe it is the firſt that is found to be worth mining for to any extent. This ſtratum is compoſed of the *rough coal*, except a ſmall portion in the middle of it, which is of the kind called ſplint. After this, comes the *ell coal*, which is much eſteemed for the blackſmith's forge. At from ten to ſeventeen feet beneath this ſtratum, the ſeam called the *main coal* is found. It is ſo named becauſe it poſſeſſes all the good qualities of the other ſtrata, and is preferred, by conſumers in general, to every other ſpecies of this mineral. Below the main coal are four more ſeams. The higheſt of theſe is compoſed of the *humph coal*, the ſecond of the *hard coal*, the third of the *ſoft coal*, and the fourth and laſt ſeam of the *lean* or *four-milk coal*. Beneath all are found ſeveral ſtrata of excellent limeſtone, probably as extenſive and inexhauſtible as the valuable mineral which covers it. Independently of theſe ſtrata of coal in the plain, there are others in the higher grounds, but of a diſſimilar nature and arrangement. The hills in the pariſh of Shotts, like the tracts of the ſame elevation in the upper ward, are found to conſiſt of an enormous bed of whinſtone, but in deſcending along their ſides, the freeſtone rock ſhows itſelf lying in a horizontal poſition beneath the whinſtone. Below the free-coal, ironſtone and limeſtone are diſcovered in ſuch vaſt profuſion, as ſeemingly to defy the utmoſt efforts of human induſtry to exhauſt them. Near the Douglas river alſo, extenſive collieries, ſimilar in quality to thoſe of Shotts, are wrought, which ſupply the higher diſtricts of this county and Tweedale, where no coal has yet been diſcovered. To the vaſt ſupplies of this valuable mineral, and its conſequent cheapneſs, the manufacturing proſperity of the weſt of Scotland is to be principally attributed, as, without abundance of fuel, ſcarcely any manufacture can be carried on.

Lead and Iron.—Another great ſource of induſtry and opulence beſtowed on this county by nature, is derived from its mines of lead and iron. The former of theſe metals is chiefly wrought at Lead-hills, a range of mountains in the uppermoſt part of the county, immediately adjoining to Nithſdale. Theſe mines belong to the earl of Hopetoun, and are carried on by two ſeparate companies. The number of miners employed in them is very great. They work only ſix hours out of the twenty-four, ſo that they have much leiſure time, a great portion of which is dedicated to reading. To facilitate this worthy employment of their time, a library was eſtabliſhed many years ago by an overſeer named M‘Sterling, who prevailed on the workmen to ſubſcribe for that purpoſe. Since that event the miners have been remarkable for induſtry and ſobriety of manners, the uſual concomitants of a taſte for literature; and the example has been followed with ſimilar effects at the neighbouring mines of Wanlockhead.

The iron of this county is found every where in the ſame tract with the ſtrata of coal. In many places it is imbedded between the different ſeams of that mineral, and is uſually wrought at the ſame time with it. Iron ore, that is, the metal in its richeſt ſtate, has not yet been diſcovered here in any great quantity, but ironſtone exiſts in great profuſion. It is found either in the form of beds of rock, or in collections of nodules or ironſtone balls, as they are called by the workmen, of various ſhapes, ſize, and qualities. Among theſe balls is the curious foſſil called *ludus Helmontii*, *ſeptuarium*, or *waxen veins*. It is of a ſpherical ſhape, more or leſs oblate or depreſſed. Above and below them are alternate ſtrata of ironſtone and ſchiſtus. They lie on their depreſſed ſides, in a regular direction, making a ſort of interrupted ſtratum, one ſtone being ſeveral inches and ſome even a foot or two diſtant from the other. The ironſtone of which they are compoſed is of excellent quality, yielding ſometimes fifty *per cent.* of iron.

The *Antiquities* in this county are not ſo numerous, in proportion to its extent, as in ſome other counties of Scotland. The Roman road, which formerly croſſed the pariſhes of Lamington and Biggar, and deſcended along the ſouth bank of the Clyde, is now only viſible in a few detached ſpots. Different parts of the upper wards, in particular, abound with excavations in the earth, or vaults which were uſed as ſtrong holds by the aboriginal inhabitants, when the haughty chieftains of Clydeſdale and Annandale were engaged in mutual hoſtilities and depredations. At Cold-chapel are the remains of a Roman ſtation, and in the ſame neighbourhood is a ſpot called Wallace's Camp. It is ſaid that a chair, which formerly belonged to that hero, is ſtill preſerved at Borrington.

Near Biggar are ſeveral artificial mounds. The church of that town is one of the moſt venerable relics of monaſtic architecture in Scotland. Here is preſerved an ancient vaſe or urn, ſuppoſed to be Roman, which was uſually appropriated to ſacred purpoſes by the Popiſh prieſts. Boghall caſtle, about a mile from this church, was formerly ſurrounded by a marſh, and acceſſible only by a cauſeway or mound of earth. The entrance is through a large and magnificent gate-way, which leads into a ſpacious court in the centre. This caſtle is flanked with towers. It was formerly the reſidence of the Flemings, earls of Wigton, and has evidently been one of the moſt extenſive and ſplendid fortreſſes in Scotland. This neighbourhood is repreſented in the popular hiſtories of ſir William Wallace, as having been the ſcene of a ſanguinary conflict between his band of patriots and the army of Edward I.

Cuthally caſtle, or, as it is vulgarly called, Cowdaily caſtle, the ſeat of the ancient family of Somerville, is ſituated in the pariſh of Carnwarth, and appears to have been formerly a place of great ſtrength. At the foot of Tintoe is an artificial mount, and near it a circle of large ſtones ſet up perpendicularly. On an adjacent farm is a place called Sheriffs' flats, where it is ſuppoſed the ſheriffs anciently held their courts. Tradition reports, that a bullock's hide, full of gold, is buried under this ſpot. Here are alſo the walls of a caſtle which belonged to the family of Lindſay. In Pittimair pariſh are the veſtiges of a large encampment, the figure of which approaches to a circular area. A ſmall fort belonging to it is ſtill diſtinctly viſible at a little diſtance from the walls. Several urns have been lately found here incloſed within four large flag ſtones. At Douglas are the remains of a caſtle belonging to the powerful family of that name. The greater part of this building was unfortunately conſumed by fire about fifty years ago. In the old church of St. Bride's, in Douglas, are a number of monuments in honour of the Douglaſes. The pariſh of Carſtairs, in the vicinity of the Clyde, contains the veſtiges of a Roman camp, the cauſeway leading to which can ſtill be traced for many miles. Pots and diſhes of different kinds, as well as various inſtruments of war and ſacrifice, have been diſcovered here. A number of coins have alſo been dug up, bearing the inſcription of Marcus Aurelius, and Marcus Antoninus. At Cleghorn is another Roman camp, ſuppoſed by general Roy to have been the work of Agricola. Beſides theſe remains of antiquity there are a number of others; as the priory of Leſmahago, the caſtles of Cudzow and Avondale, &c. but the limits of this article will not allow us to particulariſe the whole. Many of them, however, will be found either deſcribed or noticed in our acounts of the reſpective places. Rothwell caſtle, in this diſtrict, is one of the moſt magnificent ruins in Scotland. The ſtructure itſelf is ſuperb, and all the objects around have an aſpect of grandeur. The whole work is executed with ſmooth ſtone of a red colour. It is adorned with lofty towers at both ends, and has undoubtedly been a place of conſiderable ſtrength.

The principal ſeat in Lanarkſhire is the palace of Hamilton, belonging to, and the occaſional reſidence of, the Hamilton family. It is a large maſſive pile, of a dull and heavy appearance, ſituated in the neighbourhood of the town, from which it derived its name, and deſerves notice chiefly on account of the beauty of its ſcenery, and the valuable collection of paintings it contains.

Lanarkſhire has long been celebrated for its horſes, which are reckoned among the moſt powerful in the world. As containing the town of Glaſgow, it muſt be ranked among the firſt manufacturing and trading counties in Great Britain. Forſyth's Beauties of Scotland, vol. iii.

LANAWEN, in *Geography*, one of the ſmaller Sooloo iſlands, in the Eaſt Indian ſea. N. lat. 6° 15′. E. long. 122° 3′.

LANCARIM Spring, the name of a medicated water of Glamorganſhire. It has its name from a village near which it riſes, and has been very long famous in the place for the cure of the king's evil. The body of water is about an ell broad, and runs between two hills covered with wood. About twelve yards from this ſpring the rill falls from a rock of about eight or nine feet high, with a conſiderable noiſe. The ſpring is very clear and riſes out of a pure white marle. The cures that have been performed there are proofs of a real power in the water; but there is ſome queſtion, whether the water, or its motion and coldneſs, does the good; for the people, who come for relief, always drink of the ſpring, and bathe the part afterwards in the fall below. It is generally ſuppoſed that the lime-ſtone rocks communicate a virtue to it, by which it cures internally; but it has been often found, that the holding a limb diſordered with the evil, in the ſtrong current of a mill tail, has cured it; and there is the ſame advantage in the fall of this water. Phil. Tranſ. N° 233, or Abr. vol. ii. p. 233.

LANCASHIRE, in *Geography*, a county palatine in the northern part of England, ſurrounded by Cumberland and Weſtmoreland to the north, by Yorkſhire to the eaſt, Cheſhire to the ſouth, and the Iriſh ſea to the weſt. Its area compriſes about 1,130,000 acres of land, of which above 350,000 are in a ſtate of tillage, 450,000 in paſturage, and about 400,000 in wood-lands, moors, &c. According to Mr. Yates, who has publiſhed an Agricultural Survey of Lancaſhire, the greateſt length, from north to ſouth, is 74 miles, by about 44 in breadth: the circumference is 342 miles, and ſurface 1765 ſquare miles. It is divided into the ſix hundreds of Amounderneſs, Blackburn, Leyland, Lonſdale, Salford, and Weſt-Derby: and contains ſix boroughs, *viz.* Clitheroe, Lancaſter, Liverpool, Newton, Preſton, and Wigan; 21 market towns, *viz.* Blackburn, Bolton, Burnley, Bury, Cartmel, Chorley, Colne, Dalton, Eccleſton, Garſtang, Haſlingdon, Hawkſhead, Hornby, Kirkham, Mancheſter, Ormſkirk, Poulton, Preſcot, Rochdale, Ulverſton, Warrington; and 62 other pariſhes. The whole contains, according to the return to parliament in the year 1800, 117,664 houſes, and 672,731 inhabitants, of whom 269,259 were ſtated to be employed in various trades and manufactures, and 52,018 in agriculture.

In the ancient hiſtory of this county, we find that it was originally inhabited by the Setantii, or Segantii, who were ſucceeded by the Brigantes, who alſo had a very extended tract of country. (See Brigantes.) The Romans, under Julius Agricola, appear to have conquered this diſtrict in A. D. 79: and ſoon afterwards, according to Mr. Whitaker, that general eſtabliſhed the following ſtations within the limits of this county: "Ad-Alaunum and Bremetonacæ in the north; Portus-Siſtuntiorum in the weſt; Rerégorium and Coccium about the centre; Colonea in the eaſt; and Veratinum and Mancunium in the ſouth." The preciſe ſcites of all theſe ſtations are not ſatisfactorily aſcertained: nor is it generally admitted, by other antiquaries, that there were ſo many permanent ſtations in the county. In the Itinerary of Antoninus only three are ſpecified: *viz.* Bremetonacea, xxvii. m. p. from Galacum in Weſtmoreland; Coccium, xx. m. p. from the former; and Mancunium, xvii. m. p. from the latter. To connect theſe towns or ſtations, roads or military ways were formed, and theſe were diſpoſed in the moſt direct line from one place to another, and conſtructed in the moſt ſcientific and ſkilful manner. Mancunium, now Mancheſter, was a ſtation of large extent and importance; and from it roads branched off northward to Coccium, (Ribcheſter,) two north-eaſtward into Yorkſhire, one ſouth-weſtward to Condate, now Middlewich in Cheſhire, and a fifth ſouth-eaſtward to Derventio, Derby. The whole of this county was denominated by the Romans, Maxima-Cæſarienſis, or Britannia-Superior. The Saxons included it in Northumbria; and, according to Mr. Whitaker, "formed it into a ſeparate county about 680, and ſoon after the conqueſt of it by Egfrid." At this period, the Roman Alauna was "made the metropolis of the ſhire, and lent its own appellation to the county." Soon afterwards the whole was divided into hundreds, tythings, &c. That part called South Lancaſhire was firſt divided into three; but ſubdivided into ſix juſt before the Norman conqueſt: theſe are called Blackburn, Derby, and Salford; Newton, Warrington, and Leyland.

The eccleſiaſtical hiſtory of this county commences with the Anglo-Saxons: after the ſee of York was eſtabliſhed, the kingdom of Northumbria was ſpeedily ſubdivided into ſeveral dioceſes, and the whole of North Lancaſhire was connected with the ſee of York. But ſoon after the conſolidation of the ſeven kingdoms into one, the ſouth of Lancaſhire was ſevered from the dioceſe and province of York, and annexed to the province of Canterbury and dioceſe of Lichfield; and thus continued till the year 1541, when the two parts were again combined, as they have ever ſince continued, under one biſhop, and reunited to their ancient and original ſee of York. At the firſt partition of the biſhopric into archdeaconries, the principal towns of the latter would naturally be conſtituted the capitals of them: and the Roman colony of Cheſter was made the metropolis over the ſouth of Lancaſhire, as the archdeaconry of Richmond was over the north. The next eccleſiaſtical diviſion of the county was into rural deaneries, and by the "Valor Beneficiorum," which was taken in 1292 by command of pope Nicholas IV., the whole county of Lancaſter, excluſive of Furneſs, which then belonged to Weſtmoreland, was partitioned into thirty-ſix pariſhes only. By the ſame record it appears, that theſe pariſhes were included in the four deaneries of Blackburn, Leyland, Mancheſter, and Warrington; all in the archdeaconry of Cheſter. The deanery of Amounderneſs and Furneſs is in the Richmond archdeaconry.

The landed property, which the king poſſeſſes in this county, as duke of Lancaſter, is of great extent; but the revenues ariſing therefrom are but ſmall. The principal part of this property conſiſts in what are generally ſtyled the foreſts of Myerſcough, Fulwood, Bleaſdale, Wyerſdale, and Quern, all ſituated in the moſt northern parts of the county. In theſe his majeſty is intitled to the eſtrays and the game, and the right of holding courts, &c.; and muſt be conſidered as lord of the manor of all the foreſts. The townſhip of Quernmore is ſituated in the hundred of Lonſdale;

dale, and contains above 3000 acres of incloſed and waſte land. Wyerſdale, which is ſimilar in ſituation, contains more than 20,000 ſtatute acres; the greater part is mountainous land, not worth incloſing, but producing abundance of game. Blearſdale is in the hundred of Amounderneſs, and contains nearly 4000 acres of incloſed land, and about the ſame quantity not incloſed. Myerſcough is ſituated about eight miles from Preſton; and conſiſts of nearly 2200 acres, all incloſed; of which about 1600, belonging to the king, is called Myerſcough Park, and is held under a leaſe by Mr. Heatly. The ancient foreſt of Fulwood compriſed a large quantity of land which is now incloſed: the unincloſed parts are about 908 acres. Preſton race-ground is a portion of the foreſt. Beſides the duchy lands, a few large proprietors hold extenſive eſtates in this county. But the prevalence of trade, manufacture, and commerce has tended greatly to ſubdivide the property, in the vicinity of the large towns eſpecially, and hence Lancaſhire has a greater number of landowners than any other county in England, excepting Middleſex. Camden remarked, that Lancaſhire was diſtinguiſhed for the number of ancient families whoſe names were the ſame as their manorial eſtates. This remark ſtill applies, though not to the ſame extent, as many old family manſions are now deſerted. Previous to, and under the Norman dynaſty, this county was diſtinguiſhed as an *honor*, and was of the ſuperior claſs of ſeigniories, on which inferior lordſhips and manors depended, by the performance of certain cuſtoms and ſervices to the lords who held them. Landed honors originally belonged to kings excluſively, but were afterwards granted in fee to noblemen. Theſe kept their honor courts "every year at leaſt, or oftener if need be; at which court all the freeholders of all the manors that ſtand united to the ſaid honor, ſhall make their appearance, which ſuitors ſhall not ſit, but ſtand bareheaded." That the honor of Lancaſter exiſted before the conqueſt, is demonſtrated by an agreement, ſtill preſerved, between king Stephen and Henry duke of Normandy. From this period till the reign of Henry III. the honor was held by ſeveral great perſons. That monarch conferred it on his ſecond ſon Edmond, when it became an earldom. The title of *duke* of Lancaſter was created by Edward III. in favour of Henry Plantagenet, whoſe daughter and heireſs, Blanche, married John of Gaunt, fourth ſon of Edward III., for whom the privileges and revenues were conſiderably increaſed: he, being created duke of Lancaſter on the death of his father-in-law, obtained a patent for advancing this county to the dignity of the palatinate. The court belonging to this duchy has the power of deciding every cauſe relating to it: the officers are, a chancellor, attorney-general, king's ſerjeant, king's counſel, receiver-general, clerk of the council and regiſter, ſurveyor of lands, attorney in the exchequer, attorney in chancery, four counſellors, &c. The offices of the duchy court are at Somerſet place, London.

The ſoil and ſurface of Lancaſhire are various; and its features in ſome parts, particularly towards the north and along the eaſtern border, are ſtrongly marked. Here the hills are bold and lofty, and the vallies narrow and irriguous. On the ſea-coaſt, and nearly the whole of the ſouthern ſide of the county, following the courſe of the river Merſey, the land is low and flat. In the diſtrict which lies between the Ribble and the Merſey, the greater part of the ſurface is a ſandy loam, well adapted to the production of almoſt every king of vegetable, and that to a degree which renders it impoſſible to eſtimate the advantages which might be derived from an improved cultivation. The ſubſtratum is generally the red rock, or clay marle, one of the moſt deſirable ſoils that can be found. Moor-lands which are in a ſtate of nature, and produce heath and other wild plants, are of various qualities; and are much more extenſive than might have been expected in a county ſo populous, where land muſt conſequently be very valuable.

The mineralogical hiſtory of this county has never been publicly developed; and though the internal contents are ſingularly rich, the varied peculiarities and characteriſtics of theſe riches have not been made known. With ſingular advantages of natural and artificial navigation, the *coals*, which conſtitute its moſt prolific and uſeful production, are cheaply conveyed to the various manufactories of Mancheſter, Bolton, &c. and alſo to the coaſt. Coal is found in immenſe beds, both on the ſouthern part and towards the middle of the county, but chiefly in the hundreds of Weſt Derby and Salford, and in part of Blackburn. It is not obtained much farther north than Chorley and Colne; but great abundance of this uſeful foſſil is again procured at Whitehaven, and about Newcaſtle-upon-Tyne. At Haigh, near Wigan, a ſpecies of coal is produced, ſimilar in appearance to black marble, and of a very bituminous quality. It is called *Cannel Coal*, and burns with a peculiar clearneſs of flame, conſumes very rapidly, and is apt to fly in pieces in the fire; but if previouſly immerſed in water, it is ſaid to loſe this property. It is of a dull black colour, breaks eaſily in all directions; and if broken tranſverſely, preſents a ſmooth conchoidal ſurface. Towards the north and north-eaſtern parts of the county, lime-ſtone is very abundant. It is found at Halewood, near Liverpool, at various depths, but inconſiderable in quantity. In the vicinity of Leigh, and alſo at Ardwick, near Mancheſter, is lime-ſtone of ſuch peculiar quality, as to reſiſt the power of water: it is therefore applied to the conſtruction of ciſterns, and to making mortar for building under water. *Stone* of various denominations is produced in this county. Upon the common, near Lancaſter, is a large quarry of excellent free-ſtone, which bears a fine poliſh, and of which that town, equalled by few in the kingdom for neatneſs, is wholly built. Flags and grey ſlates are found at Holland, near Wigan. The mountains, called Coniſtone and Telberthwaite fells, near Hawkſhead, afford a large quantity of blue ſlates, of which there is a conſiderable export: they are divided into three claſſes, called London, Country, and Tom ſlate, of which the firſt is eſteemed the beſt. Scythe-ſtones are obtained at Rainford, and are well wrought on the ſpot. Iron-ore is found in abundance between Ulverſtone and Dalton, in Low Furneſs. In the north, ſome copper mines have been worked; but they have not been productive. At Angleſack, near Chorley, is a lead mine belonging to ſir Frank Standiſh, bart.: it conſiſts of ſeveral veins, which interſect the ſtrata of the diſtrict almoſt perpendicularly, and run in various directions. The matrix of theſe veins is formed of carbonat and ſulphuret of barytes. The former, which is a very rare mineral, is found in the greateſt abundance near the ſurface; and as it deſcends, it becomes progreſſively contaminated by the ſulphuret, which, in the loweſt ſtrata, ſeems completely to uſurp its place. The exiſtence of carbonat of barytes, as a product of nature, was firſt diſtinctly aſcertained by Dr. Withering; but he ſeems to have been miſtaken as to the place where his ſpecimens were obtained. To James Watt, jun. eſq. the public are indebted for a deſcription of the external character of this ſubſtance, and its effects on the animal body, when taken internally. See Mancheſter Memoirs, vol. iii.

The principal rivers in this county are the Loyne or Lune, the Wyer, the Ribble, the Calder, the Douglas, the Irwell, and the Merſey. Beſides theſe there are ſeveral ſmaller ſtreams or rivers, all which, directing their courſes towards the weſt, empty their waters into the Iriſh ſea. The Loyne or Lune, emanating from the fells of Weſtmoreland, enters this county near Kirkby Lonſdale. Soon afterwards its ſtream is augmented by the waters of the Greta and the Wenning from Yorkſhire; and the expanded river then paſſes through the much admired valley of Lonſdale. Purſuing a ſouth-weſterly courſe, it reaches the county town, where it becomes navigable; and at the diſtance of two miles from Lancaſter, is calculated to bear ſhips of conſiderable burthen. The approach to Lancaſter is indeſcribably ſtriking, where the river becoming wider, and winding in ſeveral bolder ſweeps, opens to the view of that ſingular town, deſcending from a lofty hill, whoſe ſummit is crowned by the baſtions of its caſtle, and the lofty tower of its church. The Wyer, which has its ſource among the moors on the north-eaſtern part of the county, meanders through a very romantic diſtrict; and purſuing a ſouth-weſterly courſe towards the ſea, receives the waters of ſeveral other mountain-ſtreams before it reaches Garſtang-church town. Near this place its current is greatly increaſed by the waters of the rivers Calder, &c.; and paſſing near the town of Poulton, expands into a broad baſon, called Wyer-water; and, again contracting its banks, joins the Iriſh ſea between Bernard's-Wharf and the North Scar. The Ribble, like the Loyne, unites to the ſea by a very broad eſtuary; and, like that alſo, has a Roman ſtation on its banks. "This river," Dr. Whitaker obſerves, "by the general conſent of moſt antiquaries, has been underſtood to be the Beliſſima of Ptolemy." The Ribble is one of the largeſt rivers in the north of England, and has its ſource in the high moors of Craven in Yorkſhire. Taking firſt a ſoutherly courſe, it paſſes by the town of Clithero, and, forming the boundary of the county for a ſhort ſpace, is joined by the Hodder and the Winburne from Whalley. The chief courſe of this river is through a highly commercial and well cultivated country; and near the thriving town of Preſton, its banks are bold, and adorned with hanging woods. A little to the weſt of this place, the Ribble forms a ſpacious eſtuary, which is enlarged by the mouth of the river Douglas. The latter has its ſource in the vicinity of Rivington-pike, and, after paſſing the town of Wigan, proceeds north-weſterly by Newburgh, and near Rutford is joined by the Elder-brook from Ormſkirk. After receiving the united ſtreams of the Yarrow and Loſtock rivulets, it empties itſelf into the eſtuary of the Ribble, at a place called Muck-Stool. The Irwell originates in the moors, near the Yorkſhire and Lancaſhire boundaries, whence it flows, ſwelled by other ſtreams, through the manor of Tottington to Bury. Hence it proceeds to Mancheſter, where it unites with the Medlock and the Irk. Paſſing through Barton, where the duke of Bridgewater's canal is carried over it by means of a grand aqueduct, it falls into the Merſey below Flixton. The Alt, riſing near Knowſley, and flowing in a north-weſterly direction, joins the Iriſh ſea near Formby Point. The Crake connects the lake called Thurſton-water with the ſea at Leven Sands. The waters of Winandermere lake join the ſea through the channel of the Leven nearly at the ſame place.

Although canals in a commercial and manufacturing country are of almoſt incalculable utility and importance, yet their origin in this kingdom is but recent; and from the beſt authority it appears that the firſt complete artificial canal was planned and formed in Lancaſhire. This was known by the name of the Sankey; but long previous to the making of this canal, different acts of parliament had been obtained, and companies formed, for rendering the rivers Irwell and Merſey, alſo the Weaver, &c. navigable. By the aſſiſtance of the tide, which flows with rapidity up the channel of the Merſey, veſſels were enabled, without any artificial help, to navigate nearly to the town of Warrington. To render the higher parts of the river, through its communicating branch the Irwell, acceſſible for veſſels as far as Mancheſter, was an improvement much wanted by the manufacturers of that town and its vicinity. To effect this, an act of parliament was obtained in 1720, whereby certain perſons of Mancheſter and Liverpool, but moſtly thoſe of the former town, were empowered to make the Irwell and Merſey navigable beyond thoſe towns. Though the act ſpecified this extent of river, yet as the Merſey was already navigable from Liverpool to Bank key, near Warrington; and as all the ſtipulated demand for tonnage was confined to the navigation between that place and Mancheſter, it appears that the projectors meant only to open the upper part of the river. This has been effected by means of weirs, locks, &c.; and in places where the ſtream formed conſiderable curvatures, cuts were made acroſs the necks of the principal bends. While the navigation of the Merſey was thus an object of commercial ſpeculation, that of the Douglas was equally attended to. The country round Wigan being particularly rich in coal, the proprietors of the mines in that diſtrict obtained an act, in 1719, for rendering that river navigable. This being completed in 1727, enabled the ſpeculators to convey their coals to the mouth of the Ribble, and thence coaſtwiſe to the northern parts of Lancaſhire, Weſtmoreland, &c. The Douglas navigation has ſince been purchaſed by the proprietors of the Leeds and Liverpool canal, who have in part ſubſtituted an artificial cut for the natural channel of the river. The Sankey canal originated with a company of gentlemen and merchants, who, in 1755, obtained an act of parliament, authoriſing them to make Sankey brook navigable from the Merſey river, which it joins about two miles weſt of Warrington, to near St. Helen's. This act empowered certain commiſſioners to purchaſe lands and other requiſites for the intended navigation. It was, at firſt, deſigned to extend and deepen the bed of the brook; but, after due deliberation, it was ultimately determined to cut a detached channel or canal. To effect this more completely, a new act was obtained in 1761, which empowered the undertaker to make a canal; to extend from a place called Fiddler's Ferry, on the Merſey, to a ſpot about 250 yards from the loweſt lock. Thus navigable canals had their riſe in England; and the peculiar advantages and ſucceſs of this at Sankey led to many other ſimilar undertakings: in the execution of which, the genius of the engineer, and the ſpeculating ſpirit of the nation, were fully brought into action. But many things which were then imagined to be unattainable, and inſurmountably impracticable, have been recently effected. The chief article conveyed by the Sankey canal is coal, of which, in the year 1771, according to an account laid before parliament, were carried to Liverpool 45,568 tons, and to Warrington, Northwich, and other places, 44,152 tons. Some of the firſt collieries on its banks are worked out, and others have been opened. Its buſineſs has been increaſed by the large copper-works belonging to the Angleſea company, erected on one of its branches; and by the plate-glaſs manufactory, and other works founded near it, in the neighbourhood of the populous town of St. Helen's. Beſides the Sankey, this county is interſected by nine other canals, of which four communicate with Mancheſter. Of all theſe canals an account has been given under Canal, to which we ſhall here add ſome further particulars and local circumſtances not already detailed. The Aſhton-under-Line canal, which communicates between Mancheſter and the town of

Aſhton, was made in conſequence of an act of parliament paſſed in 1792. The whole length of this canal is eleven miles, with a riſe of 152 feet. Bridgewater's canal originated, in 1759, with the late patriotic duke of Bridgewater, who devoted an immenſe fortune to the effecting his plan. That part of the canal more immediately connected with this county, commences at the Caſtle-field, in the ſuburbs of Mancheſter, and terminates at Pennington, near the town of Leigh. At Worſley is a ſhort cut to the entrance baſin of the underground tunnels. Here it buries itſelf in a hill, which it enters by an arched paſſage, partly bricked, and partly formed by the ſolid rock, wide enough for the admiſſion of long flat-bottomed boats, which are towed by means of rings and hand-rails on each ſide. The canal, or tunnel, penetrates above three quarters of a mile before it reaches the firſt coal-works; where it divides into two channels, branching to the right and left. In the paſſages, at certain diſtances, are funnels cut through the rock, and iſſuing perpendicularly at the top of the hill. The arch, at the entrance, is only about ſix feet wide, and five in height, above the ſurface of the water. In ſome places within it widens, to accommodate two boats to paſs each other. To this ſubterraneous canal the coals are brought from the mines in low waggons which hold about a ton each, and theſe are eaſily pulled down a gentle declivity, on an iron railway by one man. Lancaſter canal takes its courſe through nearly the whole county. Commencing at Kirby Kendal, in Weſtmoreland, it enters Lancaſhire near Burton, having paſſed under ground about half a mile near Medway. At Borwick, a little ſouth of Burton, it ſinks to its mid-level, which it preſerves for ſeveral miles, making for this purpoſe a very winding courſe, in ſome places approaching almoſt cloſe to the ſea-beach. After paſſing Preſton, it aſcends through a ſeries of locks to its higheſt level, on which it proceeds acroſs the Douglas, and arrives at its termination at Weſt Houghton. The principal object of this canal is to open a ready communication between the coal and lime-ſtone countries, thereby interchanging and conveying theſe articles to different places, and to open the port of Lancaſter to other populous towns. All the country north of Preſton is deſtitute of coal, and the canal is directed through a diſtrict abounding with this valuable mineral from Weſt Houghton to Whittle Hills. From Kendal to Lancaſter, the whole country conſiſts of lime-ſtone; and on Lancaſter Moor ſome good freeſtone is obtained. The Leeds and Liverpool canal enters Lancaſhire a little north of the town of Colne, near which it croſſes the grand ridge by means of a ſubterraneous tunnel at Foulridge, 1630 yards in length. Near Bark Mill, not far from Wigan, it croſſes the Lancaſter cut by means of an aqueduct bridge ſixty feet above that canal. A navigation between the eaſtern and weſtern ſeas had been often propoſed: this great deſideratum has been at length effected; and a canal has now been made between the towns of Liverpool and Leeds, including a line of 107¾ miles, and communicating at the latter place with the river Aire, and at the former with the river Merſey, both of which are navigable to the German ocean on the eaſt, and to the Iriſh ſea on the weſt. The fall of water in this courſe, from the high ridge of mountains which divide Lancaſhire and Yorkſhire, is 527 feet weſtward, and 446 eaſtward. Mancheſter, Bolton, and Bury canal takes a north-weſterly direction from the former to the latter town. Its northern end is conſiderably elevated, and its whole courſe comprehends a line of fifteen miles one furlong. The Rochdale canal opens a navigation from the Bridgewater canal at Mancheſter, to the Calder at Sowerby-bridge, near Halifax. At the commencement of this ſcheme it encountered much oppoſition; and the proprietors, in obtaining their acts, were obliged to bind themſelves not to uſe any of the waters of the Irk, Calder, and Roach rivers, ſo as to affect their mills, &c. They were, therefore, obliged to make ſeveral large reſervoirs on the hills to ſupply the waſte of lockage and leakage. At Ulverſtone is a ſhort cut or canal of about one mile and a half, communicating from that town to the Iriſh ſea. Douglas River Navigation commences in the tide-way, in the eſtuary of the river Ribble, near Heſketh, and terminates in the Leeds and Liverpool canal. Haſlingdon canal, not yet completed, is intended to communicate, in a diſtance of about thirteen miles, between Bury, where it joins the Bolton and Bury canal, to Church, where it joins the Leeds and Liverpool. The commercial and ſpeculating ſpirit of the inhabitants of this populous county, is ſtrongly exhibited in the conſtruction of theſe canals and navigable rivers; the good effects of which are eſpecially felt by the manufacturing towns. To that of Mancheſter, in particular, the canals have proved eminently beneficial, and the thriving ports of Liverpool and Lancaſter, with the central towns of the county, have all derived from the ſame ſource many important advantages. Whilſt the natural produce of the county is readily and cheaply conveyed to various marts, and the coals ſent to the devouring factories; the manufactured goods of the latter are thereby diſtributed over the kingdom, and to the ſea-ports for foreign exportation.

Peculiarly characteriſtic of this county are the bogs and moraſſes with which it abounds, and which bear the provincial name of Moſſes. The principal of theſe are called, from the chief places in their vicinity, Chat, Pilling, Trafford, Riſley, Aſhton, Road, Bickerſtaff, Rainford, Marton, St. Michael's, and Catforth. The component parts of theſe chiefly conſiſt of a ſpongy ſoil, containing roots of decayed vegetables, intermixed with a ſort of rotten mould. The origin and peculiarity of moſſes have occaſioned much difference of opinion with the writers on agriculture and natural hiſtory, but when their preciſe ſituations are accurately defined, it ſeems eaſy to account for the latter, and thereby to diſcover ſome clew for the former. The laws of nature are immutable; and when certain natural cauſes are known to produce certain effects, and theſe are invariable, it does not appear difficult to aſcertain the primary ſource. Thus, moſſes or bogs are always found near ſpring-heads, and in ſuch hollows as prevent a regular and conſtant diſcharge of the oozing waters. Theſe muſt conſequently remain ſtagnant, and from the perpetual generation and decompoſition of vegetable matter, muſt progreſſively acquire ſubſtance. Among the moſt common vegetables in theſe ſituations, are the Erica vulgaris, the Ornithogalum luteum, and the different ſpecies of Eriphorum, or cotton-graſs; alſo, bilberry, cranberry, crowberry, Andromeda polifolia; Lancaſhire aſphodel, ſun-dew, and the fragrant myrica-gale, or bog-myrtle. As theſe plants decay, and depoſit their ſubſtances, a conſiderable addition is annually made to the moſs, in cutting a ſection of which, in ſome places, the progreſſive ſtratification or lamina may be diſtinctly diſcovered. Theſe plants, and particularly the moſſes, ſeem to derive their nutriment and fructification from their own ruins, and grow more luxuriant as the ſubſtance increaſes: at length the whole takes the appearance and conſiſtency of a large fungus; and continuing to increaſe, it at length grows greatly above the level of the adjacent lands, till the weight of the ſurface becoming too great to be ſupported by the ſpongy ſubſtance below, it overflows its original boundary, and covers the adjoining grounds. A remarkable inſtance of this occurrence, in the year 1771, is related of Solway-moſs in Scotland; and, according to ſome of our ancient chronicles, a great portion of Chat-moſs was carried into the Irwell, thence into the Merſey, and on to the ſea. (See Leland's Itin. vol. vii. p. 46.) It may be proper juſt to mention three of the moſſes in this county which have been brought into a ſtate of improvement. Trafford-moſs, on the ſouth ſide of the river Irwell, containing about five hundred acres, has been brought into cultivation by Mr. Wakefield and Mr. Roſcoe of Liverpool. They began their improvements about the year 1793; and the whole of this hitherto uſeleſs tract of land is converted into excellent arable and paſture ground, worth four or five pounds per acre, *per annum*; but previous to that period it was wholly unproductive. The manures uſed in the improvement have been blue marle, of a ſtrong calcareous quality, which is found under the moſs itſelf, and compoſt brought by the canal from Mancheſter. Chat-moſs, which lies on the north ſide of the river, and contains ſome thouſands of acres, has been brought into a ſtate of progreſſive improvement, with every proſpect of ſimilar ſucceſs, by Mr. Roſcoe, who commenced the drainage in the year 1805. Rainford-moſs, near Preſcot, has alſo been amazingly ameliorated under the judicious management of Mr. Chorley, who began his operations on this apparently ſterile waſte in 1780, and has rendered it capable of bearing oats, barley, clover, potatoes, &c.

The agricultural productions of Lancaſhire are principally oats and potatoes; both which are uſed for human ſuſtenance; and many of the labouring claſſes, in the northern and eaſtern parts of the county, are chiefly ſupported by this food. A conſiderable quantity of barley, and ſome wheat, are cultivated in Low-Furneſs, the Filde, and in the ſouth-weſtern parts of the county; but it is ſuppoſed that Lancaſhire does not produce one quarter of the grain conſumed by its own inhabitants. The firſt potatoes ſaid to be cultivated in England were grown in this county. They were originally introduced into Ireland from North America, about the year 1565; and in conſequence of an Iriſh veſſel being caſt away on the weſtern coaſt, near North Meols, in Lancaſhire, ſome of thoſe roots were planted in that part of the county; but it was not till many years after that they were adopted as an article of food in London. They are now grown in amazing quantities in this county; and many are annually exported hence to Ireland. They are produced both from cuttings, and from the apple, or ſeed. The ox-noble and cluſter potatoe are chiefly grown for the cattle; and the pink-eye, with various kinds of the kidney, are uſed for the table. The produce of a crop of potatoes in this county is generally from two to three hundred buſhels per acre. Many uſeful particulars relating to the beſt mode of planting, growing, and preſerving potatoes, are detailed in Holt's "General View of the Agriculture of Lancaſhire."

This county boaſts a peculiar breed of horned cattle, which forms a variety with thoſe of Lincolnſhire. The cows are rather ſmaller than thoſe of the latter county, and are known by their wide-ſpreading horns and ſtraight backs.

The climate of Lancaſhire is proverbially *wet*, and this ſeems a natural conſequence of its peculiar ſituation, between the broadeſt part of the Iriſh ſea and the high ridge of hills which form its eaſtern border. All this ſide of the county is more ſubject to rains than the ſide bordering on the coaſt; for as the clouds are wafted over the Iriſh ſea from the Atlantic ocean, they are firſt checked and broken by the mountainous ridge, which has a direction north and ſouth; and hence the rains are almoſt perpetually falling on the weſtern ſide of theſe intercepting eminences. At Townley, near Burnley, it has been found by experiment, that forty-two inches of rain fall annually, at a medium; while the annual fall at Mancheſter has been only thirty-three inches. At Liverpool the average has been conſiderably leſs, whilſt that at London has been ſtill lower.

Lancaſhire ſends fourteen members to parliament; two knights for the ſhire, and two repreſentatives for each of the boroughs of Lancaſter, Liverpool, Preſton, Newton, Wigan, and Clithero: one of the members for the county is returned through the intereſt and influence of the earl of Derby; the other by what is termed the independent intereſt. The county is included in the northern circuit, and the aſſizes are held at Lancaſter, as are alſo the quarter-ſeſſions.

This county, though not abundant in antiquities, formerly poſſeſſed a few caſtles and monaſtic buildings: *viz.* caſtles—at Clithero, Gleaſton, Holland, Hornby, Lancaſter, Peele, and Thurland. Religious houſes—at Burſcough, Cartmel, and Coningſhead. Auguſtine priory—at Cockerſand; a Premonſtratentian abbey; Furneſs and Whalley, Ciſtertian abbies; Holland, a Benedictine priory; Hornby, a Premonſtratentian priory; Lancaſter, Lathom, and Penwortham, Benedictine priories; Mancheſter, a college.

Lancaſhire contains 490 public bridges; of which nine are repaired by the county, and the others by the different hundreds.

The manufactures and commerce of this populous county, are both of great extent and importance. Many particulars reſpecting the former have been already narrated under the article COTTON. Further details will be given under MANCHESTER, and the commerce of the county will be deſcribed at LIVERPOOL. Beauties of England, vol. ix. Aikin's Hiſtory, &c. of the Country round Mancheſter, 4to. Whitaker's Hiſtory, &c. of Mancheſter, 2 vols. 4to. Whitaker's Hiſtory of Whalley, 4to. Holt's Agricultural Report relating to Lancaſhire, 8vo.

LANCASTER, *County Palatine of.* See COUNTY.

LANCASTER, *Duchy Court of.* See COURT.

LANCASTER, in *Geography*, a ſea-port, market, and the county town of Lancaſhire, England, is ſituated on the banks of the river Loyne, or Lune, 239 miles diſtant from London. Few of the county-towns in England have been more neglected by the hiſtorian, or more inaccurately deſcribed by the togographer, than this of Lancaſter. That it was a Roman ſtation is evinced by the Saxon termination caſter, or caſtre; and the ſame is confirmed by the various remains of the domeſtic economy of the Romans that are continually diſcovered in the town and its vicinity. Camden contends that the Roman name of this place was Longovicum: and Mr. Whitaker aſſerts, it was the Ad-Alaunum of Richard of Cirenceſter's Itinerary. Reynolds, in his "Iter-Britanniarum," identifies this place as the Bremetonacis of Antoninus: but this is improbable, though we do not heſitate in conſidering it to be the ſcite of one, if not both, the other names. Dr. Leigh, in his "Natural Hiſtory of Lancaſhire, &c." deſcribes and refers to various coins, pieces of pottery, burnt bones, &c. that have been found in this town. In 1772, an altar-ſtone, with an inſcription, was dug up here. In the Archæologia, vol. v. is a diſſertation, by the Rev. Mr. Leigh, on certain Roman veſtigia belonging to Lancaſter. This place was a fortreſs of conſiderable conſequence alſo under the Anglo-Saxon dynaſty. Indeed it appears to have been the chief obſtacle and barrier to the Picts, or Scots, in the progreſs of their conqueſts in England. Having being demoliſhed by theſe marauders after the retreat of the Romans, it lay a conſiderable time in ruins, but was at laſt rebuilt by the Saxons, who, ſoon after their ſettlement in *Britain*, perceived the importance of this poſt, and the facility of defence afforded by its commanding ſcite. That it was conſtituted the chief and deſignating town of the county, is a ſufficient indication of its conſequence. This event is ſtated by Mr. Whitaker to have occurred in the ſeventh century, when he obſerves, the "Roman Alauna received the honour which it retains at preſent, and was made the metropolis of the ſhire." During the Saxon heptarchy we have no records whatever of this town, but ſoon after the Norman conqueſt it aſſumes ſome hiſtorical conſequence. In Domeſday-book, however, Lancaſter and Cherca-Longcaſtre appear ſimply as two vills, or *Berwic*, among the twenty-two which then compoſed the manor of Halton. At this time there was no church at Loncaſter, but the name Cherca-Longcaſtre, affixed to one of the villages, renders it probable that it had a church during the time of the Saxons, which had probably been deſtroyed during the ravages of the Danes. Lancaſter, it is likely, was granted either by the Conqueror or his ſucceſſor, William Rufus, to Roger de Poitou, for the purpoſe of erecting a caſtle upon its hill. This perſon alſo founded the church of St. Mary, and granted it as a cell to the abbey of Sees, in Normandy. To this monaſtery it continued annexed till the abolition of alien-priories, in the reign of Henry V. when it was given to the Carthuſian abbey of Sion, in Middleſex, and remained attached to that inſtitution till the general diſſolution of monaſtic eſtabliſhments by Henry VIII. The great tower of the caſtle, which is ſtill ſtanding, is an excellent ſpecimen of the maſſive ſtyle of architecture adopted in that age. The walls are of uncommon thickneſs, and the buttreſſes have narrow projections, whilſt the lower windows have ſhort rounded arches, with ſingle ſhaft columns on their ſides. This caſtle was beſieged by Hubert, archbiſhop of Canterbury, in the year 1199, at which time it was held by the brother of king John, in truſt for that monarch when he came to the throne. In the ſeventh year of the reign of the ſame prince, it was in poſſeſſion of Ranulph Blundevil, earl of Cheſter, and in the early years of the reign of Henry III. was held by William de Ferrars, earl of Derby.

Lancaſter, however important it may have been as a military ſtation, owes its chief celebrity to Edward III., who, upon the completion of the fiftieth year of his reign, ſolemnly, and in full parliament, created his third ſon, John of Gaunt, duke of Lancaſter. By the charter granted at this period, the duchy of Lancaſter was conſtituted a ſort of petty kingdom, and all the privileges of royalty conferred upon the duke within the county. During the civil wars between the houſes of York and Lancaſter, this town ſuffered ſo much by its adherence to the Lancaſtrian line, that it was nearly depopulated, and even in the time of Camden was only the reſidence of a few huſbandmen. Charles II. having confirmed its ancient charter with additional privileges, it began again to revive, and has ever ſince been increaſing in trade, extent, and population.

The caſtle, which has ſucceſſively been the ſafeguard, terror, and glory of the town, is now fitted up as the county-gaol, with its neceſſary appendages of a gaoler's houſe, priſoners' rooms, cells, work-ſhops, courts of juſtice, &c. From the appearance of its preſent remains, and the commanding ſituation on which it ſtands, it muſt, doubtleſs, have been a grand and magnificent object in former times. Much as it has ſuffered from the changes it has more recently undergone, its architectural features are ſtill entitled to general admiration. The encircling walls embrace an area of 380 feet from eaſt to weſt, by 350 from north to ſouth. Within this ſpace is a large court-yard, with ſeveral of ſmaller dimenſions, and a number of towers of various ſhapes. The chief entrance is towards the eaſt, and communicates with the town. It is a ſtrongly fortified tower gateway, conſiſting of two ſemi-octangular projections, which are perforated, near the bottom, with apertures for the diſcharge of arrows, and on the ſummit are ſeveral bold machicolations with embraſures, &c. Within this entrance is the large court-yard already mentioned, ſurrounded with towers and fortified walls, and on the oppoſite ſide is a large ſquare keep, the walls of which are of amazing thickneſs, and its apartments of grand dimenſions. One of the rooms is nearly ſixty feet long, by about thirty in width. The floors are arched, and covered with compoſition, forming flat ſurfaces. From the ſummit of this tower, the views are very grand and impreſſive. To the north of the keep are the ſhire-hall and county-courts, with ſeveral apartments and offices connected with them. Theſe have been recently erected at the expence of the gentlemen of the county, and from the deſigns of Mr. Harriſon of Cheſter, an architect, who has diſplayed ſo much claſſical taſte and ſcientific knowledge in the conſtruction of a county-gaol in that city. The finiſhing of theſe works has been from the deſigns of Mr. Joſeph Gandy, of London, an artiſt of eminent talents. The grand jury room here, and ſhire-hall, are peculiarly elegant and novel: the firſt being of circular form, and the ſecond being ſemicircular; but both finiſhed with cluſtered columns, panelling, tracery, &c. partly in imitation of the elegant eccleſiaſtical architecture of the fifteenth century. Over the judges' ſeats are two full-length portraits of the county members, by Mr. Allen; and a full-length of George III. on horſeback, by Northcote. This grand and ſpacious pile of buildings, whether viewed as an ancient baronial fortreſs, as a pictureſque object, or as a ſuite of public ſtructures for the gaol and courts of the county, muſt demand our admiration. An engraved ground plan of this caſtle is publiſhed in a ſmall Hiſtory of Lancaſter, 8vo. 1807. On an eminence near it is the pariſh-church, a ſpacious building, with a lofty tower, which ſerves as a land-mark for veſſels coming up the river. At the eaſt end of the church is a wooden ſcreen moſt elegantly carved. Among the monuments, is one by Roubiliac, for William Stratford, L. L. D. In the church-yard is the ſhaft of a ſtone croſs, with carving, and an inſcription in Runic letters.

The other public edifices of this town, are a town-hall, a chapel of eaſe to the pariſh church, a theatre, an aſſembly-room, a range of ſhambles, a Quakers' meeting-houſe, and chapels to the following claſſes of diſſenters, Preſbyterians, Quakers, Independents, and Methodiſts. An ancient bridge, now in ruins, connected the oppoſite ſhores of the Lune, near St. George's Quay, but the increaſing opulence and population of the town rendered a new and more commodious one neceſſary. This was erected from the extremity of Cable ſtreet to Skerton, at an expence of nearly 12,000*l.* paid by the county. The length of this ſuperb ſtructure is 549 feet; the arches, five in number, are equal and elliptical; the deſign was by Mr. Harriſon. Among other benevolent inſtitutions in this town are ſeveral alms-houſes for men and women, a free-ſchool for the education of 60 boys, and two charity ſchools for 50 boys and 40 girls. The manufactories of the town are inconſiderable, and chiefly conſiſt of cabinet-making, ſpinning of twine, cotton-printing, and weaving of ſail-cloth. Ship-building has been greatly encouraged, and many large veſſels conſtructed, particularly by Mr. Broockbank, who has ſent ſhips, launched at his dock-yard, to London, of 450 tons burthen. Lancaſter trades to America with hard-ware and woollen manufactures; and a conſiderable quantity of candles is exported to the Weſt Indies: 40 or 50 ſhips trade alſo to Norway. It appears from the Cuſtom-houſe entries, that in the year 1799, 52 veſſels cleared out for the Weſt Indies, with cargoes to the value of two millions and half pounds ſterling. The Cuſtom-houſe is a ſmall neat building, with a portico ſupported by four Ionic columns, fifteen feet in height, each a ſingle ſtone. The Town-hall is a large commodious edifice; in the council room is a full-length portrait of lord Nelſon, painted by Mr. Lonſdale, an artiſt of talents, who is a native of this town. He preſented it to the corporation, who have alſo a ſimilar portrait of Mr. Pitt. The borough of Lancaſter originated from a grant, made in the 4th of Richard I. and members were firſt ſent to parliament 23 Edward I. Returns were alſo made at various periods in the two ſucceeding reigns; after which there were none till the reign of Edward VI., when the privilege was reſtored. The corporation is compoſed of a mayor, recorder, 12 aldermen, two bailiffs, 12 capital burgeſſes, 12 common burgeſſes, a town clerk, and two ſerjeants. In the vicinity of the town is an excellent ſalt marſh, adjoining the banks of the Lune: this marſh is paſtured and divided into what are termed *orl graſſes*; that is, a privilege for the inhabitants of turning a horſe or two cows to ſummer on the common. By the late inland navigation, Lancaſter has communication with the rivers Merſey, Ribble, Ouſe, Trent, Derwent, Severn, Humber, Thames, Avon, &c., which navigations extend above 500 miles, into the counties of Lincoln, Nottingham, York, Weſtmoreland, Cheſter, Warwick, Leiceſter, Oxford, Worceſter, &c. About one mile north-eaſt of the town is a grand aqueduct-bridge, which conveys the Lancaſter canal over the river Lune. This ſtupendous fabric was deſigned and ſucceſsfully executed by Mr. John Rennie, civil engineer, who has hereby diſplayed much ſkill and ſcience in this and ſeveral other ſimilar works. The bridge conſiſts of five circular arches, each of 70 feet ſpan, riſing 39 feet above the ſurface of the river. The peculiar difficulties which the architect had to encounter, in the bed of the river, made it neceſſary to have a foundation, a flooring of timber, which alone coſt 15,000*l*. The ſuperſtructure came to double that ſum.

In the return to parliament in the year 1801, Lancaſter is ſtated to contain 1611 houſes, and 9030 inhabitants. Markets are held on Wedneſday and Saturday; and here are three annual fairs.

About three miles ſouth of the town is Aſhton Hall, the ſeat of the duke of Hamilton and Brandon. Two miles further is Thurnham Hall, the ſeat of John Dalton, eſq. In the vicinity of the town are alſo Wyerſide, the ſeat of John Fenton Cawthorne, eſq.; Quernmore Park, the ſeat of Charles Gibſon, eſq.; Graſs-yard Hall, the property of Thomas Edmondſon, eſq.; Halton Hall, the ſeat of W. B. Bradſhaw, eſq.; and Halton Park, the ſeat of Thomas Bateman, eſq.

Five miles north of Lancaſter, is a cavern, called Dunald Mill-hole, of a peculiarly groteſque and aweful appearance, which, probably, from its obſcure ſituation, has been but little noticed by topographers. An Hiſtorical and Deſcriptive Account of the Town of Lancaſter; with four engravings, 8vo. 1807. Beauties of England, vol. ix.

LANCASTER, a populous and wealthy county of America, in the interior part of Pennſylvania, extending S. to the Maryland line. It is about 42 miles ſquare, is divided into 25 townſhips, and contains 566,240 acres of land, and 43,303 inhabitants, including 178 ſlaves. The lands of this county are rich and well cultivated. The hills in the northern parts abound with iron ore; for the manufacture of which two furnaces and eight forges have been erected. Copper and lead, and abundance of limeſtone, have been found here.—Alſo, a county of Virginia, bounded E. by Cheſapeak bay, and S.W. by Rappahannock river. It is about 40 miles long, and 15 broad, and contains 2249 free inhabitants, and 3126 ſlaves. The lands are generally poor.—Alſo, a diſtrict of South Carolina, containing 5012 inhabitants, of whom 1076 are ſlaves.—Alſo, a poſt-town in Gerrard county, Kentucky, 621 miles from Waſhington.—Alſo, a handſome and flouriſhing poſt-town, the capital of Lancaſter county, in Pennſylvania, and the largeſt inland town of the United States. It is pleaſantly ſituated upon the deſcent of a hill, 1½ mile W. of Coneſtoga creek, which falls into Suſquehanna river, nine miles S. by W. of the town. Its trade is already great, and muſt increaſe in proportion to the increaſing population of the ſurrounding country. It contains about 900 houſes, chiefly of brick and ſtone. The legiſlature meet here till a permanent ſeat of government ſhall be eſtabliſhed. The public buildings are, a handſome court-houſe of brick, a market-houſe of the ſame materials, and a ſtrong ſtone gaol. Here are ſix places of worſhip for German Lutherans, German Calviniſts, Preſbyterians, Epiſcopalians, Moravians, and Roman Catholics. The manufactures of this town are carried on by individuals. There are three breweries, and two or three valuable tanneries. Franklin college is eſtabliſhed here for the Germans. Its endowments are the ſame as thoſe of Dickinſon college, at Carliſle. The truſtees conſiſt of Lutherans, Calviniſts, Preſbyterians, and Epiſcopalians, of each an equal number. The principal is a Lutheran, and the vice-preſident a Calviniſt; 58 miles W. by N. from Philadelphia. N. lat. 40° 3'. W. long. 76° 20'.—Alſo, a poſt-town of South Carolina, 36 miles from Camden.—Alſo, a pleaſant poſt-town in Worceſter county, Maſſachuſetts, ſettled in 1645, and incorporated in 1653. It is ſituated on two branches of Naſhua river, which runs into the Merrimack: over theſe branches are nine large bridges, and on their banks the land is excellent. Many perſons of education and fortune have been induced, by the pleaſantneſs of this town, to make it the place of their reſidence. It is famous for its abundant ſupply of good ſlates and of ſtones for tombs and graves, which are articles of exportation. Camberry pond in this town is obſerved to riſe as much as two feet before a ſtorm, and Sandy pond riſes in a dry ſeaſon. It contains 1584 inhabitants.—Alſo, a poſt-town in Grafton county, New Hampſhire, on the E. bank of Connecticut river, about 41 miles above Hanover; incorporated in 1763, and containing, in 1800, 440 inhabitants.—Alſo, a fine town, the capital of Fairfield county, in the ſtate of Ohio, on a branch of the Hockhocking river, about 25 miles N.E. from Chillicothé.—Alſo, a townſhip of Upper Canada, in Glengury county, on the river St. Lawrence, and the loweſt in the province adjoining Lower Canada. Morſe.

LANCAT, a river on the N.E. coaſt of Sumatra, which runs into the Eaſt Indian ſea, N. lat. 4° 5'. E. long. 98° 2'.

LANCAVY, LANCAKUY, or *Pulo Lada*, an iſland in the Eaſt Indian ſea, near the coaſt of Queda; about 16 miles long, and from three to eight broad. N. lat. 6 19'. E. long. 99° 40'.

LANCAYAN, a ſmall iſland in the Eaſt Indian ſea, near the N. coaſt of Borneo. N. lat. 6° 25'. E. long. 118° 9'.

LANCE, LANCEA, a ſpear, an offenſive weapon, borne by the ancient cavaliers, in form of a half pike.

The lance conſiſted of three parts, the ſhaft or handle, the wings, and the dart. Pliny attributes the invention of lances to the Ætolians. But Varro, and Aulus Gellius ſay, the word lance is Spaniſh; whence others conclude the uſe of this weapon was borrowed by the people of Italy from the Spaniards. Diodorus Siculus derives it from the Gauliſh, and Feſtus from the Greek λογχη, which ſignifies the ſame.

The lance, or ſpear, is among the oldeſt weapons recorded in hiſtory, and is nearly coeval with the ſword or bow; it probably originated in a pole or ſtake, ſharpened at one or both ends, afterwards armed with a head of flint, and in proceſs of time, on the diſcovery and uſe of metals, with copper, braſs, and iron. Flint heads for both ſpears and arrows are frequently found in England, Scotland, and Ireland, and ſo are alſo ſpear, javelin, and arrow heads of a metal nearly reſembling braſs. The ſpear, lance, javelin, darts of different kinds, and even the more modern pikes, are all comprehended under one common deſcription of a long ſtaff, rod, or pole, armed with a pointed head of ſtone or metal at one or both ends, conſtructed for the purpoſe of piercing, or wounding with their points only, either by being puſhed or thrown with the hand. Long ſpears and lances were uſed by the Saxons and Normans, both horſe and foot, but particularly by the cavalry of the latter, who, in charging, reſted the butt end of the lance againſt the arçon or bow of their ſaddle; the mail-armour not admitting of the fixture of lance-reſts, as was afterwards practiſed on the cuiraſs. A lance-reſt was a kind of moveable iron bracket, fixed to the right ſide of the cuiraſs, for the purpoſe of ſupporting the lance. It does not appear that there was any eſtabliſhed ſtandard for the length or thickneſs of the ancient lances, or the ſize or form of their heads; but it rather ſeems, that every military man had his lance, as well as his other arms, conſtructed of the dimenſions that beſt accorded with his ſtrength and ſtature. It is certain, however, that the heads of lances and ſpears were always made of the beſt tempered ſteel, and their ſtaves of the ſoundeſt aſh, whence the writers of Latin verſe uſed the word *fraxinus* (Latin for aſh) to expreſs a lance or ſpear. Although lances and ſpears were chiefly the weapons of horſemen, they were alſo uſed by the infantry and diſmounted knights, to keep off the cavalry; for this purpoſe they fixed the butts in the ground, their points ſloping towards the breaſts of the enemy's horſes. In tournaments, the knights ſometimes fought on foot with their lances, in which caſe it was cuſtomary to ſhorten them, by cutting off part of the ſtaff. Tilting lances differed from thoſe uſed in war, both in their heads and ſtaves; the heads of tilting being blunt, or occaſionally fitted with a contrivance to prevent penetration, called a coronel or cronel, from its reſemblance to a crown. The ſtaves were thick at the butt end, tapering off gradually to the point, and generally fluted; near the butt end they had a cavity for the reception of the hand. The front of it was defended by an iron-plate, called a vam-plat, that is, an avant-plate, and behind it was a broad iron ring, called a burr. Theſe handles were not confined to the tilting lance, but were made alſo on thoſe deſigned for war. Fauchet ſays, they were not in uſe before the year 1300. Lances were ornamented with a banderole near the point, which gave them a handſome appearance; theſe were alſo called pencells. Groſe on Ancient Armour, vol. ii.

Lance, *Holy*, the lance which, in legendary ſtory, is ſaid to have pierced the ſide of our Redeemer. In the time of the Cruſades, when Antioch was beſieged, a prieſt of the dioceſe of Marſeilles, called Peter Bartholemy, pretended to have received from St. Andrew, during his ſleep, the following inſtruction. "At Antioch," ſaid the apoſtle, "in the church of my brother St. Peter, near the high altar, is concealed the ſteel-head of the lance that pierced the ſide of our Redeemer. In three days that inſtrument of eternal, and now of temporal ſalvation, will be manifeſted to his diſciples. Search, and ye ſhall find; bear it aloft in battle; and that myſtic weapon ſhall penetrate the ſouls of the miſcreants." This revelation was reſpectfully received by count Raymond, whom his faithful ſubject, in the name of the apoſtle, had choſen for the guardian of the holy lance. After ſome previous ceremonies, the ground was opened at the appointed place; and ſearch was unſucceſsfully made for the lance. After the count and his companions had withdrawn, the artful prieſt deſcended into the pit; and, availing himſelf of darkneſs and ſolitude, contrived to ſecrete and depoſit the head of a Saracen lance; and the firſt gleam of the ſteel was ſaluted with a devout rapture. The holy lance was drawn from its receſs, and expoſed to the veneration of the cruſaders, and we may well imagine that the deſponding troops would again be inflamed with the enthuſiaſm of valour. Preparation was made for a conflict, and it may be ſuppoſed that the potent energy of this relic or trophy, aided by another miraculous deluſion, would enſure victory. In the ſeaſon of danger and triumph, the revelation of Bartholemy of Marſeilles was unanimouſly aſſerted; but as ſoon as the temporary ſervice was accompliſhed, the perſonal dignity and liberal alms which the count of Thoulouſe derived from the cuſtody of the holy lance, provoked the envy, and awakened the reaſon of his rivals. Incredulity, with regard to the truth of the legend, ſucceeded ſuſpicion and examination, and the author was obliged to ſubmit his life and veracity to the judgment of God. A pile of dry faggots, 4 feet high and 14 long, was erected in the midſt of the camp; the flames burnt fiercely to the height of 30 cubits, and a narrow path of 12 inches was left for the perilous trial. The unfortunate prieſt of Marſeilles traverſed the fire with dexterity and ſpeed; but his thighs and belly were ſcorched by the intenſe heat; he expired the next day, proteſting his truth and innocence. Such were the origin, influence, and termination of the legend of the holy lance. Gibbon's Hiſt. vol. xi.

Lance *la Grace*, in *Geography*, a town of Louiſiana; 75 miles S.S.W. of New Madrid. N. lat. 35° 25′. W. long. 90° 27′.

Lance's *Bay*, a bay on the N.W. coaſt of Jamaica. N. lat. 18° 27′. W. long. 78° 14′.

LANCEA Christi, in *Botany*, a name given by ſome authors to the *ophiogloſſum*, or adder's tongue, a ſmall herb found in moiſt places, with a ſingle ſtem of ſeeds.

LANCEARII, in *Middle Age Writers*, ſoldiers whoſe chief weapon was the lance. They were in great eſteem formerly.

LANCEBEARERS, *Iſland of*, or *Iſle des Lanciers*, in *Geography*, a ſmall iſland in the S. Pacific ocean, ſo named by M. Bougainville, in 1768. S. lat. 18° 28′. W. long. 138° 10′.

LANCELLOTTI, Gianpaolo, in *Biography*, an eminent juriſt, was born at Perugia about the year 1510. He was firſt noticed as a teacher of the law at his native place, and was engaged by pope Paul IV. to draw up an inſtitute of canon law, in imitation of Juſtinian's Inſtitutes of civil law. This was publiſhed in 1563, and went very quickly through ſeveral editions. It was annexed to the body of canon law, and ſtill retains its place in the modern editions of that compilation. He was author of other treatiſes on legal ſubjects, and of a life of Bartolus. He died at Perugia in 1591. Moreri.

LANCELOT, Claude, was born at Paris in 1615; at a fit age he was perſuaded to join the devout ſolitaries of the Port-Royal, by whom he was employed in teaching mathematics, and the languages in their ſchools, till government thought proper to ſuppreſs them. He was afterwards appointed tutor to the young princes of Conti, but upon the death of their mother, he took the habit of St. Benedict, in the abbey of St. Cyran. In 1680, he was exiled to Quimperlé, in Lower Brittany, where he continued the ſame aſcetic courſe which he had been uſed to in the ſeminary. He died in 1605. He was author of many excellent works, among which may be noticed "Nouvelle Methode pour apprendre la Langue Latine;" "Nouvelle Methode pour apprendre la Langue Grecque." Theſe have been frequently reprinted, and abridgments have been made of both. His "Grammaire generale et raiſonnée," is ſaid to be a very excellent work, and has been tranſlated into ſeveral languages.

LANCEOLA, in *Botany*, a name given by ſome authors to that ſpecies of plantain called *rib-wort*, or *plantago quinquenervia*, by moſt authors.

LANCEOLATED Leaf. See Leaf.

LANCEROTTA, in *Geography*, one of the Canary iſlands, about 30 miles in length, and eight in its greateſt breadth, containing 8000 inhabitants. It is divided by a ridge of mountains, which afford nothing but paſture for cattle, though the vallies are fruitful, but ſandy and thin in ſoil. A principal article of trade is goat's fleſh, which the inhabitants ſell to the neighbouring iſlands, under the name of Tuſſinetta. In 1730, a volcano broke out in this iſland. Cayas, called alſo Rubicon, and Lancerotta, the principal town, contains about 200 houſes. The iſland has ſeveral havens or roads; and at the N.E. extremity is one, where ſhips may come in from the northward, and lie land-locked from all winds in 10, 15, and 20 fathoms. The E. point of the iſland is in N. lat. 29 8′. W. long. 13° 26′.

LANCET, a well known ſurgical inſtrument, the common form of which is repreſented in the plates of this work. See the Surgical Plates.

Lancet *Arch*, in *Architecture*, the ſame as the pointed arch.

Lancet *Windows*, thoſe with lancet arches; but the term is more generally applied to windows which are long and narrow, than to thoſe which are wide and low.

LANCETI, a name given by the ancient laws of England to a kind of vaſſals, who were obliged to work for the lord one day in a week, from Michaelmas to autumn, either with fork, ſpade, or flail, at the option of the lord.

LANCH is a ſort of long boat belonging to ſhips; it is not built upon ſailing principles, it being flat-bottomed and broader, and is more uſeful for weighing ſmall anchors than the long boat, and watering and carrying the ſhip-ſtores.

Lanch *of a Ship*. See Launch.

LANCHE, in *Geography*, a town of Anterior Pomerania; 11 miles S. of Bergen.

LANCIANO, a town of Naples, in Abruzzo Citra, of which it is the capital; the ſee of an archbiſhop; 84 miles N. of Naples. N. lat. 42° 12′. E. long. 14° 20′.

LANCIEGO, a town of Spain, in the province of Alava; 18 miles S.S.E. of Vittoria.

LANCISI, John-Maria, in *Biography*, a celebrated phyſician, was born at Rome in October 1654. His parents were rather low in rank, but cheriſhed the diſpoſition for learning which he early diſplayed; and having finiſhed his claſſical ſtudies, he went through the courſe of philoſophy in the Roman college, and then commenced the ſtudy of divinity. He had always evinced a great taſte for natural hiſtory, which was ſo ſtrongly awakened during his theological reſearches, that it induced him to abandon the ſtudy, and apply himſelf entirely to that of medicine. He purſued the fundamental branches, anatomy, chemiſtry, and botany with great ardour, as well as the more important object, the obſervation of diſeaſes; and was created doctor in philoſophy and medicine in 1672. In 1675, he was appointed phyſician to the hoſpital of the Holy Ghoſt, in Saſſia, where he purſued his clinical enquiries with great accuracy and acuteneſs: but he quitted this ſituation in 1678, when he was received a member of the college of St. Saviour, in Lauro, where he read with zeal all the beſt authors from Hippocrates downwards. His talents and acquirements were now known and ackowledged, and he was appointed profeſſor of anatomy in the college de la Sapienza, in 1684, and continued his duties as a teacher for thirteen years with great reputation. In 1688, pope Innocent XI. choſe Lanciſi for his phyſician and private chamberlain; and ſome time afterwards gave him a canon's ſtall in the church of St. Lawrence: but on the death of the pope, in 1689, he reſigned it. He was now in high public eſtimation, and when Innocent XII. fell ſick in 1699, Lanciſi was called upon, and was never abſent from him during his whole illneſs. He was elected phyſician to the conclave, and was immediately appointed firſt phyſician and private chancellor to the perſon of the ſucceeding pope Clement XI. He was indefatigable in the diſcharge of all his duties, as well as in the purſuit of his ſtudies, reading and writing at every interval of leiſure, and in his attendance on the learned ſocieties of the time. He died in January, 1720, at the age of 65. He was a man of ſmall ſtature, with a lively countenance, and cheerful diſpoſition; his manners were extremely engaging; and he was poſſeſſed of much knowledge of mankind. His ardour for the advancement of his art was extreme and unceaſing. He collected a library of more than twenty thouſand volumes, which he preſented in his life-time to the hoſpital of the Holy Ghoſt, for the uſe of the public, particularly the young phyſicians and ſurgeons who attended the patients in that hoſpital. This noble benefaction was opened in 1716, in the preſence of the pope, and a great number of cardinals.

Lanciſi left a conſiderable number of works, many of which have been printed, but ſeveral in MS., which he bequeathed to the hoſpital, and which are depoſited in its library. Among his leſſer productions, were a ſynopſis of anatomy; an epiſtle to Fantoni on the ſame ſubject; an epiſtle to Bianchi on the ſecretion of the bile; an eſſay on the atmoſphere and climate of Rome; on phyſiognomy and the ſeat of the ſoul; on the proper method of ſtudying in medicine; on the origin and ſtructure of fungi, in a letter to count Marſigli; and ſome others, in the Latin language; and alſo an addreſs to the academy of Sienna, "Del modo di filoſofar nell' Arte Medica." His more important works are his treatiſe "De ſubitaneis mortibus, Libri duo," Romæ 1707.—"Tabulæ Anatomicæ Clariſſ. viri Bartholomæi Euſtachii, quas à tenebris tandem vindicatas, et ſanctiſſ. Dom. Clementis XI. Pontif. Max. munificentiâ dono acceptas, præfatione notiſque illuſtravit," ibid. 1714, folio.—"Diſſertatio Hiſtorica de Bovillâ Peſte ex Campiniæ finibus, anno 1713, Latio importatâ. Accedit Conſilium de Equorum Epidemiâ," ibid. 1715.—"De noxiis Paludum Effluviis, Libri duo," ibid. 1717.—He likewiſe edited, in the ſame year, under the patronage of the pope, a poſthumous work of Michael Mercati, entitled Metallotheca, with plates; and afterwards publiſhed, "Appendix ad Metallothecam Vaticanam Michaëlis Mercati," 1719. After his death, a treatiſe, "De motu cordis et aneuryſmatibus," was printed in folio at Rome, 1728:—and a collection of caſes from his

MSS. in the library of the hoſpital, entitled "Conſilia XLIX poſthuma," Venice, 1747. All his works, with the exception of the two laſt, were collected in his life-time, and printed at Geneva, with the title of "Joannis Maria Lanciſi Opera quæ hactenus prodierunt omnia, Diſſertationibus nonnullis adhucdum ineditis locupletata," 1718; which, as well as moſt of the ſeparate treatiſes, have paſſed through ſeveral editions. Eloy. Dict. Hiſt.

LANCISIA, in *Botany*, ſo named by Pontedera, in honour of John Maria Lanciſi, phyſician to pope Clement XI. Ponted. Diſſ. 203. Lamarck. Illuſtr. t. 701. See Lidbeckia.

LANCKAW, in *Geography*, a town of Pruſſia, in the palatinate of Culm; 10 miles E.N.E. of Thorn.

LANCKE, a town of Pruſſia, in Pomerelia, on the borders of Pomerania; 32 miles N.N.W. of Fredeland.

LANCPOU, a lake of Thibet, about 30 miles long and nine wide. N. lat. 32° 36′. E. long. 84° 32′.—Alſo, a mountain of Thibet. N. lat. 32° 55′. E. long. 84° 34′.

LANCTAN, a mountain of Thibet. N. lat. 31° 52′. E. long. 85° 54′.

LAND, in a general ſenſe. See Earth, Soil, &c.

Dr. Davenant, from a ſcheme of Mr. King, ſtates the quantity of land in England and Wales to be thirty-nine millions of acres; which, reckoning the number of inhabitants, as he does, to be 5,500,000, will at an average be 7¼ acres per head. Davenant's Works, vol. vi. § 3. See Acre, and Expectation *of Life*.

Land, in a legal ſenſe, includes not only the face of the earth, but every thing under or over it; ſo that if a man grants all his lands, he grants thereby all his mines of metal and other foſſils, his woods, his waters, and his houſes, as well as his fields and meadows.

Land, in *Agriculture*, the earth or ſoil in which plants fix themſelves and grow, or which produces crops of different kinds.

It is ſtated in an able work on the landed property of England, that "land, viewed in the light of agriculture, is the foundation on which it reſts, the materials on which it operates, and the viſible ſource of its productions. And that it may generally be conſidered as being compoſed of three diſtinct parts; the ſoil, the ſub-ſoil, and the baſe, or ſubſtructure, on which they reſt." It is added, that "the ſoil, or plant-feeding ſtratum, is not more various in quality than it is in depth. The ſoils of cultivated lands, however, have their limits as to depth. Theſe limits may, it is conceived, be fixed at three and fifteen inches. For although, in many inſtances, the component parts of land are pretty uniform, to a greater depth than fifteen inches, a uniformity of colour and vegetative quality ſeldom reaches to that depth. The influence of the atmoſphere, the fibres of vegetables living and decayed, the operations of animalculæ, and larger animals, that inhabit ſoils, and, above all, the powerful effects of manures, tend to furniſh the ſurface mould with qualities which the ſubſtrata have not the means of acquiring. The medium depth of cultivated ſoils, in England, may, it is imagined, be ſet down, with ſufficient accuracy for this purpoſe, at nine inches. For although a majority of the cultivated ſoils of the kingdom may not reach that depth, the writer is of opinion that the major part of them might, under proper management, be ſunk to nine inches deep, with advantage in many reſpects." See Soil.

And it is further ſtated, that "the ſubſoil, or intervening ſtratum of land, is ſtill leſs definite with regard to depth. In ſome inſtances, as where the cultivated ſoil reſts upon rock, it may be ſaid to be wanting; though, in moſt caſes of this kind, a ſtratum of a gravelly nature, compoſed of broken rock and earth, is found between them. And in many caſes, a regular bed of gravel, ſand, or other earth, intervenes between the ſoil and the ſubſtructure. While in others, an uniform maſs of earthy materials reaches to a great depth. If, therefore, a definite thickneſs, or depth, may be aſſigned to the ſubſoil, it muſt be, in a degree, arbitrary," or without any degree of accuracy or correctneſs.

It ſeems evident, that "the ſoil affords nouriſhment and ſtability to agricultural plants, and that the ſubſoil aſſigns them temperature, with reſpect to moiſture and internal warmth. If the ſubſoil is of ſuch a nature, or is ſo ſituated as to receive and retain more moiſture than is requiſite for the natural growth of plants, their health is injured. If it not only holds water in its own pores, but freely communicates it to thoſe of the ſoil, the more valuable plants in agriculture give place to ranker herbage, let the ſurface ſoil be what it may. On the contrary, if an open ſtratum of ſufficient depth intervenes between the cultivated ſoil and the baſe, to permit the ſuperfluous moiſture which filters through the ſoil, or which is communicated ſubterraneouſly, to paſs off, the plants in cultivation will be relieved from collected moiſture, in the immediate region of their feeding fibres; though the ſubſtructure may be charged to the fill with water. Hence, where nature has not furniſhed land with this valuable interſtratum, it is the buſineſs of art to remedy the defect," in ſome way or other, and which in general "is to be done by draining off the ſuperfluous moiſture to a ſufficient depth to prevent its evil effects on the ſoil, and thereby ſupplying the required ſtratum." It is however well obſerved, that "in doing this, the artiſt muſt be led by the given properties of the baſe, and can ſeldom lower it to any determinate or arbitrary depth. Nevertheleſs, it will be right, before he proceeds further, to endeavour to form an adequate idea of the medium depth required;" in doing which, much, he ſays, depends on the ſpecific quality of the ſubſoil. Sand will hold up water that is lodged at its baſe to a much greater height than gravel. A ſtratum of gravel of one foot in depth forms a drier ſubſoil, than a bed of ſand of twice or three times that thickneſs. But clean ſand or gravel is rarely found in land; ſand and gravelly loams being the more ordinary materials of abſorbent ſubſoils: and theſe are capable of raiſing and holding up water to a conſiderable height. "Let us, therefore, admit that effective ſubſoils may vary from one to two feet, and fix the medium depth at eighteen inches." And "by thus fixing the mean depth of ſoils at nine inches, and that of ſubſoils at eighteen inches, place the baſe or ſubſtructure of the land at twenty-ſeven inches beneath its ſurface; which is a depth of land that is equally conformable with theory and with practice. To this depth drains may be ſunk, at a moderate expence: and covered ſtone drains of this depth may be rendered effectual, yet free from injury by the operations of tillage. In the practice of ſkilful workmen, the depth of ordinary ſubſoil-drains varies from eighteen inches to three feet, according to the circumſtances of the given caſe, and the method of draining employed."

After this general view of the component parts of land, and of their due arrangement, the common varieties of it, as they are given by ſoil, ſubſoil, and baſe, may be enumerated and conſidered. In the execution of which it may be proper to divide lands into claſſes, and mark the varieties of each.

Firſt Claſs.—This comprehends, according to the above writer, ſuch lands as are liable to ſurface water only with their abſorbent ſtrata (if any) open, ſo as freely to diſcharge the ſuperfluous water they receive upon them: the varieties of which are firſt, where “the ſoil, the ſubſoil, and the baſe are repellent, or in a ſtate of moiſtneſs, impenetrable by water, as clay and ſtrong deep clayey loam.” The ſecond, where “the ſoil is repellent, the ſubſoil abſorbent, the baſe repellent.” The third, where “the ſoil is repellent, the ſubſoil and baſe abſorbent, or in a ſtate of moiſtneſs, conducting water; as ſand, gravel, open rock, and the lighter more open loams.” The fourth, where “the ſoil, the ſubſoil, and the baſe are abſorbent.” The fifth, where “the ſoil and the ſubſoil are abſorbent, but the baſe repellent.” And the ſixth, where “the ſoil is abſorbent, the ſubſoil repellent, and the baſe abſorbent or repellent.”

2d Claſs.—This includes ſuch lands as are liable to ſurface-water only, with their abſorbent ſtrata cloſed, or permitting an imperfect diſcharge, either for want of ſufficient deſcent, or by reaſon of impervious ſtrata, or beds of impenetrable materials. The varieties of which are, firſt, where “the ſoil is repellent, the ſub-ſoil abſorbent, and the baſe repellent or abſorbent.” The ſecond, where “the ſoil and the ſub-ſoil are abſorbent, but the baſe repellent, or abſorbent.” The third, where “the abſorbent and repellent ſtrata, or maſſes, are thrown together irregularly; or not diſpoſed in regular ſtrata, which correſpond with the ſurface,” or upper part.

3d Claſs.—This compriſes ſuch lands as are liable, not only to ſurface-waters, but to thoſe which are ſubterrene, and which either deſcend from higher grounds in their reſpective neighbourhoods, or riſe beneath them from ſubjacent reſervoirs; the abſorbent ſtrata of this claſs being cloſed, and thereby rendered retentive, as in the ſecond claſs, or kind of land. The varieties of which are, firſt, where “the ſoil is abſorbent or repellent; the ſub-ſtrata abſorbent and cloſed, and uniformly charged with deſcending waters, by an even ſtratum of gravel, free-ſand,” or ſome other ſimilar material. The ſecond, where “the ſame ſoil and ſub-ſtrata are partially charged with deſcending waters, through veins of ſand or gravel, or fiſſures of rock, &c.” The third, where “the ſoil is repellent or abſorbent, the ſub-ſoil abſorbent and cloſed, and uniformly charged with deſcending waters; the baſe repellent, with a ſub-baſe freely abſorbent and open.” The fourth, where “the ſoil is abſorbent or repellent, the ſub-ſtrata uniformly abſorbent and cloſed, and charged with riſing waters.” And the fifth, where “the ſoil is repellent or abſorbent, the ſub-ſtrata complex and cloſed, and charged with riſing and deſcending waters.”

It may be obſerved, that the nature of theſe different kinds, or claſſes of lands and their varieties, with that of their different conſtructions, the effects to which they are each particularly expoſed from a ſuperabundance of water, the methods of removing ſuch wetneſs, both with the view of ameliorating the lands for the purpoſes of cultivation, and that of providing ſupplies of water for economical uſes, as the working of light machinery, the conſumption of paſturing-ſtock, and in particular caſes, where a ſufficient quantity can be procured, for the watering of land, will be fully conſidered in their proper places; and many uſeful obſervations may be found in the work here alluded to, eſpecially in what relates to draining. The two objects of applying water to the uſe of live-ſtock, and that of irrigation, ſhould conſtantly be kept in the mind of the improver of the ſoil. See SOIL, WATERING *of Land*, and DRAINING *of Land*.

It is ſufficiently evident, from various circumſtances in the management of lands, that ſome ſorts are much better calculated for the production of grain crops than thoſe of the graſs kind; while, on the contrary, others are much more ſuitable and better adapted to the raiſing of graſs than thoſe of the corn kind; and that there are ſtill others that may be cultivated under a convertible ſyſtem of corn and graſs, with more ſucceſs than either of the methods ſeparately.

It may be remarked, that all thoſe lands which poſſeſs a ſufficient degree of dryneſs, whether they have much depth of mould or not, and which, in their natural ſtate, have but little tendency to produce good herbage, ſuch as thoſe covered with different ſorts of coarſe plants and vegetable productions, whether in an open or incloſed ſtate, are proper for tillage. And it has been well obſerved by Mr. Davis, that grounds of this nature are of conſiderably more value when in a ſtate of tillage than in paſture; as they are particularly adapted to the improved methods of cultivation, and in addition to the quantity of grain to be produced from them, will afford a greater quantity of vegetable food for animal ſtock, when in a tillage ſtate, than they did when kept entirely in that of paſture or ſward. The ſame writer likewiſe ſtates, that there are various other deſcriptions of light lands that may be kept in a ſtate of tillage with more advantage than in that of graſs, as they are peculiarly ſuited to thoſe improved modes of cultivation that are neceſſary for raiſing large ſupplies of green-food for the ſupport of live-ſtock of different kinds. That the poorer ſorts of ſand-lands, where marle, clay, chalk, or other ſimilar ſubſtances, can be readily procured, are much more proper for the purpoſes of tillage than thoſe of graſs, is ſufficiently ſhewn by the improvements that have been made in many of the more ſouthern diſtricts of the kingdom. And that lands of the chalky kind, whether of the more ſuperficial or deep deſcriptions, are, in moſt caſes, better ſuited for tillage than graſs, is proved from their wetneſs in the winter ſeaſon, and their openneſs and friability in the ſummer, rendering it almoſt impoſſible to eſtabliſh good herbage upon them. Beſide theſe, there is another ſort of land that is better for the purpoſes of tillage than thoſe of graſs, which is that which, in the ſtate of graſs, is conſtantly ſo diſpoſed to the production of moſs, as to afford but a very ſcanty ſhare of good herbage in any circumſtances.

It has been ſtated by the author of “Practical Agriculture,” that “moſt of the clayey and more heavy deſcriptions of land, eſpecially when ſituated in vallies, or other low confined expoſures, though they may be capable of affording good crops of particular kinds when under the plough, as thoſe of the wheat and bean kind, are, on account of their retention of moiſture, the increaſed expences of labour, and the uncertainty of ſeaſon for tilling them, as well as their inaptitude for moſt other ſorts of crops, and their fitneſs for the production of good herbage, much more beneficial in the ſtate of graſs than in that of tillage. When there is an opportunity of procuring ſea-ſand, and of applying it at an eaſy expence, they may, however, it is obſerved, be converted to the purpoſes of tillage in a profitable manner. Moſt of thoſe ſtrong cold graſs-lands which, in a ſtate of tillage, would be improper for the growth of turnips, and other applications of improved cultivation, ſhould alſo conſtantly remain in a ſtate of graſs. And likewiſe thoſe lands that are ſituated near large towns, where manure is plentiful, and, of courſe, capable of being procured at a reaſonable rate; and where the produce of ſuch lands is always in great demand, and therefore capable of being diſpoſed of to great advantage. Such lands as are ſituated on the banks of large rivers or brooks, which are capable of being improved by means of watering, are likewiſe more beneficial when kept conſtantly under the graſs ſyſtem than any other mode of cultivation that can be practiſed. The lands of a calcareous nature, which are diſtributed in the vallies of the more mountainous diſtricts, where old graſs-land is ſcarce, and of much importance, and moſt part of that in the ſtate of tillage incapable of being converted to the condition of good graſs, may alſo, it is believed, be the moſt advantageous when continued in a permanent ſtate of herbage."

But that "the ſorts of lands that are the moſt adapted to the practice of convertible huſbandry are thoſe of the loamy kinds, which are not too ſtrong for the growth of turnips. Theſe, in all their different varieties, are capable of being changed from the ſtate of tillage to that of graſs, and the contrary, not only without ſuſtaining any injury, but frequently with the moſt evident advantage, as the practice of ſome of the weſtern and midland diſtricts has fully proved." And "the richer kinds of ſandy lands are, in moſt caſes, alſo well ſuited to this ſort of huſbandry; eſpecially where marle is at hand, to be applied at the time of laying them down to graſs. Grounds of the peaty ſort may likewiſe, in many caſes, be the moſt beneficially employed in this mode of culture, as, from their producing little elſe than plants of the aquatic kind, it is obvious that they muſt be completely deſtroyed, and thoſe of the proper graſs kind be introduced, before any uſeful herbage can be produced. And this is capable of being accompliſhed in by much the moſt perfect manner under the ſtate of tillage. But as they are, in moſt inſtances, much too tender and moiſt for the purpoſe of remaining long in the ſtate of tillage, as ſoon as the above intention has been fully effected, they ſhould be reſtored to the ſtate of permanent graſs," either as meadows or paſture-lands. See Ground and Soil.

Land *Carriage*, in *Rural Economy*, that ſort of conveyance which is performed on land, which, in many caſes, is highly inconvenient, and always greatly expenſive and troubleſome to the farmer. It ſhould, of courſe, be leſſened as much as poſſible, in ſituations that will admit of it, by the ſubſtituting of water-conveyance, by the forming of ſmall narrow canals, which may, in many inſtances, be done at a trifling expence, and thus much leſſen the extent or diſtance of land-carriage. Much has been done in this way, with conſiderable effect, within the laſt twenty-five years, in different parts of the country. See Canal and Inland *Navigation*.

Land-*Guard*, a ſort of fence or embankment conſtructed of ſtones, wood, or other materials, on the borders of rivers and brooks, in order to prevent their overflowing and carrying away the land. The caſes in which they become more particularly neceſſary, are where they are confined in the parts where they are required to bend, by rocks or other means, to an unaltered channel; it often takes place in hilly ſituations, and where deep pools occur in ſuch parts at low water, ſo as to render it difficult or impoſſible to provide a good foundation for a pier. The mode of applying and forming theſe ſorts of guards, will be explained in conſidering the nature and manner of guarding river-banks, and confining ſtreams of other kinds. See Embankment, and River-Banks, *Guarding of*.

Land *Mark*, in *Agriculture*, any thing placed as the diviſion of land. Theſe marks were formerly chiefly uſed for ſhewing the different lots or diviſions in common field-lands, and other ſorts of commonable land.

Land-*Reeve*, in *Rural Economy*, a perſon whoſe buſineſs it is to overlook certain parts of a farm or eſtate; to attend, not only to the woods and hedge-timber, but alſo to the ſtate of the fences, gates, buildings, private roads, drift-ways, and water-courſes: and likewiſe to the ſtocking of commons (where there are any), and encroachments of every kind; as well as to prevent, or detect waſte and ſpoil in general, whether by the tenants of the eſtate, or others; and to report the ſame to the manager or land-ſteward. It has been obſerved, that "the utility accruing from theſe inferior officers of an eſtate occurred to the writer in the Highlands of Scotland; where they have been commonly appointed on every eſtate, it is believed, from time immemorial, under the name of ground-officers." And he has "ſince experienced their utility ſo fully in England, as to induce him to recommend their appointment on every large eſtate; not merely as helpmates to the acting-manager, but as authentic evidences in matters of diſpute, and as intelligent informants to a proprietor in going over, or inquiring after, the affairs of his eſtate. Active intelligent tenants, of known integrity, are generally the moſt ſuitable perſons for having the management of this ſort of truſt confided in them."

Land *Springs*, ſuch as riſe, or are produced in lands, at ſome conſiderable depth, from the water being obſtructed in its deſcent by ſome ſort of impenetrable material, ſuch as clay, &c., and thus forced up to the ſurface, where it breaks or oozes out, having different appearances, according to the nature of the ſoil and ſituation in which it occurs. See Spring, and Draining *of Land*.

Land *Steward*, the common name of a perſon who overlooks, or has the management of a farm or eſtate. The number, deſcription, and qualities of land ſtewards muſt be regulated according to the nature and extent of the property, and the particular circumſtances of the proprietor. In order to be fully qualified, according to the author of "The Modern Land Steward," for the proper management of large eſtates, the ſtewards ſhould have attained that thorough and correct knowledge of the buſineſs of life, that full-tried experience in men and things, which ought not to be expected earlier than the middle age. No material part of their time or attention ſhould be engroſſed by their own private concerns, as, in ſuch caſes, they muſt evidently neglect their own, or the buſineſs of their employers; and it would be paying human nature too great a compliment to ſuppoſe the former. To an ample ſhare of agricultural knowledge, they ought to have a thorough inſight into the nature of every improvement of which eſtates may be capable, whether upon or beneath the ſurface; or from its local ſituation, whether inland or upon the ſea-coaſt. Their attention ſhould be alſo directed to the uſeful ſciences of political economy and political arithmetic, as there is a ſtrict and happy coincidence between public and private wealth. They ſhould be well verſed in, and qualified to ſuperintend, the culture of waſte lands, the diſpoſal of timber, the eradication or planting of woods, irrigation and warping, drainage, embankment, and the recovery of land from the ſea, the cutting of canals, the laying out and repairing of roads, the conſtruction of bridges, mills, and engines; and be poſſeſſed of a conſiderable ſkill in rural architecture of every kind. Nor is it leſs neceſſary that they thoroughly comprehend the nature of all the various methods in which money buſineſs is tranſacted; together with the advantage of bargaining in the purchaſe or ſales of eſtates. Their intelligence ought alſo to extend to the valuable inventions and improvements of other countries, as well as thoſe of their own; which, whether in the mechanic or agricultural relation, they ſhould uſe their beſt means to introduce, and fairly experiment upon the eſtates under their care, with the honourable and patriotic views both of private and national benefit. In ſhort, with ſufficient honeſty, a mind amply repleniſhed, a cool, deliberate, and calculating head, a quick diſcernment, they ſhould lay hold of every occaſion, as it ſprings, to enhance the worth, the reputation, and the embelliſhment of the property committed to their charge.

For theſe qualifications and endowments they ſhould have full and adequate allowances, in the way of ſalaries or wages, according to the ſervice to be performed. Their practical ſkill in agriculture ſhould particularly extend to the management of cattle, and the common outlines, at leaſt, of rural architecture, as far as regards repairs, or ordinary new erections; and they ſhould be thoroughly maſters of common accounts, and able to deſcribe or correſpond by letter intelligibly, and with propriety. When thus qualified, they may make very capable and reſpectable ſtewards ; but they would not be the leſs eligible for a ſufficient portion of mathematical and mechanical knowledge, and the practical habits of menſuration both of timber and land : though a defect of theſe branches of ſcience ought not to operate to the rejection of thoſe otherwiſe well qualified ; ſince they are acquired by a very moderate application and practice ; and ſince there are always at hand profeſſional men in theſe ſciences, whoſe ſervices are perhaps, after all, the moſt eligible and proper. Land ſtewards ſhould have the care and management of every thing that relates to the farm or eſtate, of which they have the ſuperintendence. It is alſo further adviſed, that " every eſtate ſhould be accurately ſurveyed, and correctly deſcribed in a map, of which the tenant alſo ſhould have one. It is ſuppoſed particularly neceſſary, both to ſteward and tenant, to keep an exact terrier of all common field-lands ; and where the bounds and abutments of any ſingle parcel of land are dubious, to have them defined and aſcertained with durable land-marks, by a jury purpoſely impannelled at the manor-court : and in order to preſerve the bounds and precincts of a pariſh, with the particular property of the lord, entire, and free from encroachment, and to preclude the neceſſity of quarrels and ſuits at law, it is good to keep the ancient cuſtom of annual perambulation." And it is conſidered as " the duty of ſtewards to ride over, and make actual perſonal ſurveys of the eſtates in their truſt, ſufficiently often to offer timely advice, to obviate any dangers, and nip any irregularities or encroachments in the bud : to have in their poſſeſſion duplicates of all leaſes, covenants, deeds, &c." And that, " where the caſe of default or danger does not admit of immediate remedy through their own means," to exonerate themſelves by inſtant application to their employers.

And it is likewiſe their buſineſs " to inſpect all repairs, that they be duly and ſubſtantially performed ; fencing regularly kept up, according to covenant ; ditches caſt and ſcoured, water-courſes free, and common rights fairly enjoyed, according to the cuſtom of the manor ; the larger tenants not overſtocking, to the prejudice of the inferior : in which caſe, the ſtewards are bound to interfere.—To obſerve that the cutting of underwood be at the regular, cuſtomary, or covenanted periods ; that the lopping of pollards be fair, and no damage done, in any wiſe, to the proprietor's timber or woods ; to mark the ſpots where new plantations may be neceſſary or adviſable ; woodwards to be admoniſhed of their duty,—that they report all perſons who treſpaſs, either with their cattle, under colour of cutting up hand-ſticks, faggot-bands, or ſimilar pretences." And " to diſcourage poaching and deſtruction of the game, rather by rational and moderate indulgences, than either by the threat or exertion of the exceſſive rigour of the law, which, according to the complexion of the preſent times, can have no other poſſible effect than to detract from the popular character of the proprietor, and from the ſafety of that which ſuch meaſures are intended to enſure." Further : " to caution the tenants that they do not ſuffer the land to be overrun and rooted up by moles, or the commons or woodlands by unrung ſwine." And that " the ſtricteſt caution be obſerved, that all materials produced by the farm or eſtate, in any reſpect fit for manure, or other uſeful purpoſe, ſuch as marle, lime-ſtone, coal, or kelp-aſhes, weeds, ſhells, ſand, clay, virgin-earth, &c. be diſpoſed of and uſed among the tenants of the eſtate only, and by no means alienated from it ; ſince ſuch practice would be to rob the ſoil of a natural and moſt valuable mean of improvement."

It is, on the whole, concluded, that " there is great convenience in land ſtewards being ſurveyors of the highways for the pariſhes in which they reſide ; in which caſe, it lies in their own power to preſerve them in a condition creditable to the county and the proprietors for whom they act. Nor ought they ever to be inattentive to the conduct of the ſurveyors of other pariſhes, in which they are concerned ; never permitting the leaſt neglect, nuiſance, decayed bridge, or dangerous way ; but occaſionally, and according to the neceſſity of the caſe, making a few examples in a genteel and temperate, but firm tone, always pleading for their punctiliouſneſs, the ſtrict and peremptory orders of their employers, which they dare not diſobey." And " the like ſtrictneſs is, it is ſuppoſed, neceſſary with reſpect to treſpaſſes from neighbouring cattle ; for ſome farmers are ſo exceſſively dilatory in this reſpect, that they will take no kind of pains either for the ſecurity of their own or their neighbour's crops."

It is remarked by the writer of the work on " Landed Property," that on a large eſtate a reſident manager is generally found,—" a land ſteward, a man who has ſome knowledge of what is termed country buſineſs, and who acts under the controul of his employer, or of a confidential friend who is more converſant in rural concerns, or perhaps of a law-agent who knows leſs of them :" and that ſuch reſiding ſteward, eſpecially of a detached eſtate, which lies at ſome diſtance from the reſidence of its proprietor, acts without controul. In this caſe, if he is a man of judgment and integrity, he becomes, at leaſt in the eyes of the tenantry, a ſuperior being ; frequently, in their minds, a more exalted character than their landlord,—than the proprietor himſelf, who, perhaps, never deigned to glance his eye upon them or their lands." But that, " on the contrary, if ſuch poſſeſſory manager wants thoſe requiſite qualifications, the conſequence becomes miſchievous to the lands, their occupiers, their proprietor, and the community. If this unprincipled agent has an intereſt in the derangement of the eſtate, and the ruin which will follow, and is ſuffered to make uſe of it,—the crime of neglect, on the part of the proprietor, might well be cognizable as a crime againſt the public." And further, that " ſimilar evils are liable to befal an eſtate which lies round the reſidence of its proprietor, if he is equally inattentive" to its proper management and regulation.

Agriculture is conſidered as the only firm foundation on which the other acquired attainments can be ſecurely repoſed. It is not more eſſentially valuable in the ſuperintendence, than in the improvement of an eſtate. " It is difficult to become an accurate judge of the value of lands, without a practical knowledge of their uſes : nor can any man, without it, properly appreciate the management of occupiers ; much leſs aſſiſt them in correcting their errors, and improving their practice." And that " land ſurveying is another requiſite qualification : not ſo much, however, for the purpoſe of mapping and meaſuring an eſtate at large, as for checking and correcting the works of profeſſional men ; as well as to aſſiſt in laying out its lands to the moſt advantage," and with the greateſt propriety. Further : that " ſome knowledge of mechanics, and the other ſciences that are requiſite to the buſineſs of an engineer, may be highly uſeful in proſecuting the improvements incidental to landed property, in various ways ; as well as a competent knowledge of rural architecture, and the ſuperintendence of artificers, as they may be ſaid to be of daily uſe. The nature of planting, and the management of woodlands, are acquirements that cannot be diſpenſed with. Nor ſhould his knowledge and attention be confined to the ſurface of the eſtate entruſted to his care; he ought to have ſome acquaintance with natural hiſtory, to enable him to ſearch with due effect for the ſubterrene productions which it may contain."

But that, beſides theſe qualifications of buſineſs, there is another important quality, which a reſident manager or land ſteward ought to poſſeſs; which is, as before ſuggeſted, that he ſhould be a man of good character, of upright principles, and conciliatory manners; to ſet an example of good conduct to the tenants, and to become their common counſellor and peace-maker in thoſe trifling diſputes, which never fail to ariſe among the occupiers of adjoining lands, and which too often bring on ſerious quarrels and law-ſuits, that end in the ruin not only of themſelves, but of the tenements they occupy. A proprietor has, therefore, it is conceived, an intereſt in checking ſuch diſputes in the bud: and no man can do this with ſo much effect as a ſteward or manager, in whom they have a proper confidence, and who poſſeſſes a due ſhare of popularity on the eſtate or farm over which he preſides.

And on large eſtates, eſpecially where they lie in detached and ſcattered parts, it is conſidered neceſſary to have other aſſiſtants, as a woodward, land-reeve or ground officer, a clerk or under-ſteward, a law aſſiſtant or ſolicitor, and a ſurveyor. As the under-ſteward, a tenant's ſon who has been properly educated, and is fully acquainted with farming, is the moſt ſuitable and proper perſon that can be found for the buſineſs. See BAILIFF.

LAND *Surveyor*, in *Agriculture*, the common name of one whoſe buſineſs is the planning and ſurveying of lands or eſtates.

It is remarked by Mr. Marſhall, that land ſurveyors are not only uſeful, merely to meaſure and map the whole or parts of eſtates, but to aſſiſt in matters of arbitration, and the amicable adjuſtment or ſettlement of diſputes; as well as to act as valuers or referees, all which are highly uſeful in the management of landed property in different caſes. See SURVEYING *of Land*.

LAND, *Burning of*, is a very great improvement of it, particularly of ſour, heathy, and ruſhy land, be it either hot or cold, wet or dry; ſo that ſuch lands will, in two or three years after burning, yield more, excluſive of the charges, than the inheritance was worth before; but this is not to be practiſed on rich fertile land; for as the fire deſtroys the acid juice, which occaſions ſterility in the poor land, ſo it will in like manner conſume the good juices of the richer land, and thereby impoveriſh it, ſo that it hath been with great reaſon diſuſed in deep rich countries.

It is alſo a very great improvement, where land is overgrown with broom, furze, &c. to ſtub them up by the roots; and when they are dry, lay them on heaps, and cover them with the parings of the earth, and burn them, and ſpread the aſhes over the ground. By this method vaſt tracts of land, which at preſent produce little or nothing to their owners, might be made good at a ſmall expence, ſo as to become good eſtates to the proprietors. Miller. See BURNING, DENSHIRING *of land*, and PARING.

LAND, *Draining of*. The draining of land is alſo another great improvement to it; for though meadows and paſtures, which are capable of being overflowed, produce a greater quantity of herbage than dry land, yet where the wet lies too long upon the ground, the graſs will be ſour and extremely coarſe; and when there is not care taken in time to drain this land, it will produce little graſs, and ſoon be over-run with ruſhes and flags, ſo as to be of ſmall value.

The beſt method for draining of theſe lands is, to cut ſeveral drains acroſs the land, in thoſe places where the water is ſubject to lodge; and from theſe croſs drains to make a convenient number of other drains, to carry off the water to either ponds or rivers in the lower parts of the lands. Theſe drains need not be made very large, unleſs the ground be very low, and ſo ſituated as not to be near any river to which the water may be conveyed; in which caſe there ſhould be large ditches dug at proper diſtances in the loweſt part of the ground, to contain the water, and the earth which comes out of the ditches ſhould be equally ſpread on the land, to raiſe the ſurface. But where the water can be conveniently carried off, the beſt method is to make under-ground drains at proper diſtances, which may empty themſelves into large ditches, which are deſigned to carry off the water. This ſort of drains is the moſt convenient, and as they are hid from the ſight, do not incommode the land; nor is there any ground loſt where theſe are made.

The uſual method of making theſe drains is to dig trenches, and fill the bottoms with ſtone, bricks, ruſhes, or buſhes, which are covered over with the earth which was dug out of the trenches; but this is not the beſt method, becauſe the water has not a free paſſage through theſe drains; ſo that whenever there is a flood, they are often ſtopped by the ſoil which the water frequently brings down with it. The beſt method yet found to make theſe drains is to dig trenches to a proper depth for carrying off the water, which, for the principal drains, ſhould be three feet wide at their top, and ſloped down for two feet in depth, where there ſhould be a ſmall bank left on each ſide, upon which the croſs ſtakes or bearers ſhould be laid, and below theſe banks there ſhould be an open drain left, at leaſt one foot deep, and nine or ten inches wide, that there may be room for the water to paſs through; the larger drains ſhould be at convenient diſtances, and ſmaller drains of about ſix or ſeven inches wide, and the hollow under the buſhes eight or nine inches deep, ſhould be cut acroſs the ground, which ſhould diſcharge the water into theſe larger drains. The number and ſituation of them muſt be in proportion to the wetneſs of the land; and the depth of earth above the buſhes muſt alſo be proportioned to the intended uſe of the land; for if it is arable land to be ploughed, it muſt not be ſhallower than a foot or fourteen inches, that there may be ſufficient depth for the plough, without diſturbing the buſhes, but for paſture land nine inches will be full enough; for when the buſhes lie too deep in ſtrong land, they will have little effect, the ground above will bind ſo hard, as to detain the wet on the ſurface. When the drains are dug, there ſhould be prepared a quantity of good bruſh-wood, the larger ſticks ſhould be cut out to lengths of about ſixteen or eighteen inches, which ſhould be laid acroſs upon the two ſide-banks of the drain, at about four inches diſtance; then cover theſe ſticks with the ſmaller bruſh-wood, furze, broom, heath, or any other kind of bruſh, laying it lengthwiſe pretty cloſe; on the top of theſe may be laid ruſhes, flags, &c. and then the earth laid on to cover the whole. This ſort of drains will continue good for a great number of years, and are never liable to the inconveniences of the other; for the water will find an eaſy paſſage through them under the buſhes; and where there is plenty of bruſh-wood, they are made at an eaſy expence; but in places where wood is ſcarce, it would be chargeable to make them: however, in this caſe, it would be a great advantage to theſe lands to plant a ſufficient number of cuttings of willow, or the black poplar, on ſome of the moiſt places, which would furniſh bruſh-wood for theſe purpoſes in four or five years; and as the expence of planting theſe cuttings is trifling, there cannot be a greater advantage to an eſtate which wants draining, than to practiſe this method, which is in every perſon's power, ſince there is little expence attending it.

In countries where there is plenty of ſtone, that is the beſt material for making theſe under-ground drains; for when theſe are properly made, they will never want repairing.

The beſt time of the year for making theſe drains is about Michaelmas, before the heavy rains of autumn fall, becauſe at this ſeaſon the land is uſually dry, ſo that the drains may be dug to a proper depth; for when the ground is wet, it will be very difficult to dig to any depth, becauſe the water will drain in, wherever there is an opening in the ground. Miller. See Bog, Draining, and Fen.

By 11 Geo. II. cap. 34, 14 Geo. II. cap. 24, and 21 Geo. II. cap. 18, the ſecond offence in ſetting fire to engines for draining the ſeveral fens, to which theſe acts relate, is made felony without clergy. By 22 Geo. II. cap. 11. 16. 19; 29 Geo. II. cap. 22; 30 Geo. II. cap. 32, 33. 35, 36; 31 Geo. II. cap. 18, 19; 32 Geo. II. cap. 13; 33 Geo. II. cap. 32, offenders maliciouſly ſetting fire to any of the works for draining the ſeveral fens to which theſe acts relate, may be tranſported for ſeven years.

Land, *Flooding of.* As the draining of cold wet lands is a great improvement to them, ſo the floating or watering of dry looſe lands is not a leſs advantage to them. This may be eaſily effected where there are rivers, or reſervoirs of water, which are ſituated above the level of the ground deſigned to be floated, by under-ground drains made after the manner of thoſe before directed for draining of land, through which the water may be conveyed at proper ſeaſons, and let out on the ground: in order to this, there muſt be good ſluices made at the heads of the drains, ſo that the water may never get out, but at ſuch times as is required; for if this be not taken care of, the water, inſtead of improving the land, will greatly damage it.

The time for drowning of land is uſually from November to the end of April; but though this is the general practice, yet Miller ſays he cannot approve of it for many reaſons. The firſt is, that by the wet lying continually on the ground in winter, the roots of the finer ſort of graſs are rotted and deſtroyed; and by letting on of the water, at the ſeaſon when the ſeeds of docks, and other bad weeds, which commonly grow by river ſides, are falling, theſe ſeeds are carried upon the land, where they remain and grow, and fill the ground with bad weeds, which is commonly the caſe with moſt of the water-meadows in England, the graſs in general being deſtroyed; ſo that ruſhes, docks, and other trumpery, make up the burden of theſe lands; but if theſe meadows were judiciouſly managed, and never floated till March or April, the quantity of ſweet good graſs would be thereby greatly increaſed, and the beautiful verdure of the meadows preſerved. Miller. See Irrigation and Watering *of Land.*

Land, *Incloſing of.* Incloſing of lands, and dividing the ſame into ſeveral fields for paſture and tillage, is another mode of improvement; firſt, by aſcertaining to every man his juſt property, and thereby preventing an infinity of treſpaſſes and injuries that lands in common are ſubject unto, beſide the diſadvantage of being obliged to keep the ſame ſeaſons with the other people who have land in the ſame field; ſo that the ſowing, fallowing, and tilling the ground, muſt be equally performed by all the landholders; and when there happens a ſlothful negligent perſon, who has land intermixed with others, it is one of the greateſt nuiſances imaginable. Secondly, where land is properly incloſed, and the hedge-rows planted with timber-trees, &c. it preſerves the land warm, and defends and ſhelters it from the violent cold nipping winds, which, in ſevere winters, deſtroy much of the corn, pulſe, or whatever grows on the champaign grounds; and where it is laid down for paſture, it yields much more graſs than the open fields, and the graſs will begin to grow much ſooner in the ſpring. The hedges and trees alſo afford ſhelter for the cattle from the cold winds in winter, and ſhade for them in the great heats of ſummer. Theſe hedges alſo afford the diligent huſbandman plenty of fuel, as alſo plough boot, cart boot, &c. And where they are carefully planted and preſerved, furniſh him with maſt for his ſwine; or where the hedge-rows are planted with fruit trees, there will be a ſupply of fruit for cyder, perry, &c. which in moſt parts of England are of no ſmall advantage to the huſbandman.

By this method of incloſing, there is alſo much more employment for the poor, and it is therefore a good remedy againſt beggary; for in thoſe open countries, where there are great downs, commons, heaths, and waſtes, there is nothing but poverty and idleneſs to be ſeen amongſt the generality of their inhabitants. Miller. See much more on this ſubject under the article Incloſing *of Land.*

It muſt be acknowledged, that incloſures of waſte lands and commons would be uſeful, if they were divided into ſmall parcels, and given up to be occupied at moderate rents by the poor. But if, beſides leſſening the produce of fine wool, they bear hard on the poor, by depriving them of a part of their ſubſiſtence, and only ſerve to increaſe farms already too large, which is commonly the caſe, the advantages attending them may not much exceed the diſadvantages. With reſpect to incloſures of open fields and lands, the advocates for incloſing are ready to own, that theſe diminiſh tillage, increaſe the monopolies of farms, raiſe the prices of proviſions, and produce depopulation. Such incloſures, therefore, however gainful they may be at preſent to a few individuals, are undoubtedly pernicious. It is a known fact, that in Northamptonſhire and Leiceſterſhire, where incloſing has greatly prevailed, moſt of the incloſed lordſhips are converted into paſturage; in conſequence of which, many lordſhips have not now fifty acres ploughed yearly, in which fifteen hundred, or at leaſt a thouſand were ploughed formerly; and ſcarcely an ear of corn is to be ſeen in ſome that bore hundreds of quarters; the effect of which has been, that the price of wheat and malt is nearly doubled, and that the inhabitants in almoſt all the incloſed villages, where they have no conſiderable manufacture, are very ſenſibly diminiſhed; inſomuch, that a hundred houſes and families have in ſome places dwindled into eight or ten; and the landholders, in moſt pariſhes that have been incloſed only fifteen or twenty years, are very few in compariſon of the numbers who occupied them in their open field-ſtate. It is no uncommon thing to ſee four or five wealthy graziers engroſſing a large incloſed lordſhip, which was before in the hands of twenty or thirty farmers, and as many ſmaller tenants or proprietors. All theſe are hereby thrown out of their livings, with their families, and many other families which were employed and ſupported by them. The ſtate of Norfolk is in ſome reſpects ſimilar to this. Incloſures, ſays the celebrated lord Bacon, in his hiſtory of the reign of Henry VII. (ſee his Works, vol. iii. p. 431.) began in 1489 to be more frequent, whereby arable land was turned into paſture, which was eaſily managed by a few herdſmen. This bred a decay of people. In remedying this inconvenience, the king's wiſdom and the parliament's was admirable. Incloſures they would not forbid, and tillage they would not compel; but they took a courſe to take away depopulating incloſures, and depopulating paſturage by conſequence. The ordinance was, that all houſes of huſbandry, with twenty acres of ground to them, ſhould be kept up for ever, together with a competent proportion of land to be occupied with them, and in no wiſe to be ſevered from them. By theſe means, the houſes being kept up, did, of neceſſity, enforce a dweller; and the proportion of land for occupation being alſo kept up, did, of neceſſity, enforce that dweller not to be a beggar. This ſtatute was renewed in king Henry the Eighth's time; and every perſon who converted tillage into paſture ſubjected to a forfeiture of half the land, till the offence was removed. In a law of the 25th of the ſame reign, it is ſet forth, that many farms, and great plenty of cattle, particularly ſheep, had been gathered into few hands, whereby the rents of lands had been increaſed, and tillage very much decayed; churches and towns pulled down; the price of proviſions greatly enhanced, and a marvellous number of people rendered incapable of maintaining themſelves and families; and, therefore, it was enacted, that no perſon ſhould keep above two thouſand ſheep, nor hold more than two farms. In the third of Edw. VI. a bill was brought in for the benefit of the poor, for re-building decayed farm-houſes, and maintaining tillage againſt too much incloſing. In the year 1638, there was a ſpecial commiſſion from Charles I. for enforcing the ſtatute of the 30th of Elizabeth, by which no cottage was allowed in any country place, without at leaſt four acres of land to it, to prevent the increaſe of the poor, by ſecuring to them a maintenance; nor were any inmates allowed in any cottage, to ſecure the full cultivation of the land, by diffuſing the people more over it. And by an act in Cromwell's time, no new houſe was to be built within ten miles of London, unleſs there were four acres of land occupied by the tenant. Thus did the policy of our anceſtors diſcourage incloſing and engroſſing, upon the ſame general view of their depopulating tendency; and though the increaſe of trade and manufactures in more modern times has produced a conſiderable alteration in the ſtate of our country, and may require ſome change in our internal policy, yet it is eaſy to foreſee, becauſe facts juſtify the apprehenſion, that incloſing and engroſſing, to the degree in which they have lately prevailed, will annihilate the ſmall occupiers of land, and reduce the inhabitants of the kingdom to two claſſes, *viz.* gentry and beggars, or grandees and ſlaves. See this ſubject more amply diſcuſſed, and the arguments for and againſt incloſures and large farms, ſtated under Farm, and Inclosing *of Land.*

As in former times the number of the occupiers of land was greater, and all had more opportunities of working for themſelves, it is reaſonable to conclude, that the number of people willing to work for others muſt have been ſmaller, and the price of day-labour higher. The nominal price of day-labour, ſays an author who wrote a few years ago, is at preſent no more than about four times, or at moſt five times, higher than it was in the year 1514. But the price of corn is ſeven times, and of fleſh-meat and raiment about fifteen times higher; therefore the price of labour has been ſo far from advancing in proportion to the increaſe in the expences of living, that it does not appear to bear now half the proportion to theſe expences that it did formerly. What alteration has taken place ſince theſe obſervations were made, we leave others to determine. See on this ſubject Price's Obſervations on Reverſionary Payments, Supplement, p. 388, &c. Appeal to the Public on the Subject of the National Debt, p. 93, &c. See Labour, and Labourers.

For the different kinds of incloſure, ſee Earth-*banks*, Fence, Hedge, and Wall.

Land, *Arable.* See Arable.

Land, *Bog.* See Bog.

Land, *Burning of.* See Burn-*beating*, Burning, Land, *Burning of*, and Paring.

Land, *Catch.* See Catch-*land.*

Land, *Chalk.* See Soil.

Lands, *Champion.* See Champion.

Land, *Charter.* See Charter-*land.*

Land, *Chiſely.* See Chisely.

Land, *Clay.* See Soil.

Lands, *Court.* See Court-*lands.*

Lands, *Fabric.* See Fabric-*lands.*

Land, *Fardel of.* See Fardel.

Land, *Folk.* See Folk-*land.*

Land, *Fore.* See Fore-*land.*

Land, *Glebe.* See Glebe-*land.*

Land, *Gravelly.* See Soil.

Land, *Head.* See Head-*land.*

Land *in peerage, Holding.* See Peerage.

Land, *In.* See In-*land.*

Land, *Incloſing of.* See Land, *Incloſing of*, and Inclosing *of Land.*

Land, *Lay.* See Lay.

Land, *Leaſe of.* See Lease.

Land, *Marſh.* See Marshy *lands.*

Land, *Meadow.* See Meadow.

Lands, *Overflowing of.* See *Flooding of* Land, Irrigation, Overflowing and Watering *of Land.*

Land, *Oxgang of.* See Oxgang.

Land, *Plough.* See Carrucate.

Land, *Rent of.* See Rent.

Land, *Road.* See Road.

Land, *Sandy.* See Soil.

Land-*Teleſcope.* See Telescope.

Lands, *Tenementary.* See Tenementary.

Lands, *Thane.* See Thane-*lands.*

Land, *Up.* See Up-*land.*

Land, *Waſte.* See Waste.

Land, *Watering of.* See Watering *of Land*, Irrigation, &c.

Lands, *Wood.* See Wood-*lands.*

Land, *Yard.* See Yard-*land.*

Land, *Yoak.* See Yoak *of Land.*

Land, *Laying the*, in *Sea Language*, denotes that motion of a ſhip which increaſes its diſtance from the coaſt, ſo as to make it appear lower and ſmaller, a circumſtance ariſing from the intermediate convexity of the ſea. This is uſed in contradiſtinction to *raiſing the land*, which is produced by the oppoſite motion of approach towards it. When a ſhip is got out of ſight of land, they ſay the *land is laid.*

Land, *To make the.* See Make.

Land-*Mark*, at *Sea*, is any mountain, rock, ſteeple, windmill, tree, or the like, near the ſea-ſide, which ſerve to direct ſhips paſſing by how to ſteer, ſo as to avoid certain dangers, be they rocks, ſhoals, whirlpools, &c.

Land, *Setting the*, is obſerving by the compaſs how it bears.

Land, *Shut in.* When another point of land hinders the ſight of that which a ſhip came from, then they ſay the *land is ſhut in.*

Land-*To.* When a ſhip lies ſo far from the ſhore, that ſhe can but juſt ken land, then ſhe is ſaid to lie *land-to.*

Land-*Turn*, is a wind that blows from the ſhore in the night, at certain times, in moſt hot countries.

Land, *Head*, or *Point of land*, in the *Sea Language*, is that which lies farther out into the ſea than the reſt. See Point, Cape, &c.

LANDA, in *Geography*, a kingdom of Borneo, ceded, in 1778, to the Dutch company, together with Succadana,

dana, by the king of Bantam, to whoſe crown they were appendages.

LANDAFF. See Llandaff.

Landaff, a townſhip of America, in Grafton county, New Hampſhire; incorporated in 1774, and containing 461 inhabitants.

LANDAU, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diſtrict of Wiſſembourg, ſituated on the river Queich, which runs into the Rhine; containing four churches; formerly imperial. The place contains 5123, and the canton 15,246 inhabitants, on a territory of 487½ kiliometres, in 18 communes. N. lat. 49° 13′. E. long. 8° 10′.—Alſo, a town of the county of Waldeck; 12 miles N. of Waldeck.—Alſo, a town of Bavaria, on the Iſer; 32 miles W. of Paſſau. N. lat. 48° 36′. E. long. 12° 37′.

LAND-CHEAP, an ancient cuſtomary fine, paid either in cattle or money, upon the alienating or ſelling of land in certain manors, or within the liberty of certain boroughs.

At Malden in Eſſex, a payment is ſtill made of 13*d.* in every mark of the purchaſe-money for lands and houſes ſold in that town; which is called land-cheap.

LANDE, in *Geography*, a town of Norway; 36 miles N. of Chriſtiania.

LANDECK, a town of the duchy of Warſaw; 48 miles N. of Gneſna.—Alſo, a town of the county of Tyrol, on the Inn; 39 miles W.S.W. of Inſpruck.—Alſo, a town of Pruſſian Pomerelia; 64 miles S.W. of Dantzic.—Alſo, a town of Sileſia, in the county of Glatz, on the Biela; 8 miles S.E. of Glatz. N. lat. 50° 15′. E. long. 16° 40′.

LANDED Intereſt, a term oppoſed to monied intereſt, in political conſiderations; though there is a near connection between them: for the landed intereſt is affected by foreign trade. See Monied *Intereſt.*

The foreign trade of every country muſt decline, that, 1. Lays unequal taxes in general on its people. 2. That cramps its commerce, the fountain of riches, by high duties, and impolitic prohibitions. 3. That ſuffers many monopolies. 4. That oppreſſes its people by prohibiting the importation of victuals, under the pretence of raiſing the value of its lands. 5. That encourages idleneſs, by bad laws relating to its poor. 6. That tempts foreigners to carry away its coin for leſs than its intrinſic value. 7. That makes the obtaining juſtice chargeable. 8. That ſuffers a heavy national debt, contracted in time of war, to continue unpaid in time of peace.

The reaſon why the decline of foreign trade ſinks the value of land is, 1. Becauſe it ſinks the markets at home. For, the produce of land being rendered exceſſively dear from the cauſes above enumerated, foreigners will not take its ſuperfluities; and labour being by the ſame cauſes rendered exceſſively dear, we cannot manufacture or improve that produce, becauſe nations which can afford cheaper ſupply the markets abroad; ſo that the produce of the lands, not being carried off as uſual, muſt become a dead ſtock on the farmer's hands, and cauſe great quantities to be crowded into markets, where, being encouragement but for few buyers, the price naturally falls; as, for inſtance, the declining demand of our woollen goods abroad falls the price of wool at home.

2. Becauſe it increaſes the number of poor, to burden the land.

3. Becauſe it diminiſhes the number of people: for, as employment leſſens, the moſt induſtrious, rather than ſtarve here, will fly to other countries, where trade can maintain them. So the conſumption of theſe being taken away, the demand at market muſt grow leſs, and of courſe rents muſt fall, yet the farmer's charges muſt grow greater; for the fewer the hands, the higher wages are: this muſt break him in the end, and produce all the conſequences following that misfortune. Beſides, men who trade bring in money; therefore the fewer they are, the leſs money will be brought; and the leſs money, the leſs rent can be given for land.

4. Becauſe the decline of trade diminiſhes *our riches.* This is a conſequence of the above remarks; for having fewer goods capable of being exported by reaſon of their dear price, and our manufactures declining, muſt in time be loſt: therefore the importation of foreign goods muſt naturally increaſe, and more money go out to pay for them.

Nations that have no mines of gold and ſilver, have no means to get them but by foreign trade; and according to the quantity of theſe metals they poſſeſs, the price of their commodities, and therewith the value of their lands, riſe and fall in proportion, which ſhall now be proved.

According to Dr. Davenant, the whole rental of England, in 1600, did not exceed ſix millions *per annum*, and the price of land was twelve years purchaſe; in 1688, the rental was fourteen millions, and the price of land was eighteen years purchaſe: ſo that, within this period, the landed intereſt roſe from ſeventy-two to two hundred and fifty-two millions; and this advance was owing to an increaſe of trade.

The Britannia Languens, page 12, ſays, if there were but five hundred pounds in England, an ox could hardly be worth a penny; therefore the rent muſt bear its proportion to the riches. This appears by Maitland's Hiſtory of London; for he ſays that, in the year 961, land ſold at one ſhilling *per* acre. The reaſon that land then bore ſo low a price, was the low price the produce ſold at; for he ſays, that, in the year 1000, an ox ſold for 2*s.* 6*d.*, a cow for 2*s*, a ſheep for 1*s.*, and a ſwine for 8*d.* In 1445, wheat was at 4*s.* 6*d. per* quarter; in 1447, at 8*s.*; in 1448, at 6*s.* 8*d.*; in 1449, at 5*s.* A bullock, in 1445, was 5*s.*; a ſheep 2*s.* 5½*d.*; a hog 1*s.* 11½*d.*; clothing for a year, at the ſame period, of a common ſervant of huſbandry, 3*s.* 4*d.*; of a chief carter and ſhepherd, 4*s*; of a bailiff of huſbandry, 5*s.* In 1512, the mean price of wheat in Yorkſhire was 6*s.* 2*d*; the price of malt was 4*s.*, and of oats 2*s.*; ſo that the nominal price of grain at this time was about a ſeventh of its nominal price for the laſt twenty years; reckoning from the time when the author below cited wrote. The price of a fat ox, at the ſame time and in the ſame county, was 13*s.* 4*d.*; of a lean ox, 8*s.*; of a wether, 1*s.* 8*d.*; of a calf, 1*s.* 8*d.*; of a hog, 2*s.*; ſo that the nominal price of meat was no more than about a fifteenth of its preſent price, and bore the ſame proportion to the price of corn that it would now bear, were it at half its preſent price. In an act of parliament of the 25th of Henry VIII. beef, veal, pork, and mutton, are mentioned as the food of the poor, and their price limited to about a halfpenny a pound. Beef and pork in particular were ſold in London at 2½ lb. and 3 lb. for a penny; at the ſame time that wheat was at 7*s.* and 8*s.* a quarter, and bore the ſame proportion to the price of fleſh as it would bear now, were it about 4*l.* a quarter. In 1549, wheat was in London 12*s. per* quarter, malt 10*s.*, barley 9*s.*, rye 6*s* 6*d.*, oats 4*s.*, a middling ox 1*l.* 18*s.*, a wether 3*s.*, butter ¾*d.* and a penny a pound, and cheeſe a halfpenny a pound. See the citations in the Supplement to Price's Obſ. on Reverſionary Payments, &c. p. 385, &c. This could be only owing to the little foreign trade the nation had at theſe reſpective periods, and conſequently, to the little quantity of gold and ſilver which trade had then brought in.

But if it ſhould be aſked, What is the reaſon that, at preſent, all things are naturally ſo much advanced in price, to what they were in thoſe days? the anſwer is, that the quantities of gold and ſilver brought to Europe ſince the progreſs made by the Spaniards and Portugueſe in America, have made thoſe metals more common, and of leſs value than formerly; ſo that 20*s.* will hardly purchaſe what 1*s.* would before the diſcovery of the Weſt Indies. On this ſubject, ſee the article INTEREST. To which may be added, the great increaſe of our national debt and taxes, together with the circulation of the intereſt of the principal money of the public funds; and likewiſe that great circulation of paper credit in trade occaſioned by notes and bills, which, by promoting an artificial circulation of property, raiſe the price of commodities, and give the appearance of wealth to the nation; though they are really the characteriſtics of a declining ſtate. Poſt. Dict. Com.

The dearneſs of commodities and the cheapneſs of money are the ſame things.

LANDEGODE, in *Geography*, a ſmall iſland in the North ſea, near the coaſt of Norway. N. lat. 67° 25′.

LANDEN, JOHN, in *Biography*, a celebrated mathematician, was born at Peakirk, near Peterborough, in Northamptonſhire, in January 1719. He became an early proficient in mathematical ſcience, was a contributor to the Ladies Diary in the year 1744, and was one of the moſt ardent friends to that very uſeful publication. He contributed to this annual work till within a few years of his death. The life of Mr. Landen was far from an eventful one. He paſſed the earlier part of his life, as a farmer, at Walton, near Peterborough, at the ſame time he gave mathematical inſtructions to ſeveral young perſons in the neighbourhood. From Walton, Mr. Landen, in 1762, removed to Milton, the ſeat of earl Fitzwilliam, to undertake the buſineſs of land ſteward to his lordſhip: and in this ſituation he remained till within a year or two of his death. To return to the mathematical labours of our author.—He publiſhed, in the Philoſophical Tranſactions for the year 1754, "An Inveſtigation of ſome Theorems, which ſuggeſt ſeveral very remarkable Properties of the Circle, &c.;" and in the following year he publiſhed a volume, intitled "Mathematical Lucubrations." This title was intended to inform his friends and the public, that the ſtudy of mathematics was at that time rather the purſuit of his leiſure hours, than his principal employment. They contain a variety of tracts relating to the rectification of curve lines, the ſummation of ſeries, the finding of fluents, and many other points in the higher parts of mathematics. From this time to the year 1766 he gave the world ſeveral valuable works; and on the 16th of January of this year, he was elected a fellow of the Royal Society: ſoon after which he inſerted in the Philoſophical Tranſactions, "A Specimen of a new Method of comparing curvilineal Areas;" by means of which, many areas are compared, that did not appear to admit of compariſon by any other method; a circumſtance of conſiderable importance in that part of natural philoſophy which relates to the doctrine of motion. Theſe are but a ſmall part of the works which he produced, and which have given celebrity to his name. In the years 1781, 1782, 1783, he publiſhed three ſmall tracts "On the Summation of converging Series," in which he explained and ſhewed the extent of ſome theorems which had been given for that purpoſe by De Moivre, Sterling, and Thomas Simpſon, in anſwer to what he conceived to have been written in diſparagement of thoſe excellent mathematicians. Mr. Landen was author of a work publiſhed in two volumes, and at different times, intitled "Memoirs." The ſecond volume contains his laſt labours on the ſolution of the general problem concerning rotatory motion. It compriſes alſo a reſolution of the problem relating to the motion of a top; with an inveſtigation of the motion of the equinoxes, in which Mr. Landen has, firſt of any one, pointed out the cauſe of ſir Iſaac Newton's miſtake in his ſolution of this celebrated problem. He lived to ſee the volume completed, and received a copy of it the day before his death, which happened January 15, 1790, at Milton, in the 71ſt year of his age. Mr. Landen was not only diſtinguiſhed by his eminent talents as a mathematician, but by the excellence of his moral character. His temper, however, was not a good one; and he was too apt to look with contempt on thoſe whom he deemed his inferiors. His MSS. were ſold for waſte paper; a circumſtance that did not reflect much credit on thoſe perſons who came in poſſeſſion of them.

LANDEN, in *Geography*, a town of France, in the department of the Ourte, and chief place of a canton, in the diſtrict of Huy, ſeated on the river Becke; 17 miles W.S.W. of Liege. The place contains 642, and the canton 9265 inhabitants, on a territory of 82½ kiliometres, in 25 communes.

LANDERNEAU, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Breſt. The place contains 3577, and the canton 13,804 inhabitants, on a territory of 180 kiliometres, in 9 communes. N. lat. 48° 27′. W. long. 4° 10′.

LANDERON, a town of Switzerland, in the principality of Neufchatel, ſituated at the S.W. extremity of the lake of Bienne, and inhabited by Roman Catholics; 7 miles N.E. of Neufchatel.

LANDES, LES, a department of the S.W. region of France, formed of Landes and Chaloſſe, diſtricts of Gaſcogne, in N. lat. 44°, a maritime territory between Lower Pyrenées and Gironde; bounded on the N. by the department of the Gironde, on the E. by that of Lot and Garonne, and Gers, on the S. by the Lower Pyrenées, and on the W. by the ſea, containing 468 ſquare leagues, and 228,889 inhabitants, and divided into three circles or diſtricts, *viz.* Mont-de-Marſan, which has 72,968 inhabitants, St. Sever, including 78,125, and Dax, with 77,796 inhabitants, 28 cantons, and 368 communes. Its contributions amount to 145,376 fr. and its expences charged on the departments are 203,769 fr. 62 cents. The ſoil of this department is for the moſt part ſandy and unfruitful, the N. and W. parts conſiſting of heath and marſhes, and poorly cultivated. Some parts, however, towards the S.E. are more fertile; and this department yields ſome grain, fruits, and excellent paſtures. It has alſo foreſts of pines, quarries, and mineral ſprings. Its chief town is Mont-de-Marſan.

LANDESHUT, a town of Sileſia, in the principality of Schweidnitz, on the Bober. The town was founded in 1292, and it has a Latin ſchool, a Roman Catholic church, and by permiſſion and purchaſe a Lutheran church. Its linen trade is flouriſhing; 18 miles W.S.W. of Schweidnitz. N. lat. 50° 30′. E. long. 15° 55′.

LAND-FALL, is a ſea-term, ſignifying to fall in with the land, or the firſt land diſcovered after a ſea-voyage.

LAND-FALL, *Good*, is when a ſhip makes or ſees the land, as ſhe expected, according to her reckoning. The contrary is called a *bad land-fall.*

LAND-GABLE, an ancient term for a tax or rent, iſſuing out of a land; anſwering to what we now call *ground-rent*.

LANDGRAVE, formed of the German *land*, *earth*, and *graff*, or *grave*, *judge*, or *count*, a name formerly given to thoſe who executed juſtice on behalf of the emperors, with regard to the internal policy of the country. The title does not ſeem to have been uſed before the eleventh century. Theſe judges were firſt appointed within a certain diſtrict of Germany; in proceſs of time the title became hereditary, and theſe judges aſſumed the ſovereignty of the ſeveral diſtricts or countries over which they preſided. Landgrave is now applied, by way of eminence, to thoſe ſovereign princes of the empire who poſſeſs by inheritance certain eſtates, called *landgravates*, and of which they receive the inveſtiture of the emperor. There are four princes who have this title, *viz.* thoſe of Thuringia, Heſſia, Alſace, and Leuchtenberg. There are alſo other landgraves who are not princes, but counts of the empire. See COUNT.

LANDGUARD FORT, in *Geography*, an Engliſh fort, ſituated on a point of land at the S.E. extremity of the county of Suffolk, at the mouth of the rivers Orwell and Stour, oppoſite to Harwich; furniſhed with a garriſon, under the command of a governor, and a platform of guns to defend the coaſt.

LANDGUARD, a point on lake Erie, in Upper Canada; formerly called *Point aux Pins*, ſituated in N. lat. 42° 7′ 15″. To this place there is a great reſort of Indians in the ſpring, on account of the abundance of fiſh and fowl, which may be then taken. This point is about twenty miles E. of the South Foreland, and bears the only pine-timber on this coaſt.

LANDI, ORTENSIO, in *Biography*, was born at Milan about the middle of the ſixteenth century: he was educated at his native place, and at Bologna. Being in neceſſitous circumſtances, he attempted to gain a maintenance by the practice of phyſic, which he exchanged, in a very ſhort time, for theology, and entered into the order of St. Auguſtine. It has been ſaid by ſome writers that he apoſtatized from the church, but others ſay that in this particular he has been miſtaken for a different perſon. While at Milan, he publiſhed two dialogues, entitled "Cicero relegatus," and "Cicero revocatus," which he feigns to have been held by a company of learned men in 1533. His next work was entitled "Forcianæ Quæſtiones," in which, under the feigned name of Philalethes, he treats, in an entertaining manner, on the cuſtoms, dreſs, diverſions, and inhabitants of the different cities of Italy. It was publiſhed at Naples in 1536. He now travelled into France, and contracted a cloſe friendſhip with Stephen Dolet, who was afterwards burnt as an atheiſt. Upon his return to Italy, he entered ſucceſſively into the ſervice of the biſhops of Trent and Catania. In 1540, he publiſhed a dialogue againſt Eraſmus, who had been dead four years, and on account of which he was ſeverely handled by an able antagoniſt. While he was at the court of Francis I. in 1543, he publiſhed his two books of "Paradoxes:" theſe he ſoon found had been written with too great freedom, and as they began to excite conſiderable attention, he thought proper to anſwer them himſelf anonymouſly, and in his reply he is ſaid to have treated himſelf with as little ceremony as any real opponent would have done. In 1544, he travelled through Germany, and afterwards through the different provinces of Italy, which he deſcribed in a work entitled "Commentario delli piu notibili et moſtruoſe coſe d'Italia et altri luoghi." He is ſuppoſed to have died ſoon after the year 1560, leaving behind him many other works beſides thoſe which have been enumerated. He lived in friendſhip with ſeveral of the learned men of that age, by whom he has been much praiſed. Gen. Biog.

LANDINGS, in *Architecture*, the firſt part of the floor at the head of a pair of ſtairs.

LANDINO, CHRISTOPHER, in *Biography*, an Italian ſcholar, was born at Florence in 1434. He ſtudied firſt at Volterra, under Angiola da Todi, by whom he was ſo much beloved, that he not only maintained him a long time at his own expence, but at his death bound his heirs to ſupport him three years longer. He was intended by his father for the law, and was by him obliged to purſue it till he obtained the liberal patronage of Coſmo and Peter de Medici, by which he was enabled to return to his favourite purſuits, and indulge himſelf in the ſtudy of the Platonic philoſophy. He became one of the chief ornaments of the Platonic academy at Florence, and lived in ſtrict friendſhip with Poliziano, Ficino, and others of its members. In 1457, he gave public lectures in polite literature at Florence, which contributed to the progreſs of learning in that period. At an advanced age he obtained an office in the ſtate, and was preſented with a palace for his reſidence. He died in 1504, at Prato Vecchio. His "Latin Poems" will bear a compariſon with the moſt able compoſitions of that age. He wrote commentaries on Virgil and Horace, and Dante, which went through ſeveral editions. He tranſlated Pliny's "Natural Hiſtory" into Italian, and was author of "Dialogues on the Nobility of the Mind," and other pieces connected with moral philoſophy. He compoſed ſome Latin and Italian orations, which were printed.

LANDIVISIAN, in *Geography*, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Morlaix; 10 miles W.S.W of Morlaix. The place contains 2124, and the canton 11,460, on a territory of 150 kiliometres, in 7 communes.

LANDIVY, a town of France, in the department of the Mayenne, and chief place of a canton, in the diſtrict of Mayenne; 18 miles N.W. of Mayenne. The place contains 1872, and the canton 11,223 inhabitants, on a territory of 187½ kiliometres, in 8 communes.

LAND-LOCKED: a ſhip is ſaid to ride *land-locked*, when ſhe is ſurrounded with land, that is, is at anchor in a place where there is no point open to the ſea, ſo that ſhe is ſafe from the violence of winds and tides.

LANDO, pope, in *Biography*, a Sabine by birth, ſucceeded to the pontifical throne on the death of Anaſtaſius III. in the year 913. He was indebted for his elevation to Theodora, and her daughters Marozia and Theodora, all of them no leſs famous for their beauty, their wit, and addreſs, than infamous for the ſcandalous lives which they led. Lando died within about ſix months of the time that he was elevated to the papal ſee, and during that ſhort reign he did nothing worthy of note, or that need be recorded in this work. Moreri. Bower.

LANDRECIES, in *Geography*, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Aveſnes, ſeated on the Sambre. It was taken from the Spaniards by the French in 1655, and continued in their poſſeſſion by the peace of the Pyrenées, when they enlarged its fortifications, and made it one of the ſtrongeſt places in the country. It has only two gates, one towards the eaſt, called the "Gate of France," and the other towards the weſt, called the "Gate of Queſnay." It ſuffered ſeverely by the ſiege of 1794, and ſurrendered to the allies; but in the ſame year the garriſon, conſiſting of 20,000 men, ſurrendered to the French. The place contains 2867, and the canton 8865 inhabitants, on a territory of 90 kiliometres, in 9 communes. N. lat. 50° 7′. E. long. 3° 45′.

LANDRIANO, a town of Italy; 11 miles S.S.E. of Milan.

LANDROAL, a town of Portugal, in Alanteijo; 13 miles N. of Mourao. N. lat. 38° 35′. E. long. 7° 12′.

LANDSBERG, a town of Pruſſia, in the province of Natángen; 26 miles S. of Konigſberg. N. lat. 54° 14′. E. long. 20° 30′.—Alſo, a town of the duchy of Stiria; 24 miles S.W. of Gratz.—Alſo, a town of Germany, in the county of Hoya, on the Weſer; 6 miles S.S.W. of Nieuburg.—Alſo, a town of Sileſia, otherwiſe called *Gorzow*, in the circle of Oppeln, on the borders of Poland; 30 miles N.E. of Oppeln. N. lat. 51° 3′. E. long. 18° 29′.—Alſo, a town of Bavaria, on the Lech; 18 miles S. of Augſburg. N. lat. 48°. E. long. 10° 51′.—Alſo, a town of Saxony, in the circle of Leipzig; 14 miles N.W. of Leipzig. N. lat. 51° 34′. E. long. 12° 11′.—Alſo, a town of Brandenburg, in the New Mark, on the Warta; containing three churches, a royal magazine, and ſeveral manufactures of ſtuff and cloth, with a conſiderable trade in wool; 20 miles E.N.E. of Cuſtrin. N. lat. 52° 48′. E. long. 15° 20′.—Alſo, a town of Brandenburg, in the Middle Mark; 14 miles E.N.E. of Berlin. N. lat. 52° 35′. E. long. 13° 48′.

LANDSCAPE, or LANDSKIP, the view or proſpect of a country, extended as far as the eye will reach.

LANDSCAPE *Painting*, is that peculiar application of the art of painting, which repreſents extended views of whatever is attached to the ſurface of the earth; as mountains, rocks, woods, buildings, &c. It is even applied to views of the ſea, particularly when any portion of the land is ſeen: and, in the general diviſion of the practice of the art into four principal branches, landſcape-painting includes all repreſentations of the ſea alone; although, in common diſcourſe, they are generally termed according to their character: as a calm at ſea, a ſtorm, a ſea-fight, &c. &c.

The great points which the artiſt ought to aim at, who practiſes landſcape-painting, are, to mark juſt proportion and true perſpective; to obtain a free and varying touch, which may fully characterize the various objects he muſt of neceſſity be called upon to imitate; and to produce the effect of ſpace, or what is technically termed diſtance.

There are two kinds of proportion which require attention in order to produce a pleaſing landſcape. One is, between the quantum of the ſurface of the picture appropriated to the ſky, and that allotted to the earth or the figures intended to be introduced, be they mountains, houſes, rocks, or trees: and the other is that of the various parts of the picture, reciprocally, according to their various diſtances in the ſcene. Of the latter, after the ſize of the objects on the fore-ground is determined, perſpective is the ſole regulator: therefore a knowledge of the principal rules of that ſcience is here abſolutely requiſite.

With regard to the former of theſe proportions, the ſubject of the picture will undoubtedly furniſh the beſt means of deciding juſtly. If the ſcene be mountainous, viewed from below, and at a ſhort diſtance, the ſpace allotted to the ſky muſt be ſmall and near the top of the picture. If, on the contrary, the view be of an open champaign country, the reverſe will be the juſt characteriſtic of the picture; and the ſky will occupy by far the larger part. It is by no means aſſerted that this will always be the caſe, as for inſtance, if the view of a plain be taken from a great height, then of courſe the horizon will riſe very high; but this would have more the character of a plan, than a pictureſque or natural view. Common ſenſe points out the rule in the two preſuppoſed caſes; but it is not eaſy to regulate this matter in ordinary compoſitions, whereas, to make the work captivating, it is of much more importance than is generally imagined, and a large demand is made upon taſte to regulate it. In general, much more grandeur is acquired by a low horizon, and an ample ſpace of ſky, than by any other proportion; and next in effect to that, is the direct reverſe. In both, it is the quantity doubtleſs that produces the impreſſion; and this principle holds good, not only in landſcape, but in all other ſubjects on which the art is employed. In fact, the general principles of the art of painting are alike applicable in all its different branches. The ſame ſelection in ſtyle of deſign, or rather choice of nature; the ſame aims in compoſition; the ſame contraſts in arrangements of colour, except that they can never, or very rarely, be ſo powerful in landſcape, as where the picture repreſents animated or artificial objects. In landſcape not only are the objects fit to be introduced, of a claſs which are not fraught with ſtrong colours, particularly of red or blue, but being ſurrounded by open air, and receiving reflections of light and colour in every direction, their natural vividneſs is diminiſhed; and as they recede from the eye, the denſity of the atmoſphere intervening between them and the ſpectator, envelopes them in a miſt, and renders them indiſtinct in various degrees; till in the extreme diſtance it reduces all colours to one hue of a light greyiſh blue, almoſt intermingling them with the ſky.

It is by the intervention of this grey hue in the atmoſphere, which ariſes from reflections of light thrown off by particles floating in the vapours which hover upon the ſurface of the earth, (aided by diminution of form,) that the effect of diſtance is produced; and to imitate this with truth, and in a tone correſpondent to the kind of day or ſeaſon which is ſelected for repreſentation, is one of the principal difficulties of landſcape painting.

It is vain to attempt to give rules for overcoming this difficulty. Different maſters have proceeded by different ways to gain poſſeſſion of this deſideratum. Claude in one ſtyle, and Wilſon in another, have both admirably effected it. One by ſcumbling a grey, or air-teint, over the diſtant parts; the other by working the teint in the body of colours. Obſervation of their pictures, with taſte cultivated by a long continued obſervance of nature, is the only means of acquiring a juſt feeling of the ſimplicity and purity exhibited in her works, and the conſequent power of repreſenting them in all the varied effects ſhe exhibits; either in her more gay, or ſombrous moments; when the face of the earth is illumined with ſunſhine, and ſparkling with luſtre; or when clouds bedim and envelope its beauties in ſhade, and the forms of diſtant objects are loſt in the whirlwind and the ſtorm.

Though landſcape-painting has not the ſame powerful means to work with as hiſtoric painting, which enjoys the great advantage of animation and expreſſion in its ſubjects, and likewiſe preſents the greateſt difficulty to overcome; yet no true and enthuſiaſtic lover and obſerver of nature, can avoid acknowledging, that it poſſeſſes the power of exciting great intereſt in the mind. A ſtorm repreſented by the pencil of Gaſpar Pouſſin, or a calm by that of Claude, will not fail to impreſs the obſerver with ideas of terror, or gentleneſs. The one, who ſkilfully traced the paths of the wind in its ravages, and the deformity produced by the falling ſhower; and the other, who loved to dwell upon the beauties of the earth, in moments of undiſturbed tranquillity, equally intereſt our feelings, and excite thoſe emotions which ſuch varied circumſtances in nature are calculated to inſpire. Compared with ſuch views of the higher objects and airs of art, the practitioner in landſcape-portrait painting, or one who paints views of particular ſpots, ſinks into about the ſame ratio, as the portrait painter of mankind holds to him who engages his talents in the repreſentations of hiſtory. Yet ſtill his taſk is not devoid either of pleaſure or intereſt.

The ſame principles are required for practice, but they are unfortunately often obliged to yield to peculiarities which deſtroy their ſimplicity and prevent their effect; unleſs the artiſt has obtained that extraordinary talent of introducing caſual circumſtances, ſuch as ideal ſhadows, accidental reflections, and agreeable figures, in ſuch a manner as to unite or improve imperfect forms, and guide or attract the eye from diſagreeable parts. As is the aim of the improver of grounds, or, as he is now termed, the landſcape gardener, ſuch ought to be that of the landſcape painter. Wherever blemiſhes in form occur, they ſhould be hidden, and where natural beauties are beſtowed, they ſhould be exhibited to view; and adorned with proper adjuncts of trees, water, clouds, or figures. A perſon not converſant with the powers of combination and contraſt in deſign, can have no conception of their extraordinary power to heighten the effect of the dulleſt ſcenes, and the meaneſt objects. It ſhould therefore be the principal taſk of the artiſt to obſerve thoſe which are conſtantly occurring among natural objects, their effects, and the different ſentiments they excite; ſo that he may poſſeſs a ſtore to recur to, in time of need.

The beauty of landſcape-painting depends very much upon ſimplicity of ſelection, and clearneſs and freſhneſs of colour. The former ſhould not only govern the choice of objects or ſcenery, but alſo the manner of repreſenting them, *i. e.* the artiſt muſt not attempt to delineate all the forms he ſees in a tree or a rock; that would not only be an almoſt endleſs labour, but an imperfect one, even when the greateſt ſkill was exhibited; his duty is rather to ſelect thoſe forms which more immediately characterize the object, and mark them only; taking care to avoid heavineſs.

Of this kind was the practice of Titian, Claude, Domenichino, Pouſſin, Mola, and all the beſt landſcape-painters of the Italian ſchool, and Rubens and Rembrandt adopted it; whilſt Hobbima, Ruyſdael, Both, Wynants, and almoſt all the Flemiſh ſchool, by attempting too minute an imitation in ſmaller matters, loſt dignity and even intereſt.

Among thoſe who have practiſed with ſucceſs this delightful branch of the art of painting, the name of Claude Gelee, uſually known by that of Claude de Lorraine, deſervedly ſtands pre-eminent. He may have been ſurpaſſed by Titian in wild and romantic ſcenery, and grandeur of ſtyle in deſign, but neither he nor any other has ever equalled Claude's truth and purity of colour and effect. Hitherto the perfection with which he has repreſented the effect of the atmoſphere is unrivalled. Even Cuyp and our own Wilſon, who have arrived the neareſt to him, ſtill lack his completion of effect. Their art is more apparent than his in his beſt works; and great chaſtity and ſweetneſs of taſte appear generally to have governed his choice of ſcene and of parts. Nicolo Pouſſin has left a great number of highly intereſting landſcapes, in a ſtyle peculiarly his own. He appears to have delighted in the hues of the earth and trees after wet, and without ſun; and in the tones of twilight; which admirably coincides with his choice of ſcenery and the claſſic objects he introduced into it. His nephew Gaſpar proceeded in another track, and made pictures from the ſcenes which the Apennine mountains afforded him; which, while they are wrought with great freedom, ſtill bear too much the air of portraiture, and too often lack atmoſphere. The ſame may be ſaid in a greater degree of the works of Salvator Roſa, who delighted to repreſent the moſt wild and deſert ſcenes of nature; which he executed with a touch in perfect conſonance with their character. It was with Wilſon, as we have above mentioned, that the taſte and talent of Claude for producing the air-teint, (as that which produces the effect of the atmoſphere is technically termed,) was moſt powerfully revived: and of him it may truly be ſaid, that had his patience in completing his pictures been equal to his taſte in colour, compoſition, and effect, the ancient maſter might have fallen under the modern one; and we ſhould have had to boaſt, that the greateſt painter of landſcapes the world ever produced, was an Engliſhman.

LANDSCRON, in *Geography*, a town of Bohemia, in the circle of Chrudim; 27 miles E. of Chrudim. N. lat. 49° 50'. E. long. 16° 23'.

Landscron, a town of Pruſſia, in Natangen; 18 miles N.E. of Heilſperg.

LANDSCRONA, a fortified ſea-port town of Sweden, on the W. coaſt of the province of Skone, on an iſland near the Sound: a ſtaple town, with a good harbour. The harbour lies between the continent and a ſmall iſland, and is 20 feet deep; 12 miles S. of Helſingborg. N. lat. 55° 52'. E. long. 12 36'.

LANDSELE, a ſmall iſland in the Eaſt Indian ſea, near the N. coaſt of the great Andaman. N. lat. 13° 38'. E. long. 93° 7'.

LAND'S-END. See Cornwall.

Land's-end, a cape on the N. coaſt of the iſland of Sheppey; 4 miles N. of Sheerneſs.

LANDSER, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the diſtrict of Altkirch. The place contains 651, and the canton 10,629 inhabitants, on a territory of 150 kiliometres, in 22 communes.

LANDSHAAG, a town of Auſtria, on the Danube; 19 miles S.W. of Freuſtadt.

LAND'S-HEIGHT, or the high ground, in North America, that which lies on the chain of lakes between lake La Pluie and lake Superior, where is a portage of 7 miles; 80 miles E. of the grand portage from the W. end of lake Superior.

LANDSHUT, or Landznit, a town of Moravia, in the circle of Brunn; 16 miles S.E. of Auſpitz.

Landshut, a town of Bavaria, on the river Iſer; an open well-built town, and the capital of a government; containing two palaces and a college with a church in it, the ſteeple of which is reckoned the higheſt in Germany; 32 miles N.E. of Munich. N. lat. 48° 29'. E. long. 12° 5'.—Alſo, a town of Auſtrian Poland, in Galicia; 72 miles W. of Lemberg.

LANDSKIP. See Landscape.

LANDSORT, in *Geography*, a ſmall iſland in the Baltic, near the coaſt of Sweden. N. lat. 58° 52'. E. long. 17° 10'.

LANDSTHUL, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diſtrict of Deux Ponts. The place contains 705, and the canton 7910 inhabitants, in 32 communes.

LANDSTRASS, or Landstrost, a town of Carniola, ſituated on an iſland in the river Gurek, with a cathedral; 18 miles S. of Cilley.

LAND-TAX, is one of the uſual annual taxes, which has ſuperſeded all the former methods of rating either property, or perſons in reſpect of their property, whether by tenths, fifteenths, ſubſidies on land, hydage or hidage, ſcutage or eſcuage, or talliage. Tenths and fifteenths were temporary aids iſſuing out of perſonal property, and granted to the king by parliament, being the real tenth or fifteenth part of all the moveables belonging to the ſubject. We meet with the payment of fifteenths as far back as the ſtatute of Magna Charta; in the concluſion of which, the parliament grants to the king, for the conceſſions made by him, a fifteenth part of all their moveable goods. This taxation was originally charged upon the ſeveral individuals, but in the eighth year of Edward III. a certain ſum was rated in every town, &c. In proceſs of time this fifteenth being inſufficient for the public exigence, the number of fifteenths was augmented to two or three fifteenths. Whenever, in later years, the commons granted the king a fifteenth, every pariſh in England knew their proportion of it; *i. e.* the ſame identical ſum that was aſſeſſed by the ſame aid in the eighth of Edward III., and then raiſed it by a rate among themſelves, and returned it into the royal exchequer. (See Fifteenth. See alſo Tenth.) The other ancient levies were in the nature of a modern land-tax; for we may trace the original of that charge as high as to the introduction of our military tenures; when every tenant of a knight's fee was bound, if called upon, to attend the king in his army for forty days in every year. In lieu of this perſonal attendance, a pecuniary ſatisfaction came to be levied by aſſeſſments, at ſo much for every knight's fee, under the name of ſcutages. (See Escuage.) Of the ſame nature with theſe were the aſſeſſments of hydage or hidage upon all other lands, and of talliage upon cities and boroughs. But they all gradually fell into diſuſe, upon the introduction of ſubſidies, about the time of king Richard II. and king Henry IV. (See Subsidy.) In lieu of ſubſidies, which were uſually raiſed by commiſſioners appointed by the crown, or the great officers of ſtate, the parliament, in the beginning of the civil wars, introduced the practice of laying weekly and monthly aſſeſſments of a ſpecific ſum upon the ſeveral counties of the kingdom, to be levied by a pound rate on lands and perſonal eſtates; which were occaſionally continued during the whole uſurpation, ſometimes at the rate of 120,000*l.* a month, ſometimes at inferior rates. After the reſtoration the ancient method of granting ſubſidies, inſtead of theſe monthly aſſeſſments, was twice, and twice only renewed, *viz.* in 1663, when four ſubſidies were granted by the laity and four by the clergy; and in 1670, when 800,000*l.* was raiſed by way of ſubſidy, which was the laſt time of raiſing ſupplies in this manner. The monthly aſſeſſments being eſtabliſhed by cuſtom, raiſed by commiſſioners named by parliament, and producing a more certain revenue, ſubſidies were diſcontinued, and occaſional aſſeſſments granted as emergencies required. Theſe periodical aſſeſſments, the ſubſidies which preceded them, and the more ancient ſcutage, hydage, and talliage, ſays judge Blackſtone, were to all intents and purpoſes a land-tax; and the aſſeſſments were ſometimes expreſsly called ſo. However, in the year 1692, a new aſſeſſment or valuation of eſtates was made throughout the kingdom, which, though by no means a perfect one, had this effect, that a ſupply of 500,000*l.* was equal to 1*s.* in the pound of the value of the eſtates given in. And, according to this enhanced valuation, from the year 1693 to the preſent, the land-tax has continued an annual charge upon the ſubject; above half the time at 4*s.* in the pound, ſometimes at 3*s.*, ſometimes at 2*s*, twice, *viz* in 1732 and 1733, at 1*s.* but without any total intermiſſion. The medium has been 3*s.* 3*d.* in the pound, being equivalent to twenty-three ancient ſubſidies, and amounting annually to more than a million and a half of money. The method of raiſing it is by charging a particular ſum upon each county, according to the valuation of 1692; and this ſum is aſſeſſed and raiſed upon the perſonal as well as the real eſtates of individuals by commiſſioners appointed in the act, being the principal landholders of the county, and their officers.

It is obſerved by Dr. Smith, in his "Nature and Cauſes of the Wealth of Nations," (vol. iii.) that a land-tax, like that of Great Britain, aſſeſſed upon each diſtrict according to a certain invariable canon, though it ſhould be equal a its firſt eſtabliſhment, neceſſarily becomes unequal in proceſs of time, according to the unequal degrees of improvement, or neglect in the cultivation of the different parts of the country. In England, the valuation according to which the different counties and pariſhes were aſſeſſed to the land-tax by the 4th of William and Mary, was very unequal even at firſt eſtabliſhment. This tax, therefore, offends againſt the firſt of thoſe four maxims which this ingenious writer propoſes, with regard to taxes in general. (See Tax.) This maxim is, that the ſubjects of every ſtate ought to contribute towards the ſupport of the government, as nearly as poſſible, in proportion to their reſpective abilities; that is, in proportion to the revenue which they reſpectively enjoy under the protection of the ſtate. However, it is perfectly agreeable to the other three. It is perfectly certain, and not arbitrary. The time of payment for the tax, being the ſame as that for the rent, is as convenient as it can be to the contributor. Although the landlord is in all caſes the real contributor, the tax is commonly advanced by the tenant, to whom the landlord is obliged to allow it in the payment of the rent. Moreover, this tax is levied by a much ſmaller number of officers than any other which affords nearly the ſame revenue. As the tax upon each diſtrict does not riſe with the riſe of the rent, the ſovereign does not ſhare in the profits of the landlord's improvements. It does not therefore obſtruct the induſtry of the people; nor ſubject the landlord to any other inconveniency beſides the unavoidable one of paying the tax. The advantage, however, which the landlord has derived from the invariable conſtancy of the valuation by which all the lands of Great Britain are rated to the land-tax, has been principally owing to ſome circumſtances altogether extraneous to the nature of the tax. It has been owing in part to the great proſperity of almoſt every part of the country: the rents of almoſt all the eſtates of Great Britain, having, ſince the time when this valuation was firſt eſtabliſhed, been continually riſing, and ſcarcely any of them having fallen. The landlords, therefore, have almoſt all gained the difference between the tax which they would have paid, according to the preſent rent of their eſtates, and that which they actually pay according to the ancient valuation. But if the ſtate of the country had been different, and rents had been gradually falling in conſequence of the declenſion of cultivation, the landlords would almoſt all have loſt this difference. As the tax is made payable in money, ſo the valuation of land is expreſſed in money. Since the eſtabliſhment of this valuation, the value of ſilver has been pretty uniform, and there has been no alteration in the ſtandard of the coin, either as to weight or fineneſs. But if ſilver had riſen conſiderably in its value, the conſtancy of the valuation might have proved very oppreſſive to the landlord. In circumſtances, ſomewhat different from thoſe which have actually taken place, this conſtancy of valuation might have been a great inconveniency, either to the contributors, or to the commonwealth. A tax upon the rent of land which varies with every variation of the rent, or which riſes and falls according to the improvement or neglect of cultivation, has been recommended by thoſe philoſophers called economiſts in France, as the moſt equitable of all taxes. In the Venetian territory, all the arable lands leaſed to farmers are taxed at a tenth of the rent. The leaſes are recorded in a public regiſter, kept by the officers of the revenue in each province or diſtrict. A proprietor cultivating his own lands is allowed a deduction of one fifth of the tax, and pays only 8 inſtead of 10 *per cent.* of the ſuppoſed rent. A land-tax of this kind, ſays Dr. Smith, is certainly more equal than the land-tax of England, but it might not, perhaps, be altogether ſo certain, and the aſſeſſment of the tax might frequently occaſion more trouble to the landlord, and the levying of it might be more expenſive. In the ancient dominions of the king of Pruſſia, the land-tax is aſſeſſed according to an actual ſurvey and valuation, which is reviewed and altered from time to time. According to that valuation, the lay proprietors pay from 20 to 25 *per cent.* of their revenue. Eccleſiaſtics from 40 to 45 *per cent.* In ſome other countries the ſame method is purſued. A land-tax aſſeſſed according to a general ſurvey and valuation, how equal ſoever it may be at firſt, muſt, in the courſe of a very moderate period of time, become unequal; and to prevent its becoming ſo would require the continual and painful attention of government to all the variations in the ſtate and produce of every different farm in the country.

The ſum fixed by 38 Geo. III. c. 5. ſ. 1. to be paid for the land-tax in Great Britain is 2,037,627*l.* 9*s.* $\frac{1}{4}$*d.*, which is now made perpetual. To this time the land-tax acts had been annual; but by 38 Geo. III. c. 60. after reciting, that it may materially conduce to ſtrengthen public credit, that the duty now payable for one year on land ſhould be made perpetual, ſubject to redemption by purchaſe on conditions herein ſet forth; it was enacted, that the ſeveral ſums charged by virtue of an act (38 Geo. III. c. 5.) granting an aid for the ſervice of the year 1798, on the reſpective counties, &c. in reſpect of the manors, meſſuages, &c. to be raiſed and paid within one year, from the 25th of March, 1798, ſhall, after the expiration of the ſaid term (allowing for certain ſpecified exceptions) continue, and be raiſed and paid after the 25th of March in every year for ever. And all powers and proviſions contained in the ſaid act ſhall be in full force, and be duly executed; ſubject to the regulations and conditions of redemption or purchaſe mentioned in it. Provided always, that none of the proviſions herein contained ſhall extend to any ſums charged by the ſaid act upon perſonal eſtates and perquiſites of office; which ſums ſhall, after the 25th of March, 1799, be aſcertained, raiſed, collected, and paid, according to the directions of an act to be paſſed for that purpoſe. (39 Geo. III. c. 3.) It is alſo enacted, that the land-tax not purchaſed by proprietors ſhall be ſold to other perſons, ſubject to redemption by the perſon in poſſeſſion, or having any beneficial or future intereſt in the lands: provided that in ſuch caſes, all ſuch lands wheron the land-tax ſo purchaſed ſhall be charged, ſhall, until ſuch redemption take place, be ſubject to a new aſſeſſment of the ſaid land-tax from year to year, by an equal rate, according to the value thereof, in common with each other, without any power in ſuch purchaſer to exonerate the ſame from ſuch land-tax, or to fix the rate of land-tax to be charged thereon. Alſo, where the whole tax in any place ſhall not be ſold, ſuch lands as are not exonerated by this act from ſuch land-tax, ſhall continue ſubject to a new aſſeſſment yearly, and from year to year, by an equal rate, according to the value thereof, not exceeding in any year 4*s.* in the pound on ſuch annual value. It is alſo enacted, that in caſe perſons entering into any contract for the redemption or purchaſe of any land-tax, ſhall neglect to complete their contract, ſuch contract ſhall be void, and the tax be revived, and again aſſeſſed and collected; and the perſons thus making default ſhall forfeit not exceeding one-ſixteenth part of the conſideration. Where land-tax, remaining unſold, ſhall exceed 4*s.* in the pound on the annual value, the ſame ſhall be ſubject to an abatement in the manner directed by the ſaid act. (38 Geo. III. c. 60. ſ. 103. 42 Geo. III. c. 116. ſ. 181.) By this laſt act, the proviſions of the ſeveral acts for the *redemption of the land-tax* are repealed from the 24th of June, 1802, from which date all contracts are to be entered into and made according to that act, and the 43 Geo. III. c. 51. to render the ſame more effectual. As the land-tax not purchaſed will remain to be collected as before, it may not be improper or unuſeful to detail the following particulars relating to it. By 38 Geo. III. c. 5. the general qualification of commiſſioners in counties, with ſome few exceptions, is 100*l.* a-year of landed property: theſe commiſſioners, before they can act, are required to take the oaths of allegiance, ſupremacy, and abjuration, under a penalty of 200*l.* to the king: and by 28 Geo. III. c. 2. ſ. 49. an oath, if required, ſpecifying in writing the pariſh, ſituation, quantity of land, whether freehold or copyhold, of the premiſes which entitle them to act as commiſſioners. When they firſt meet, they direct the return and appointment of proper aſſeſſors: and by 20 Geo. III. c. 17. they ſhall cauſe to be delivered to each aſſeſſor a printed form of aſſeſſment, according to which they ſhall make their aſſeſſments. At their ſecond meeting they direct the aſſeſſors how to proceed in ſettling the ſeveral rates and charges. By 39 Geo. III. c. 3. the ſeveral ſums charged upon eſtates in ready money, debts, goods, wares, merchandiſes, chattels, or other perſonal eſtate, by the act of 38 Geo. III. c. 5. and which were not authorized to be ſold by the ſaid act of 38 Geo. III. c. 60; and alſo the ſeveral ſums hereby charged in reſpect of any public office or employment, or any annuity, penſion, ſtipend, or other annual payment, ſhall be aſſeſſed and paid in the following manner. That is to ſay, the ſeveral ſums charged by virtue of the ſaid act on perſonal eſtates as aforeſaid, ſhall be, and are hereby ſet and impoſed on the reſpective pariſhes, conſtablewicks, diviſions, allotments, and places, wherein the ſame have been, or ſhall be ſo charged by virtue of the ſaid act, and towards raiſing the ſeveral ſums hereby charged on the ſame reſpectively, all perſons, bodies politic and corporate, guilds and fraternities within ſuch places reſpectively, having any eſtate in ready money, or in debts owing to them, or having any eſtate in goods, wares, merchandize, chattels, or other perſonal eſtate belonging to, or in truſt for them, (except ſuch ſums as they may *bonâ fide* owe, and ſuch debts owing to them as ſhall be by the commiſſioners adjudged deſperate, and alſo except ſtock upon lands, and ſuch goods as are uſed for houſhold ſtuff; and alſo except ſuch loans and debts as are owing from his majeſty,) ſhall be charged with as much equality and indifference as is poſſible by a pound rate, *viz.* for every 100*l.* of ſuch ready money and debts, and for every 100*l.* worth of ſuch goods, wares, and merchandize, or other perſonal eſtate, and ſo in proportion for more or leſs, towards the ſaid reſpective ſums by this act impoſed upon every ſuch pariſh or place charged therewith as aforeſaid, ſo that by the ſaid rates ſo to be aſſeſſed as aforeſaid, upon ſuch perſonal eſtates as aforeſaid, the full ſum hereby ſet upon the ſame, ſhall be completely aſſeſſed, collected, and paid. ſ. 2.

And towards raiſing the ſums charged on perſons in reſpect of public offices, or employments of profit, all perſons, having, uſing, or exerciſing the ſame, which are aſſeſſed by virtue of the ſaid act of 38 Geo. III. c. 5; and all clerks, agents, ſecondaries, ſubſtitutes, and other inferior miniſters whatſoever, (ſuch military officers as are muſtered by the muſter-maſter general of the army, or in pay of the army or navy in reſpect of ſuch offices, only excepted,) ſhall pay any ſum not exceeding what ſuch office or employment ſhall be aſſeſſed in the year commencing 25th March, 1798, by virtue of the ſaid act of 38 Geo. III. c. 5. And all perſons, guilds, fraternities, bodies politic and corporate, having any annuity, penſion, or other yearly payment, either out of the exchequer, or any branch of the revenue, or payable, or ſecured to be paid by any perſon whatſoever, (not iſſuing out of any lands, tenements, or hereditaments, or charged upon the ſame, nor included in any aſſeſſment made thereon by the ſaid act of 38 Geo. III. c. 5. and not being annuities or yearly payments which by any act of parliament ſhall be exempted from the payment of taxes,) ſhall pay 4*s.* for every 20*s.* by the year for the ſame, to be levied and collected in like manner, and by the ſame perſons as the land-tax. ſ. 3, 4.

It is provided that nothing in this act ſhall extend to the queen or royal family; nor to charge the penſions of ſuperannuated ſea-officers or their widows, poor knights of Windſor, or poor clergy of the Iſle of Man, or tolls on turnpike roads. By 38 Geo. III. c. 5. the charge upon *real* eſtates ſhall be as follows: That the entire ſum may be raiſed, all manors, meſſuages, lands, and tenements; all quarries, mines of coal, tin and lead, copper, mundick, iron, and other mines, iron-mills, furnaces, and other iron-works; ſalt-ſprings, and ſalt-works; all alum mines and works; all parks, chaſes, warrens, woods, underwoods, coppices; all fiſhings, tithes, tolls, annuities, and all other yearly profits; and all hereditaments whatſoever—ſhall be charged with as much equality and indifference as poſſible, by a *pound rate*, to make up the ſeveral ſums charged by the act on each county or place.

A parſon who lets to each pariſhioner his own *tithes* is properly the occupier, and ought to be rated. 16 Viner, 427.

But if a parſon makes a leaſe of his tithes to one perſon, and that perſon afterwards lets to each pariſhioner his own tithes, in that caſe the leſſee is the occupier, and ought to be rated. 8 Mod. 61.

Colleges and hoſpitals are exempted, together with the buildings that are within the walls or limits of the ſame. The act 38 Geo. III. c. 5. ſ. 25. alſo exempts any maſter, fellow, or ſcholar, or exhibitioner of any ſuch college, or hall, or any reader, officer, or maſter of the ſaid univerſities, colleges, or halls, or any maſters or uſhers of any ſchools; for or in reſpect of any ſtipends, wages, rents, profits, or exhibitions whatſoever, ariſing, or growing due to them in reſpect to the ſaid ſeveral places or employments: or any of the lands which before March 25, 1693, did belong to the ſcites of any college or hall, or to Chriſt's hoſpital, St. Bartholomew, Bridewell, St. Thomas and Bethlehem hoſpitals in London and Southwark; or any other hoſpitals or alms-houſes, in reſpect of any rents, or revenues, which, before March 25th, 1693, were payable to them, being to be received and diſburſed for the immediate uſe and relief of the poor of the ſaid hoſpitals and alms-houſes only. Id. ſ. 25.

But this ſhall not diſcharge any tenants of any houſes or lands belonging to the ſaid colleges, halls or hoſpitals, alms-houſes, or ſchools, who, by their leaſes, or other contracts, are obliged to pay and diſcharge all rates, taxes, and impoſitions. Id. ſ. 26.

All ſuch lands, revenues, or rents belonging to any hoſpital or alms-houſe, or ſettled to any charitable or pious uſe as were aſſeſſed in 4 W. & M. ſhall be liable; and no other lands, revenues, or rents, then belonging to any hoſpital, or alms-houſe, or ſettled to any charitable or pious uſe, ſhall be charged or aſſeſſed: but lands given to charities ſince the 4 W. & M. ſhall not be exempted. No poor perſon ſhall be charged, whoſe lands, &c. are not of the full yearly value of 20*s.* in the whole. The aſſeſſors themſelves are aſſeſſed by the commiſſioners. The land-tax ſhall be paid by the tenant, who ſhall deduct it out of his rent. Papiſts and reputed papiſts, being 18 years of age, who ſhall not have taken the oaths of allegiance and ſupremacy, ſhall pay double land-tax. By 10 Geo. III. c. 6. ſ. 113. eſtates doubly taxed, coming to Proteſtants, are to be diſcharged. At the third meeting of the commiſſioners, the aſſeſſors ſhall deliver duplicates of the aſſeſſment in writing, ſigned by them, to the commiſſioners, with the names of proper collectors, for whom the pariſh or place ſhall be anſwerable. One of the duplicates, ſigned by three or more commiſſioners, ſhall be delivered to the collectors, with warrant for collecting; and the time and place of appeals ſhall then be appointed. The fourth meeting is that of appeal, notice of which ſhall be given in the church; and every perſon intending to appeal ſhall give a written notice to one or more aſſeſſors, that they may attend to juſtify the aſſeſſment. The commiſſioners are empowered to give relief in caſe of overcharge, and cauſe the ſum abated to be re-aſſeſſed: and when the appeal is determined, it is abſolutely final. If any perſon refuſe or neglect to pay to the collector on demand, he may levy the ſum aſſeſſed by diſtreſs and ſale of the goods of the perſon neglecting or refuſing to pay; and for want of diſtreſs he may be committed by warrant of two commiſſioners to the common gaol, until payment of the money aſſeſſed and of the charges. The collector is required to pay the money received to the receiver-general, or his deputy, quarterly, on or before June 24th, Sept. 29th, Dec. 25th, and March 25th; who ſhall give a receipt gratis: the collectors are allowed 3*d.* in the pound, which they may detain out of the laſt payment; but if any collector detains the money longer than the time appointed, or pays it otherwiſe than directed, he ſhall forfeit not exceeding 40*l.* nor leſs than 5*l.* to be levied by diſtreſs; and if he refuſe to pay it, two commiſſioners may impriſon him, ſeize his eſtates real and perſonal, and ſell them for payment. The receiver-general is appointed by the king, or in purſuance of his directions, and has a ſalary allowed him by the lords of the treaſury, not exceeding 2*d.* a pound: notice of his appointment is to be given to the commiſſioners, before the time of the firſt quarterly payment. The receiver, within twenty days after the receipt, ſhall pay the money into the exchequer, or forfeit 500*l.* to him who ſhall ſue. The clerks of the commiſſioners are allowed 1½*d.* in the pound for writing the aſſeſſments, duplicates, &c. to be paid by the receiver-general, according to the warrant of two commiſſioners. Aſſeſſors, collectors, &c. not doing their duty may be fined by three or more commiſſioners, in any ſum not exceeding 40*l.* 38 Geo. III. c. 5. Blackſt. Com. vol. i. Burn's Juſtice, art. Land-Tax.

LANDVELLER, in *Geography*, a town of Sweden, in Weſt Gothland; 9 miles E. of Gothenborg.

LAND-WAITER, an officer of the cuſtom-houſe, whoſe duty is, upon landing any merchandize, to examine, taſte, weigh, meaſure them, &c. and to take an account thereof. In ſome ports they alſo execute the office of a coaſt-waiter. They are likewiſe occaſionally ſtyled ſearchers, and are to attend and join with the patent ſearcher, in the execution of all cockets for the ſhipping of goods to be exported to foreign parts; and in caſes where drawbacks or bounties are to be paid to the merchant on the exportation of any goods, they, as well as the patent ſearchers, are to certify the ſhipping thereof on the debentures.

LANE, in the *Military Art*, is uſed when men are drawn up in two ranks facing one another. This is called *making a lane*, and is generally done in the ſtreets through which a great perſon is to paſs, as a mark of honour. But ſoldiers are often drawn up in this manner, when an offender is to run the gantlope. See *Military* Execution.

Lane, in *Geography*, an iſland in the Atlantic, near the coaſt of America, a little to the eaſt of Scuttock Point. N. lat. 44° 18′. W. long. 67° 56′.

Lane, a river of Ireland, in the county of Kerry, which riſes in Magillicuddy's reeks, and receiving ſeveral ſtreams from Mangerton, and other adjoining mountains, and the river Fleſk from the weſtward, flows north-weſtward to Caſtlemain harbour. The expanſe of the waters of this river, confined by a great ledge of rocks, forms the two lakes, ſo well known and ſo juſtly celebrated as the upper and lower lakes of Killarney, from the town of that name being near them. See Killarney.

LANEL, a town of Africa, and capital of the kingdom of Galam, on the S. ſide of the Senegal.

LANERK. See Lanark.

LANES, a town of Sweden, in the province of Angermanland; 30 miles N. of Hernoſand.

LANESBOROUGH, a poſt-town of America, in Berkſhire county, Maſſachuſetts, N. of Pittsfield ſix miles. It has two quarries of marble, and contains 1448 inhabitants.

Lanesborough, a ſmall town of Ireland, in the county of Longford, on the bank of the Shannon, over which there is a bridge into the county of Roſcommon, in which it has a ſuburb. This is a borough town, which was disfranchiſed by the Union, and is 62½ miles W.N.W. from Dublin.

LANFRANC, in *Biography*, archbiſhop of Canterbury in the eleventh century, was a native of Italy, and born at Pavia, at which place his father was keeper of the public archives; he purſued his academical ſtudies at Bologna, paid particular attention to rhetoric and civil law, and on his return to his native city, he commenced advocate in the courts. He removed to France, under the reign of Henry I., taught publicly in the ſchool of Avranches, and was attended by a crowd of ſtudents of high rank. In a journey from that place to Rouen he was beſet by robbers, who plundered him, and left him bound in a foreſt near the abbey of Bec. Here he remained, in a moſt deplorable ſtate, till next day, when he was releaſed, carried to the abbey, and ſoon after he took the monk's habit. While he reſided in this place, his literary fame and excellent character recommended him to the eſteem of William I., duke of Normandy, who made him one of the counſellors of ſtate. Under the pontificate of Leo IX. he went twice to Rome; the principal object of his ſecond journey was to ſolicit a diſpenſation for the marriage of William with the daughter of the earl of Flanders, his firſt couſin, which was granted upon the condition that the duke and his lady ſhould build a monaſtery. They accordingly gave directions for the building of that named St. Stephen, at Caen, of which Lanfranc was appointed abbot in the year 1063. Soon after William was ſeated on the throne of England, he ſent Lanfranc to Rome, to negociate with Alexander II. about the miſſion of legates to England, to crown him, and to regulate the affairs of the church. After the coronation of William, he formed the deſign of depriving many of the Engliſh clergy of their dignities, in order that he might beſtow them on his countrymen, or on others, on whoſe attachment he could depend: in conformity with this principle, Stigand, archbiſhop of Canterbury, was depoſed, and Lanfranc raiſed to the high office in his ſtead: he would gladly have declined the honour, but an expreſs order from pope Alexander II. obliged him to accept it. He was accordingly conſecrated archbiſhop of Canterbury in 1070, and in the following year he went to Rome, in company with the archbiſhop of York, and was received with uncommon reſpect by his holineſs, who had formerly been his pupil at the abbey of Bec. Lanfranc defended before the pope the claims of his ſee to ſuperiority over that of York. Alexander, however, unwilling to offend either of theſe prelates, or to diſoblige the king of England, refuſed to give judgment in the matter, and declared that it ought to be determined by an Engliſh ſynod. Two councils were held for this purpoſe in 1072, in which the queſtion was debated with much warmth, in the preſence of the king, queen, and the whole court, and at length determined in favour of Canterbury. After this, Lanfranc preſided at different councils, in which ſeveral ecclaſiaſtical canons were made, by ſome of which a change was produced in the condition of the clergy, as well as in the creed of the church of England. By one, the ſecular clergy who had wives were allowed to keep them; but thoſe who had not wives were forbidden to marry, and biſhops were prohibited in future to ordain any man who had a wife. By another, the doctrine of tranſubſtantiation was promulgated, which before this period was but little known in our iſland: Lanfranc was, however, one of its moſt zealous champions, and employed the weapons of dialectics, with great ingenuity and addreſs, in defence of it, both before and after his elevation to the ſee of Canterbury. Having preſided over the dioceſe nineteen years, he died in 1089, leaving behind him a high character for wiſdom, learning, munificence, and other virtues. His munificence in the way of alms-giving has been very highly extolled; he is ſaid to have given away upwards of five hundred pounds a year, a ſum which muſt have been equal to eight or nine thouſand pounds at preſent. As an author, the archbiſhop maintained a high rank for the age in which he lived, and his works are written in good Latin: theſe are "Commentaries upon the Epiſtles of St. Paul:" "A Commentary on the Pſalms:" "A Treatiſe on Confeſſion:" "A Diſſertation concerning the Body and Blood of Chriſt in the Euchariſt:" and a collection of letters to pope Alexander II.; to Hildebrand, while archdeacon of Rome, and to ſeveral biſhops in England and Normandy. They were collected, and publiſhed in 1648, in a folio volume. Moreri. Moſheim. Henry's Hiſt.

Lanfranc, a phyſician and ſurgeon of Milan in the thirteenth century. He left his native country, in conſequence of ſome perſecutions that he had ſuffered during the troubles of the times, and went to France; and in the year 1295, having already obtained conſiderable reputation, he was invited to Paris by many members of the faculty. His dexterity as an operator, his candour, and the energy with which he communicated his knowledge to others in his lectures, gained him the reſpect and eſteem of his profeſſional brethren; and he certainly contributed to the advancement of ſurgery, which was at that time at a very low ebb in France. Nevertheleſs he held ſome opinions adverſe to the progreſs of the art; he condemned the uſe of the trepan, and abſolutely forbade the operation of lithotomy, alleging that the extraction of a calculus rendered the patient impotent. He pointed out in ſtrong terms the impropriety and danger of tents, which were generally employed at that time; the practice, however, continued to be reſorted to long after his animadverſions were made.

He left two works in MS., which were depoſited in the king's library at Paris; the one entitled, "Chirurgia parva," the other, "Ars completa totius Chirurgiæ, ſive Practica major" They were printed at Venice in 1490, with the title of "Chirurgia magna et parva," in folio; and have undergone ſeveral ſubſequent editions, and have been tranſlated into the French and German languages. Eloy. Dict. Hiſt.—Hutchinſon Biog. Med.

LANFRANCO, Giov. Maria da Terentio, in 1538 publiſhed his *Scintille di Muſica*, or "Sparks of Muſic."

a work which, notwithſtanding its quaint title, is often quoted with great praiſe by ſubſequent writers. It is now ſo ſcarce, that it would be difficult to find a copy of it throughout Italy.

Lanfranco Giovanni, a painter of hiſtory, whoſe principal merit was the freedom and eaſe with which he managed large compoſitions in their colour and execution, but to the great loſs of character and expreſſion. He was born at Parma in 1581, and was at firſt a diſciple of Agoſtino Caracci, but afterwards ſtudied under Annibale, and having obtained a great proficiency of handling, was employed by that maſter in his great work in the Farneſe palace at Rome, part of which he executed ſo well, that the difference between his painting and that done by Annibale himſelf is ſcarcely to be diſcerned.

Endowed by nature with a lively imagination, and having, after he left the Caracci, (under whom he had learnt the art of compoſition,) paid great attention to the artificial ſtyle of Corregio, particularly in the Duomo at Parma, and in the cupola there, he obtained a fondneſs for fore-ſhortening, loſing ſight of the ſimplicity of nature, and indulging his fancy in ideal forms and groups, which, while they exhibit his ſkill, deprive him of a reputation for judgment or true taſte. He was, as M. Fuſeli has obſerved, " a machiniſt in art of the firſt order, and taught his ſucceſſors the means of filling the eye at a great diſtance, by partly painting and partly leaving it to the air to paint."

His colour was powerful and rich, but not pure. He moſt frequently employed very dark ſhadows, which give his pictures a heavy and ſombrous appearance; and not being well verſed in chiaro-ſcuro, the lights in them are not unfrequently ill connected, or rather lack connection, and are too much in detached ſpots. With thoſe who prefer ſpirit and daſh to more ſtudied perfections, Lanfranco will, notwithſtanding his deficiencies, be always a favourite.

He was engaged by Urban VIII. to paint the miracle of St. Peter walking on the water for the grand cathedral, dedicated to that ſaint in Rome, and he afforded his patron ſo much pleaſure by his labour, that his holineſs conferred the honour of knighthood upon him.

His pencil being exceedingly rapid, and his life prolonged to the age of 66, his works are by no means ſcarce, but are to be met with in moſt collections. He died in 1647.

LANG, John Michael, a German Proteſtant divine, was born at Ezelwangen, in the duchy of Sulzbach, in the year 1664. Having received a good claſſical education, he was ſent to the univerſity of Altdorf, in 1682, and there applied himſelf with great ardour to thoſe ſtudies which were to fit him for his future profeſſion. He excelled particularly as an oriental ſcholar, and was admitted to the degree of M.A. in 1687, and then went to the univerſity of Jena, where he delivered public lectures on ethics and natural theology. He officiated ſeveral years as paſtor to a country church in the palatinate, but becoming diſſatisfied with a country life he removed to Altdorf, where he was created doctor, and admitted into the academical ſenate in 1697. Here he was elected to the profeſſorſhip of divinity, and appointed paſtor of one of the churches. After ſome years he was involved in theological diſputes, which ended in his quitting Altdorf, and removing to Prentzlow, in the year 1710, where he obtained an appointment, in which he remained till 1737, when he died, at the age of ſixty-ſeven. He was author of the following among other works then held in high eſtimation : " Diſſertationes Botanico-Theologicæ;" " Philologia Barbaro-Græca;" " De Fabulis Mohammedicis." Moreri.

Lang, in *Geography*, a narrow iſland of Denmark, ſomewhat more than two miles in length, ſituated in the Baltic, near the S. coaſt of Laaland. N. lat. 54° 42′. E. long. 11° 20′.

LANGANICO, or Sunri, anciently Olympia, a town of the Morea, on a ſmall river called Carbon, the ancient Alpheus, once a city of great note, near which were celebrated the " Olympian games," which ſee. See alſo Olympia. It is now an inconſiderable place; 60 miles S.W. of Corinth.

LANGAROOD, a town of Perſia, in the province of Ghilan, near the S. coaſt of the Caſpian ſea, which gives name to a road for ſhips. The cove has 10 feet water, but the entrance is narrow. The ſilk manufacture is here in high eſtimation; 20 miles S.E. of Reſhd. N. lat. 27. E. long. 50° 15′.

LANGASCHANTZ, a town of Sweden, in the province of Harjedalen; 110 miles S.W. of Sundſwall.

LANGBAINE, Gerard, in *Biography*, was born at Barton-kirk, in Weſtmoreland, about the year 1608. In 1626, he was admitted a ſervitor of Queen's college, Oxford, of which he became a ſcholar and afterwards a fellow. He took his degree of M.A. in 1633, and of D.D. in 1646. He had, however, ſome years previouſly to his taking the laſt degree, made himſelf known as a man of erudition, by an edition of Longinus, Greek and Latin, with notes, printed at Oxford in 1636. This work was followed by others of an hiſtorical and critical kind, diſplaying much ſound learning, and an ardent attachment to the exiſting order of things in church and ſtate. He was in habits of correſpondence with the learned Uſher and Selden, and is referred to by biſhop Nicholſon as a perſon admirably ſkilled in the antiquities and laws of England. In 1644, the univerſity, of which he was a member, appointed him keeper of its archives, and in the following year he was made provoſt of his college. He readily ſubmitted to the changes which took place at this period, and was accordingly allowed to remain in peace, employing his time and talents in the promotion of learning, and the maintenance of academical diſcipline. He died in the enjoyment of both his offices, in the year 1658. He had a ſon of the ſame name, who is known by his " Appendix to a Catalogue of Oxford Graduates;" and " A New Catalogue of Engliſh Plays."

LANGDON, in *Geography*, a townſhip of America, in Cheſhire county, New Hampſhire, incorporated in 1787, and containing 484 inhabitants.

LANGE, or Langius, John, in *Biography*, a phyſician of reputation, was born at Loewenburg, in Sileſia, in the year 1485. He purſued his ſtudies with ſingular zeal at Leipſic, Bologna, and Piſa, in the latter of which univerſities he was honoured with the degree of M.D. He then ſettled in the practice of his profeſſion at Heidelberg, where he ſoon acquired the eſteem of the public, and was nominated firſt phyſician to four ſucceſſive electors palatine; one of whom, Frederic II., he accompanied in his travels through the greater part of Europe. He attained the age of eighty, notwithſtanding his exceſſive uſe of cheeſe, which made a part of all his meals, aſſerting that phyſicians were miſtaken in decrying, as indigeſtible, this his favourite nutriment. He died at Heidelberg in June, 1565.

The moſt eſteemed of his works is entitled " Medicinalium Epiſtolarum Miſcellanea," firſt publiſhed at Baſle, in 1554, 4to. This edition contains but eighty-three epiſtles; but theſe were greatly multiplied in the ſubſequent editions. The work was full of the various learning of the times; and he in a great meaſure anticipated Sydenham in recommending the cool regimen in inflammatory diſeaſes. He likewiſe publiſhed the following works: " De Syrmaiſmo et ratione purgandi per vomitum, ex Egyptiorum invento et formulâ," 1572, 8vo.—"De Scorbuto Epiſtolæ duæ," 1624; together with the treatiſe of Sennertus on the ſame ſubject. —"Conſilia quædam et experimenta," 1676, 4to. together with the Conſilia Medicinalia of Velſchius. Eloy. Dict. Hiſt.

LANGEAC, in *Geography*, a town of France, in the department of the Upper Loire, and chief place of a canton, in the diſtrict of Brioude; 12 miles S. of Brioude. The place contains 1807, and the canton 9753 inhabitants, on a territory of 232½ kiliometres, in 16 communes.

LANGEAIS, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the diſtrict of Chinon, ſeated on the Loire; 12 miles W. of Tours. The place contains 2229, and the canton 9465 inhabitants, on a territory of 322½ kiliometres, in 12 communes. N. lat. 47° 18′. W. long. 0° 1′.

LANGEDORF, a town of Germany, in the duchy of Wurzburg; 7 miles S.W. of Kiſſingen.

LANGEFIORD, a ſmall iſland near the coaſt of Lapland. N. lat. 69° 38′.

LANGELAND, a fertile iſland of Denmark, ſituated in the ſouth part of the Great Belt, between the iſlands of Laaland and Funen, about 30 miles in length, and from three to five in breadth. It was formerly a principality, but is now only a county, the beſt in the kingdom, and under the ſame government as Funen. The chief town is Rudkioping. N. lat. 55°. E. long. 10° 50′.

LANGELMAKI, a town of Sweden, in the province of Tavaſtland; 42 miles N. of Tavaſthus.

LANGELSHEIM, a town of Weſtphalia, and principal place of a bailiwick, in the principality of Wolfenbuttle; 6 miles N.W. of Goſlar.

LANGENAU, a town of Pruſſia, in the province of Oberland, the church of which is celebrated for beautiful paintings; 8 miles N. of Biſchofswerder.—Alſo, a town of Pruſſia, in the province of Ermeland; 25 miles N.W. of Heilſberg.—Alſo, a town of Bavaria, ſituated on a ſmall river, which runs into the Danube; 11 miles N.E. of Ulm.

LANGENBERG, a town of the duchy of Berg; 15 miles N.E. of Duſſeldorf.

LANGENBURG, a town of Germany, in the principality of Hohenloe, on the Jaxt; 32 miles W. of Anſpach.

LANGENES, an iſland in the North ſea, near the coaſt of Norway, about 24 miles in circumference. N. lat. 59° 20′.

LANGENFELD, a town of Saxony, in the Vogtland; 10 miles S.S.W. of Zwickau.

LANGEN-SALZA, a town of Saxony, the capital of Thuringia, on the Salza. Its environs are pleaſant and manufactures flouriſhing. It contains about 900 houſes, two churches, a college, and a caſtle; 14 miles W. of Erfurt. N. lat. 51° 4′. E. long 10° 42′.

LANGENSCHWALBACH, a town of Weſtphalia, in the county of Catzenelnbogen, celebrated for its mineral waters; 9 miles N.W. of Mentz.

LANGEN-SEE. See Lake.

LANGENTHAL, a town of Switzerland, in Berne, advantageouſly ſituated for commerce with France and Germany; for the convenience of which it has three fairs, at which are annually ſold from 10,000 to 11,000 pieces of linen, 8000 of which are whitened; theſe are exported to Spain, Portugal, America, &c. Cheeſe is likewiſe ſold here in great quantities, beſides horſes, cattle, grain, and many other articles, both of agriculture and manufacture. In its vicinity are mineral ſprings; 18 miles N.E. of Berne. N. lat. 47° 12′. E. long. 7° 33′.

LANGENZENN, anciently called *Cinna*, or *Cenna*, a town of Germany, on the river Zenn; 12 miles W. of Nuremberg.

LANGEROGE, a ſmall iſland in the German ſea, near the coaſt of Eaſt Frieſland, with a ſmall town. N. lat. 53° 42′. E. long. 7° 24′.

LANGESCHEED, a town of Weſtphalia; 25 miles W. of Brilon.

LANGESUND, a ſea-port town of Norway, in the dioceſe of Chriſtiania; 50 miles S.S.W. of Chriſtiania.

LANGEWANG, a town of the duchy of Stiria; 16 miles N.E. of Pruck.

LANGFORD, a town of America, in the ſtate of Kentucky; 25 miles E.S.E. of Stamford.

Langford *Bay*, a bay of the iſland of Antigua, on the N. coaſt, W. of Peyerſon's Point.

LANGHOLM, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 60° 45′. E. long. 21° 40′.

Langholm, a market-town and burgh of barony under the duke of Buccleugh, is ſituated in a pariſh of the ſame name, in the diſtrict of Eſkdale and county of Dumfries, Scotland. The population of this town is ſtated, in the parliamentary reports of 1801, at 2039 perſons, but it is preſumed, this number includes the whole pariſh. A market is held here every week, and four fairs annually; that held on the 26th of July is conſidered as the greateſt in Scotland for lambs. At a ſhort diſtance from the town is the village of New Langholm, which has been erected by the duke of Buccleugh for the eſtabliſhment of an extenſive cotton manufactory. The country along the banks of the Eſk is generally flat, well ſheltered with woods, and yield luxuriant crops, particularly of oats and barley. The other parts of the pariſh conſiſt chiefly of ſmall hills, covered with verdure, and affords excellent paſture for ſheep. The duke of Buccleugh has built in this neighbourhood a very handſome manſion called Langholm-lodge, which ſtands in a delightful valley.

LANGHORNE, John, in *Biography*, an excellent Engliſh poet, was born at Kirkby-Stephen, in Weſtmoreland, in 1735. By the death of his father, the education of John and three other children devolved upon his mother, who fulfilled the taſk with great aſſiduity and affection. He received his ſchool-learning at Appleby under Mr. Yates, who joined elegance of taſte to the acquirements of a claſſical ſcholar. Langhorne continued under his tuition till the age of eighteen; when the narrowneſs of his circumſtances obliged him to engage himſelf as domeſtic tutor in a family, near Ripon. He made himſelf known as a poet, by a poem entitled "Audley-park," deſcriptive, as its title imports, of the beauties of that place. He ſoon after became an aſſiſtant at the free-ſchool of Wakefield, and taking orders, acquired popularity as a preacher. In 1759, he undertook the tuition of the ſons of Robert Cracroft, eſq., of Hackthorn, near Lincoln, and while in this ſituation he made a collection of ſuch miſcellaneous poems as he had written, and publiſhed them in a volume for the benefit of a friend in diſtreſs. In the year 1760, he entered himſelf at Clare-hall, Cambridge, for the purpoſe of taking a degree, and dated from that place a poem on the king's acceſſion, printed in the Univerſity collection of verſes on that occaſion. In 1761, he officiated as curate to the clergyman of Dagenham, in Eſſex, and at the ſame period he publiſhed ſeveral poems, which made him generally known among the votaries to the Muſes, and in 1762, he appeared as a proſe writer by his "Letters on religious Retirement, Melancholy, and Enthuſiaſm," and by his eaſtern tale of "Solyman and Almena." He was, at this time, likewiſe a writer in the Monthly Review. His next work, publiſhed in 1763, entitled "Letters ſuppoſed to have paſſed between Theodoſius and Conſtantia," founded on a ſtory in the Spectator, became popular, and obtained for the author much applauſe. Mr. Langhorne, in the following year, removed to the metropolis, where he was appointed curate and lecturer of St. John's, Clerkenwell, and in the ſame year he publiſhed two volumes of ſermons, which he entitled "Tracts of religious Philoſophy." Dr. Hurd now appointed him aſſiſtant preacher at Lincoln's-Inn, and Mr. Langhorne ſoon after gave the public his "Letters on the Eloquence of the Pulpit:" and "Letters to and from ſelect Friends, or Effuſions of Friendſhip and Fancy." He is ſaid to have publiſhed a defence of lord Bute; but a paſtoral poem, entitled "Genius and Valour," he avowed, the object of which was to vindicate the natives of Scotland from the rancorous abuſe thrown upon them by Churchill. This obtained for the author a complimentary letter from the univerſity of Edinburgh, with a diploma of doctor of divinity. He had, in the year 1760 or 1761, quitted the family of Hackthorn, on account of being refuſed the hand of one of Mr. Cracroft's daughters; in 1767, when he had obtained a ſtation of much greater reſpectability, and when he was looked up to as an author and clergyman, he renewed his ſuite, and was ſucceſsful. The living of Blagdon, in Somerſetſhire, was purchaſed, which afforded the newly-married couple a deſirable reſidence, but this happy union was fatally diſſolved by the death of Mrs. Langhorne in child-bed, in the enſuing year. Life now ſeemed to have loſt its charms on the ſurvivor, he quitted a place which ſerved only to remind him of his heavy affliction, and retired to the houſe of his brother William, a clergyman at Folkeſtone, in Kent. In this retreat, inſtead of giving himſelf up to melancholy, he very wiſely occupied his mind with a literary taſk of ſome labour and extent, and the two brothers jointly produced a new verſion of Plutarch's Lives, with notes critical and explanatory, and a life of the author, which was publiſhed in 1771, and met with a favourable reception. He had publiſhed, previouſly to this, "Letters ſuppoſed to have paſſed between St. Evremond and Waller," two vols.; and "Frederic and Pharamond, or the Conſolations of Human Life," a philoſophical diſcourſe. His "Fables of Flora" were publiſhed in 1771, as was another poem, entitled "The Origin of the Veil." In 1772, he paid a viſit to his native country, which produced a ſecond matrimonial connection, and having indulged himſelf and his lady with a continental tour, he ſat down again at his living of Blagdon. To the duties of the church he added thoſe of a magiſtrate, and at the deſire of his friend Dr. Burn, he gave the world accurate ideas of this important office in a poem, entitled "The Country Juſtice." The firſt part appeared in 1774, and was greatly admired for the manly ſtrain of its ſentiments, and the beauty of its deſcriptions. The two other parts were of inferior merit, and publiſhed at different periods. In 1776, he loſt his ſecond wife in child-bed, which muſt, to a man of feeling, have been an unuſually ſevere calamity, and from the effects of which he probably never wholly recovered. His affliction was in a degree alleviated by the connexions that he had acquired in the great world, one of the fruits of which was, the preſentation to a prebend in the cathedral of Wells, in 1777, by the biſhop of that ſee. His health was, however, declining, yet he continued to amuſe himſelf and the public with writings of different kinds, the laſt of theſe was a romantic tale, entitled "Owen of Carron." He died at Blagdon, in April 1779, in the forty-fifth year of his age. He was amiable in his manners, but is ſaid to have been rather too much addicted to convivial indulgences: if this habit was incurred by domeſtic misfortunes, though not to be juſtified, it may, in a meaſure, be palliated, and the ſubject of it is to be truly pitied. "His poetry," ſays an able critic, "is generally harmonious, abounding in pleaſing imagery, but over-loaded with ornament, and not free from obſcurity and affectation. His proſe writings are rather light and flowery than ſolid and natural. His ſermons have been cenſured for the looſe ſoft texture of their ſtyle, and the falſe pathos of their ſentiment. In religion he was inclined to enthuſiaſm, but the morality of all his works is pure and rational"

LANGIN, in *Geography*, a town of France, in the department of Mont Blanc; 6 miles N. of Bonne.

LANGINES, a ſmall iſland of Denmark, in the North ſea, near the weſt coaſt of South Jutland; 2 miles N.W. from the iſland of Nordſtrand.

LANGIONE, a town of the kingdom of Laos, conſidered by ſome as the capital. N. lat. 22 30'.

LANGLE'S BAY, a bay on the weſt coaſt of the iſland of Saghalien, ſo called by M. La Perouſe. N. lat. 47° 49'. E. long. 142° 49'.

LANGLE'S *Peak*, a mountain on the north coaſt of the iſland of Jeſſo, ſaid to be more than 1200 toiſes above the level of the ſea. N. lat. 45° 25'. E. long. 142° 20'.

LANGLEY ISLAND, a ſmall iſland, near the ſouth coaſt of Newfoundland, about 3 miles S. from the iſland of Miquelon. N. lat. 46° 42'. W. long. 56 5'.

LANGOE, a ſmall iſland of Denmark, near the north coaſt of the iſland of Funen. N. lat. 55° 35'. E. long 10° 11'.—Alſo, an iſland in the North ſea, about 80 miles in circumference, and 40 from the coaſt of Norway, celebrated for its marble quarries. N. lat. 68 16'.

LANGOGNE, a town of France, in the department of the Lozére, and chief place of a canton, in the diſtrict of Mende; 21 miles N.E. of Mende. The place contains 2923, and the canton 7450 inhabitants, on a territory of 250 kiliometres, in 8 communes. N. lat. 44 44'. E. long. 3 54'.

LANGON, a town of France, in the department of the Gironde, and chief place of a canton, in the diſtrict of Bazas; 9 miles N. of Bazas. The place contains 3208, and the canton 10,602 inhabitants, on a territory of 130 kiliometres, in 13 communes.—Alſo, a ſmall iſland in the north part of the gulf of Bothnia. N. lat. 65 32'. E. long. 22° 26'.

LANGORAN, a ſmall iſland on the eaſt ſide of the gulf of Bothnia. N. lat. 63 32'. E. long. 22 18'.

LANGPORT, a market-town and pariſh in the hundred of Pitney, and county of Somerſet, England, is ſituated upon the banks of the river Parrot, near its confluence with the Irvell. It was formerly a royal borough; and the inhabitants, by immemorial cuſtom, ſtill claim ſeveral borough-privileges. This town conſiſts chiefly of two ſtreets, and is divided into two parts, called Langport-Eaſtover and Langport-Weſtover. The government is veſted in a portreve, a recorder, two capital bailiffs, and nine common-council men. The river Parrot being navigable by lighters, a conſiderable trade is carried on, between this place and Bridgewater, in timber, ſtone, coal, iron, and ſalt. The church, dedicated to All-Saints, is adorned with a very fine tower, which has ſeveral niches on the weſt ſide, formerly ornamented with handſome ſtatues. Adjoining to the town are two large commons, called *Common-Moor* and *Ragg-Common*; the former conſiſting of 150, and the latter of 70 acres of good meadow ground, upon which all the inhabitants not only aſſume the right of feeding cattle, but even of building as they deem moſt convenient for themſelves. The houſes in Langport, according to the parliamentary returns of 1800, amounted to 126 in number, and were occupied by 754 inhabitants. Here are a weekly market and three annual fairs. Collinſon's Hiſtory, &c. of Somerſetſhire, 3 vols. 4to.

LANGRAVA, a town of Portugal, in the province of Beira, having a medicinal ſpring; 12 miles N.W. of Pinhel.

LANGREL-SHOT, is a ſort of ſhot ſometimes uſed at ſea, made of two bars of iron, with a joint, or ſhackle, in the middle; by which means it can be ſhortened, and ſo put the better into the gun; and at each end there is a half bullet, either of lead or iron.

This ſhot, when diſcharged, flies out expanded, and ſo does more execution among the enemies rigging, &c. It is never uſed in royal ſhips, but very often by privateers and merchantmen.

LANGRES, in *Geography*, a town of France, and chief place of a diſtrict, in the department of the Upper Marne. In the time of Julius Cæſar, this was the capital of the Lingones. On the irruption of Attila, it was taken and burnt; and after having been rebuilt, the Vandals deſtroyed it. It was, at an early period, erected into a biſhopric; and from the reign of Philip Auguſtus to the revolution, the prelates were peers of France. It afterwards belonged to Burgundy, and fell with the reſt of that kingdom to France. N. lat. 47° 52′. E. long. 4° 25′.

LANGRISH, Browne, in *Biography*, a phyſician of the laſt century, who diſtinguiſhed himſelf as an advocate for the mechanical theories of phyſiology and medicine, and by the numerous experiments with which he ſupported thoſe doctrines. A more accurate inveſtigation of the nature of the animal economy has exploded them; but Dr. Langriſh had the merit of aſcertaining ſeveral intereſting facts in reſpect to the nature of the circulating powers. He died in London, on the 29th of November 1759, and left the following works: "A new Eſſay on Muſcular Motion, founded on Experiments, &c." 1733, 8vo.; "Modern Theory of Phyſic," 1738, 8vo.; "Phyſical Experiments upon Brutes," 1745, 8vo.; "Croonian Lectures on Muſcular Motion," 1747. Eloy. Dict. Hiſt.

LANGSELE, in *Geography* a town of Sweden, in Angermannland, on a river of the ſame name; 45 miles N.N.W. of Hernoſand. N. lat. 63° 14′. E. long. 16° 49′.

LANGSKAR, a ſmall iſland on the eaſt ſide of the gulf of Bothnia. N. lat. 63°. E. long. 21° 9′.

LANGTON, Stephen, in *Biography*, archbiſhop of Canterbury in the 13th century, was a native of England, but was educated at the univerſity of Paris, where he afterwards taught divinity, and explained the Scriptures with much reputation. His character ſtood ſo high, that he was choſen chancellor of that univerſity, canon of Paris, and dean of Rheims. He was afterwards ſent for to Rome by pope Innocent III., where he was created a cardinal. In the year 1207, the monks of Canterbury having, upon a vacancy taking place in that ſee, made a double return, both parties appealed to the pope, and ſent agents to Rome to ſupport their reſpective claims. His holineſs not only determined againſt both the contending candidates, but ordered the monks of Canterbury, then at Rome, immediately to proceed to the election of an archbiſhop, and, at the ſame time, commanded them to chooſe cardinal Stephen Langton. After various excuſes, which the pope knew how to get over, by abſolving the agents in the buſineſs from all ſorts of promiſes, oaths, &c. and by threatening them with the higheſt penalties of the church, they complied, and Langton was conſecrated by the pope at Viterbo. As ſoon as the news arrived in England, king John was incenſed in the higheſt degree both againſt the pope and monks of Canterbury. The laſt, being within the reach of his power, experienced the effects of his indignation. He ſent two officers with a company of armed men to Canterbury, took poſſeſſion of the monaſtery, baniſhed the monks out of the kingdom, and ſeized all their property. He wrote a ſpirited letter to the pope, whom he accuſed of injuſtice and preſumption, in raiſing a ſtranger to the higheſt dignity in his kingdom, without even his knowledge; and he added, that if his holineſs did not inſtantly repair the injury, he would break off all communication with Rome. John, unfortunately for himſelf and his kingdom, was unfit for ſo arduous a conteſt; and he, in the end, ſubmitted to the moſt diſgraceful terms. (See John, and Innocent III.) In 1213, cardinal Langton arrived in England, and took poſſeſſion of the ſee; and though he owed all his advancement to the pope, yet the moment he became an Engliſh baron, he was inſpired with a zealous attachment to the liberties and independence of his country. In the very year in which he came over, he and ſix other biſhops joined the party of the barons, who aſſociated to reſiſt the tyranny of the king; and at length they were ſucceſsful in procuring the great charter. Langton was equally zealous in oppoſing the claims of the papal agents, particularly of the pope's legate, who aſſumed the right of regulating all eccleſiaſtical affairs in the moſt arbitrary manner. In the grand conteſt which took place between king John and the barons about the charter, the archbiſhop's patriotic conduct gave ſuch offence to the pope, that, in 1215, he laid him under a ſentence of ſuſpenſion. Nevertheleſs, in the following year, we find Langton aſſiſting at a general council held at Rome; and during his abſence from England at this time, king John died. In 1222, he held a ſynod at Oxford, in which a remarkable canon was made, prohibiting clergymen from keeping concubines publicly in their houſes, or from going to them in other places ſo openly as to occaſion ſcandal. In the following year, he, at the head of the principal nobility, demanded an audience of king Henry III., and demanded of him a confirmation of the charter of their liberties. Their determined manner convinced the king that their demand was not to be refuſed, and he inſtantly gave orders for the aſſembling of parliament. The archbiſhop ſhewed, in ſeveral inſtances, that he was friendly to the legal prerogatives of the crown; and by a firm and impreſſive conduct, in a caſe of great difficulty, he prevented the calamity of a civil war. He died in the year 1228, leaving behind him many works, which prove that he was deſerving the character of being as learned and polite an author as any of the age in which he flouriſhed. He wrote "Commentaries" upon the greateſt part of the books of the Old and New Teſtament. He was deeply ſkilled in Ariſtotelian dialectics, and the application of them to the doctrines of Scripture. The firſt diviſion of the books of the Bible into chapters is aſcribed to this prelate. The hiſtory of the tranſlation of the body of Thomas à Becket was printed at the end of that archbiſhop's letters, at Bruſſels, 1682. His letter to king John, with the king's anſwer, may be ſeen in d'Archery's Spicilegium. Moſheim's Eccl. Hiſt. Henry's Hiſt. of Eng.

Langton, in *Geography*, a town of Scotland, in the county of Berwick; 2 miles S.W. of Greenlaw.

LANGUAGE, a ſet of words which any people have agreed upon, whereby to communicate their thoughts to each other. Or, language, in general, ſignifies the expreſſion of our ideas by certain articulate ſounds, which are uſed as the ſigns of theſe ideas. See Articulation.

Whatever be our opinion reſpecting the progreſſive amelioration of brutes, if the capacity of language were communicated to them, there can be no heſitation in admitting the progreſſive deterioration of the human ſpecies, if they were deprived of it. If man had not poſſeſſed this, or ſome other extenſive power of communication, that aſtoniſhing ſyſtem, which we call the human mind, would have remained in inactivity, its faculties torpid, its energies unexcited, and that capacity of progreſſive improvement, which forms ſo important a part of the mental conſtitution of man, would have been given in vain, would have been unknown, except to him who gave it. But in every part of the creation we diſcern a unity of deſign, which equally proves the wiſdom and benevolence of the great Firſt Cauſe. The means of bringing his powers into activity are beſtowed upon man, as well as the powers themſelves; and it is a poſition which will bear a vigorous examination, that the accuracy of human thought and the extent of human intellect generally proceed in equal ſteps with the accuracy and extent of language. "This ineſtimable prerogative," ſays Smellie, "is perhaps one of the greateſt ſecondary bonds of ſociety, and the greateſt improvement to the human intellect. Without artificial language, though nature has beſtowed upon every animal a mode of expreſſing its wants and deſires, its pleaſures and its pains,—what a humiliating figure would the human ſpecies exhibit, even upon the ſuppoſition that they did aſſociate. But when language and ſociety are conjoined, the human intellect, in the progreſs of time, arrives at a high degree of perfection. Society gives riſe to virtue, honour, government, ſubordination, arts, ſciences, order, happineſs. All the individuals of a community conduct themſelves upon a regulated ſyſtem. Under the influence of eſtabliſhed laws, kings and magiſtrates, by the exerciſe of legal authority, encourage virtue, repreſs vice, and diffuſe through the extent of their juriſdiction the happy effects of their adminiſtrations. In ſociety, as in a fertile climate, human talents germinate and are expanded; the mechanical and liberal arts flouriſh; poets, orators, hiſtorians, philoſophers, lawyers, phyſicians, and theologians, are produced. Theſe truths are pleaſant, and it were to be wiſhed that no evils accompanied them: but through the whole extent of nature it appears to our limited views, that good and evil, pleaſure and pain, are neceſſary and perpetual concomitants." It will not appear too much to affirm, when we conſider the influence of language on the intellect, that if that genius, which has dazzled the world with its ſplendour and extent, had been originally deſtitute of the power of communication, he would not have riſen above the level of the leaſt cultivated of his fellow-mortals. Conceive him (to uſe the ideas of Condillac) bereft of the uſe of viſible ſigns, how much knowledge would be concealed from him, attainable even by an ordinary capacity! Take away from him the uſe of ſpeech,—the lot of the dumb teaches you in what narrow bounds you encloſe him. Finally, deprive him of the uſe of all kinds of ſigns; let him not know how to make with propriety any geſture;—you would have in him a mere idcot.

We are far, however, from believing, with lord Monboddo, that the human race have actually riſen from the very loweſt ſtage,—that of mere brutality. His lordſhip's opinion is too ſingular to be omitted here. He ſuppoſes, on the authority of ſeveral travellers whom he quotes, (and of whoſe paſſion for the marvellous his quotations leave no room to doubt,) that there are nations without laws, or any of the arts of civilized life, without even language; and that ſome of them, to complete their relationſhip to the monkey tribe, had actually tails. This, with other opinions, which diſplay rather the credulity of the man of ſyſtem than the ſober and cool judgment of the philoſopher, has been expoſed to the lively ridicule of Horne Tooke: and though we wiſh never to countenance the idea, that ridicule is a proper teſt of truth,—we are willing to admit, that there are ſome opinions which it is below the dignity of reaſon to refute.

We ſee in language a complicated whole, which we have been accuſtomed to conſider as it is, without attempting to aſcertain what it has been. We ſee all regularity, and beauty; and we do not aſk ourſelves the queſtion, has language always been thus regular and beautiful? When we look back into the earlier periods of human nature, we find that that which now wears the appearance of art was early the invention of neceſſity, gradually perfected and brought to a ſyſtematic form, by cauſes which have operated generally, but have received modification from the influence of local or temporary circumſtances. A complete ſyſtem of the origin and progreſs of language would be a hiſtory of the progreſs of human intellect. This we ſhall not attempt: perhaps our reſources of knowledge are not ſufficient to render the attempt in any degree ſucceſsful; but a ſhort outline of the early hiſtory of language, particularly of written language, will be neither unintereſting nor uſeleſs.

Our direct evidence is not extenſive, and we are too much obliged to have recourſe to hypotheſis, in tracing the progreſs of improvement in any department of ſcience. We are unable always to aſcertain (as Mr. Stewart obſerves) how men have actually conducted themſelves on particular occaſions; and we are then led to inquire in what manner they are likely to have proceeded from the principles of their nature, and the circumſtances of their external ſituation. In ſuch inquiries, the detached facts which the remains of antiquity, or the narration of travellers, afford us, or the actual appearances of language at preſent, ſerve as landmarks for our ſpeculations. "In examining the hiſtory of the human mind, as well as in examining the phenomena of the natural world, we cannot always trace the progreſs by which an event *has been* produced; and it is frequently of importance to diſcover how it *may have been* produced, by cauſes known to exiſt. The ſteps in the formation of language cannot probably be determined with certainty; yet if we can ſhew the known principles of human nature, how the various parts may naturally have ariſen, the mind is not only to a certain degree ſatisfied, but a check is given to that indolent philoſophy which refers to a miracle whatever appearances, either in the natural or moral world, it is unable to explain."

Diodorus Siculus (lib. i.) and Vitruvius (Archit. lib. ii, c. 21.) ſuppoſed that the firſt men lived for ſome time in the woods and caves, like the beaſts, uttering only confuſed and inarticulate ſounds; till aſſociating for mutual aſſiſtance, they came by degrees to uſe articulate ſounds, mutually agreed upon for the arbitrary ſigns or marks of thoſe ideas in the mind of the ſpeaker, which he wanted to communicate to the hearer. By what degrees they proceeded from inarticulate to articulate ſounds, theſe writers do not attempt to point out; and unleſs we admit that theſe articulate ſounds were connected with certain feelings, in the ſame manner as what are called the natural ſigns, or that they were eaſily produced, which will not be allowed by thoſe who have attended to the ſtructure of the organs of ſpeech, the account we have received from a better informed hiſtorian will not loſe ground.

Plato, in Cratyl. p. 383. p. 425. ed. Serrani, ſeems to maintain, that the firſt language was of divine formation; for he ſuppoſes that the names of things had originally ſome natural connection or congruity with the things themſelves, and that the firſt names muſt have been juſtly impoſed, becauſe they were impoſed by the gods.

Moſes, however, on whoſe authority we may more confidently depend, gives us to underſtand that the rudiments of language were begun by man, under the ſuperintendence of his Maker. The Supreme Being cauſed all the animal creation to paſs before their lord, to receive from him their names. If we conſider that the numerous varieties which we obſerve in the ſubordinate claſſes of the brute creation probably originated in a comparatively ſmall number of individuals, as the almoſt equally numerous varieties of men ſprang from our great progenitor, this almoſt endleſs taſk, as it at firſt ſight appears, is very much reduced in its magnitude. Here is the firſt ſtep. Miracles are never uſed except when they are neceſſary, that is, when the ſame effect cannot be produced by the common laws of nature: and hence we feel inclined to believe, that here the divine communication ceaſed; and that what man had been inſtructed to begin, he was left to complete for himſelf. Indeed, if we ſuppoſe that more than the application of names to natural objects had been divinely taught, yet we muſt admit that theſe communications would be bounded by the wants of the being to whom they were made. It is not probable that the divine inſtructor would lead man to fix upon words, to denote things then unknown, or to denote ideas which were not then acquired. "It is not neceſſary to ſuppoſe," ſays Kett, "that the Creator inſpired the firſt parents of mankind with any particular original or primitive language; but that he made them fully ſenſible of the power with which they were endued of forming articulate ſounds, gave them an impulſe to exert it, and left the arbitrary impoſition of words to their own choice." This ſeems to be intimated Gen. ii. 19. See Shuckford's Connection, vol. i. book ii. p. 111.

Let us then ſuppoſe the uſe of articulation given, and its application in ſome inſtances pointed out, in the invention of the names of animals; which, we may obſerve, is, in fact, the firſt ſtep that would probably have been taken, preſuppoſing the power of articulation, if no divine direction had been given. Words would originally be ſimply the ſigns of things, and farther of individuals. Every new object, for which neceſſity required a name, would receive a different name from others: but if there were a ſtriking ſimilarity between this new object and one which had already received a name, the old one would be transferred. One of the principles of aſſociation is ſimilarity; and this new impreſſion would recal the idea of the former object which it reſembled, and conſequently the word with which it was connected: and thus what originally was a name only for an individual, would gradually become the name of a multitude. Thus Lee Boo, who had been taught by his fellow-voyagers to call a great Newfoundland dog by the name of Sailor, uſed to call every dog he ſaw Sailor. There is little or no difficulty attending the application and claſſification of ſenſible objects: it ſeems to be an operation ſimple and eaſy, if we preſuppoſe (as we have done) that ſome articulate ſounds were known.

When ſeveral objects had received the ſame name, it would be ſometimes neceſſary to diſtinguiſh them. Our procedure in ſuch caſes is to connect with the name of the object, the name of a diſtinguiſhing quality, or to ſpecify ſome relation it has with other objects; but this ſuppoſes that to be already done, which we muſt conſider as yet to be done. Now we muſt bear in mind that ſimilarity, (ſenſible external ſimilarity,) and local connection, are thoſe principles of aſſociation, which are known to be moſt active at preſent in the minds of the illiterate and uncultivated; they muſt alſo have been moſt active in the minds of all men in the rude ſtates of ſociety. A peculiar colour, (which would furniſh one principle of diſtinction,) would naturally be denoted by the name of an object remarkable for that colour, and this name, joined with the general term, would confine it to the particular object it was meant to ſpecify. This is a procedure ſo ſimple, that one may expect to find ſome traces of it ſtill remaining, and it is what we actually do in common language. An *orange ribbon* will preciſely explain our meaning. We wiſh to diſtinguiſh a ribbon from others by its colour; in this inſtance we are able, agreeably to the cuſtom of our language, to employ the name of an object remarkable for that colour, to denote the colour itſelf; and it is to be obſerved, that ſenſible qualities were thoſe, and thoſe only, which would be firſt noticed, and moſt requiſite to be noticed.

Local ſituation, or vicinity to ſome object, would furniſh another ground for diſtinction; the *fountain near the cave*, for inſtance. Now in order to expreſs this, the procedure would be ſimple and intelligible, if immediately preceding or following the term employed to denote *fountain*, the term denoting *cave* were added. As we ſhould at preſent uſe the expreſſion, the *barn-yard*, for the yard near to, or adjoining the barn; the *hermitage-walk*, for the walk leading to the hermitage. This juxtapoſition of the ſigns, to ſignify the congruity or ſimilarity of the objects they denote, is the moſt natural, and in a language little extended, ſufficiently adequate for all the purpoſes of common life; but it is obvious that it would allow very great latitude of interpretation; and hence, as language became more copious, contrivances were uſed to denote the *nature* of the connection which ſubſiſted between the objects denoted by the ſigns employed. The chief of theſe is the employment of prepoſitions, at firſt ſeparately, and afterwards, in ſome caſes, coaleſcing with, and forming a part of the word; and the origin of theſe furniſhes additional proof that the procedures we have ſpoken of were in reality thoſe of the early framers of language (ſee GRAMMAR); but theſe were contrivances of a later date than thoſe of which we here ſpeak.

By degrees it was found convenient, at leaſt by ſome tribes, to deſignate thoſe names which were employed, in connection with other names with a view to point ſome quality or reſtricting circumſtance of the thing ſignified, by ſome note that they were ſo employed. The ſpeaker might certainly have left the inference to ſimple juxtapoſition; but this appears to have been done in few languages, after improvements began to take place; and to effect ſuch deſignation words (in ſome caſes denoting *add*, *join*, *like*, &c.) were ſubjoined to the particularizing names, and they then were uſed only as adjectives, (or, to uſe a more general term, as adnouns.) The Chineſe, however, ſtill make no diſtinction in form, between words when employed as nouns and as adnouns; the ſame word when placed firſt being an adjective, and when placed laſt a ſubſtantive; thus *hao gin* is a good man; and *gin te hao* is the goodneſs of a man. We uſe the ſame word in many inſtances both as a noun and an adnoun; but a large proportion of our ſimple adjectives are formed as above, and are never employed as ſubſtantives; the Chineſe, on the other hand, when a ſubſtantive is not to be uſed as an adjective, add the deſignating ſyllable *çu* to it.

As far as the proceſſes we have deſcribed regard ſenſible objects and their connections, all ſeems very plain; and we find ſo many traces of ſimilar modes of proceeding in languages at preſent in uſe, that we can ſcarcely doubt that at leaſt it ſtrongly reſembles the actual procedure in the early ſtages of language. And we may remark, as we go on, that every procedure, in order to be probable, ſhould be ſimple, and ſuch as might eaſily be adopted. It would not be long before art was applied to perfect and correct that which neceſſity began; but even this muſt have had the features of ſimplicity, muſt have been directed by circumſtances which would not lie under the controul of man. It is not probable that any variations would be formed by regular analogies, except ſuch as really exiſted in the ſituation or connection of the object; nor that they would form any combinations of words, excepting when the objects they ſignified had ſome real or apprehended connection.

In order to expreſs objects which were not ſenſible, ſo as to convey to others notions or feelings which exiſted in the mind of the ſpeaker, words would be uſed which had previouſly been appropriated to objects to which thoſe objects of the mind's eye appeared to have ſome reſemblance, or other connection. This reſemblance or connection was frequently forced, and to thoſe whoſe ſituation was different would not be at all ſtriking; in other caſes it was correct, and the juſtneſs of application is proved by a ſimilar procedure of unconnected inventors. We may derive great light here from the hieroglyphics; for there cannot be a doubt that where the viſible ſign which originally repreſented only a ſenſible object, was applied to denote ſome quality diſcovered by reaſoning and obſervation, or ſome internal feeling, the audible ſign or word was applied in a ſimilar manner. The writing would, of courſe, as Warburton very juſtly obſerves, be that very picture which was before painted by the fancy, and thence delineated in words. Some inſtances will be adduced, when we come to conſider the hieroglyphical mode of communication; at preſent we will add one or two as illuſtrations of the principles we have laid down. The term uſed to denote the *mouth*, denoted alſo *ſpeech*; this, connected with the *dog*, ſignified the *dog's voice*. They proceeded further, and uſed this compound, at leaſt the hieroglyphic denoting it, to ſignify *lamentation* and the *ſorrow* which produced it. At firſt view this procedure appears extraordinary; to enter fully into the reſemblance, we muſt remember that in uncultivated minds grief is loud and clamorous; and it is to a ſimilar reſemblance, that the ſame term has, in our own language, been applied to the cry of a dog in pain, and to the expreſſion of lamentation among the lower claſſes of the Iriſh. It was a procedure much more natural when the term dog joined with the word denoting a field was made to ſignify *hunting*. Our readers will be able, even in the preſent refined period of our language, to trace numerous inſtances, in which the names of intellectual things have been obviouſly transferred from ſenſible things; and to thoſe who have attended much to the ſubject, it will not appear too much to affirm, that in every inſtance where a word is not the name of a ſenſible object, it has acquired its preſent force by a gradual tranſition from its primary application to ſenſible objects. Mungo Park has furniſhed us with ſome good ſpecimens of the commencement of this tranſition in the Mandingo language; thus *telingabalid*, literally *ſtraight-bodied*, ſignifies *proud*; *juſu bota*, literally *the heart comes out*, ſignifies *angry*; *a beagee*, literally *is here*, ſignifies *alive*; &c. In every known language the tranſition has been begun; but it is only among the more refined that it has been complete. In our own, we find abundance of inſtances in almoſt every intermediate ſtage of the progreſs, as well as in its termination.

Language would proceed but awkwardly without thoſe wheels which have been gradually made for it; but all which can be thought neceſſary for communication are the noun and the verb; and even of the latter, as a diſtinct claſs of words, the neceſſity may juſtly be doubted. We regard it as next to certain that the whole of what is now (by aſſociation) implied or denoted by the verb, beyond what is denoted by the acknowledged noun, was originally mere inference from the juxtapoſition of the verb-noun with another noun. We cannot indeed advance one ſtep in oral communication, without leading our hearers to the inference that certain ideas are connected in our minds, or that we believe certain objects, properties, or events, to be connected. The connecting link, however, need not always be ſtated; in the firſt ſtage of language it would not exiſt, becauſe the *firſt* words could only be names without the idea of affirmation being appropriated to any of them; and in the language of childhood it does not exiſt. Words are placed together; and it is eaſily *underſtood* that the correſponding ideas are connected in the mind. "Mamma, milk—good," would ſurely be underſtood by any one; and depending upon the eaſe of inference, the ancient writers (long after words had been appropriated to expreſs affirmation) continually left their readers to make it for themſelves. But how ſlowly, and how ambiguouſly, communication would, in many caſes, proceed, without ſome *appropriated* link of connection, any one may be convinced by attempting to expreſs a train of thoughts without thoſe words which have the idea of *affirmation* aſſociated with them, in the forms ſo expreſſing affirmation.

The chief difficulty oppoſing the admiſſion of the opinion that verbs were originally nouns, ariſes from the peculiarities exiſting in the external character of verbs, the notion of time and of modes of exiſtence and action having become aſſociated with them, and the ſubject in numerous inſtances, and occaſionally the object, having coaleſced with the verb; but theſe are all accidental circumſtances; and the mere Engliſh ſcholar has here advantages which the learned do not poſſeſs, becauſe he continually meets with verbs in his own language the ſame in every external character as the noun, and frequently uſed as nouns. The point, however, to be carefully kept in view, and what muſt gradually remove every difficulty, is, that the only eſſential difference between the noun and the verb is, that the latter (of courſe by aſſociation) expreſſes affirmation; all the ſuperadded circumſtances may be convenient for communication, but are in no way neceſſary; and in our own language, thoſe ſuperadded circumſtances are in moſt caſes expreſſed by adjuncts and not by the verb itſelf. If, in any form, a word employed to expreſs affirmation, does not expreſs it, it ceaſes to be a verb. For grammatical convenience we may arrange ſuch forms with thoſe which expreſs affirmation, but it is merely for convenience: γραφε, γραφειν, *ſcribe*, *ſcribere*, are no more verbs than γραφων, *ſcribens*, *ſcribendi*, &c. It would prevent much miſtake as to the nature of the verb, if the infinitive and imperative moods were always arranged together under the claſs of the *noun-ſtate* of the verbs. The infinitive is the *verb-noun* with a termination (originally, without a doubt, *expreſſive* by itſelf, as all terminations muſt have been,) denoting that it is to be employed as a verb; thus in the Anglo-Saxon verb ꞇean, ꞇe is the *verb-noun*, and an is the verbalizing adjection; ſo τυπτε, *ama*, &c. are the *verb-nouns*, and τυπτεμεναι (gradually reduced to τυπτεναι, τυπτεμεν, τυπτειν, &c.) and *amare*, have the reſpective verbalizing adjections joined to them. In ſhort, in our opinion, the imperative is the verb-noun itſelf; and the notion of command, entreaty, &c. conveyed by it, is merely the inference of cuſtom; whether we ſay to a ſervant *bread*, or, *bring ſome bread*, we merely ſpecify, in the latter caſe, the action and the object of the action, and, in the former, the object alone; the reſt is *inferred* from tone, manner, &c. The fact indiſputably is, that in every department of language, fully as much is done by inference as by actual expreſſion; and even as it is, thought is by far too quick for words. Though we are now encroaching on the department of grammar, we muſt add as ſome confirmation of our ideas, that the Hebrew imperative is the ſame with what is called the radical form of the verb, in its ſeveral conjugations, except in *niphal,* where it is the ſame as the infinitive. But to proceed;

Men, fight, are names, and are ſtill acknowledged as ſuch; when they are placed together, eſpecially if accompanied by diſtinguiſhing tones of voice, it would be naturally inferred that the ſpeaker intended to raiſe in his hearer's mind that belief which exiſts in his own; or at leaſt, to inform his hearer of a connection which circumſtances had formed in his mind. By degrees, at leaſt in moſt nations, ſome of thoſe names which were frequently thus employed with the *inference* of affirmation, became *appropriated* to convey this inference, and it would then be made whenever the word was employed; but in the more ſimple languages, a large proportion of thoſe verbs which are employed as verbs, (*i. e.* conveying the inference of affirmation,) are ſtill immediately recognized as nouns. In the Chineſe, very few names are appropriated as verbs, but are uſed indiſcriminately, and without any variation of form, either as nouns or verbs; in the Hebrew, the root, (which does not, like every part of the indicative in the Greek and Latin verbs, include a pronoun,) is a ſimple name, and is uſed, in many caſes, as a noun; and in our own language, many names are uſed either as nouns or as verbs. When we have advanced to the frequent uſe, and gradual appropriation of ſome names to convey the inference of affirmation, the reſt is eaſy and almoſt certain. With reſpect to the ſimple affirmation, the ſubject of it would, in the caſe of the firſt and ſecond perſons, always be a pronoun, and, in the ſame diſtrict, the ſame pronoun. This, where *ſpoken* language made material progreſs, would gradually coaleſce with the verb; and the word ſo formed would be completely inveſted with the verbal character, and never be employed but with the inference of affirmation. The Hebrew preſents us with this coaleſcence in its incipient and obvious ſtate; the Greek and Latin ſhew it in a much more complete ſtate, and the component parts cannot always be detected; no reaſonable doubt can however exiſt but that the procedure has been the ſame in all. The ſame might alſo be the caſe reſpecting the third perſon, but the coaleſcence would, in this inſtance, be more ſlowly formed; and in ſome languages where the coaleſcence took place in the other perſons it did not in this; it muſt, however, be admitted that, in others, the contrary is the fact.

Reſpecting the changes of the verb, to make it expreſs other circumſtances beſides thoſe of affirmation, we muſt refer to Grammar and the connected articles, and ſhall content ourſelves with the following general remarks. There appears to us to be little or no reaſon to doubt, but, that all the common changes, which have taken place in the verbs of all languages, to denote the time or mode of exiſtence and action, (as well as thoſe of number and perſon,) have been formed in conſequence of the coaleſcence of words of appropriate ſignification; and though the gradual refinement of language may have greatly varied the aſſociations of words, from what they originally poſſeſſed, yet that thoſe changes were originally found ſufficient to anſwer their reſpective purpoſes. In ſome caſes the contrivances adopted can be ſtill traced; and from the new turn which has lately been given to philological ſpeculation, we may expect other diſcoveries reſpecting the cauſes or origin of particular flexions. We ſhall only mention two inſtances, which will ſerve to ſhew how ſimple thoſe contrivances originally were. The future of the French verb is nothing more than the infinitive of the verb, with the preſent tenſe of *avoir;* thus *aimerai* is *ai aimer;* and *j'aimerai,* means, *I have to love,* which mode of expreſſion is, in our own language, uſed with a future force. This leading diſtinction between the paſt and the future tenſe of the Hebrew verb is, that in the paſt tenſe the verb is placed *before* the fragment of the pronoun forming the perſon, and in the future *after* it; to intimate (as may be reaſonably ſuppoſed) that the action has paſſed the ſubject in the firſt caſe; in the ſecond, that it is yet to come.

The force of the pronouns (the legitimate ſubſtantive pronouns) is very clear. *I* means the perſon *ſpeaking; thou,* the perſon *ſpoken to; he, ſhe, it,* the *ſaid* perſon or thing, the perſon or thing *before mentioned* or *referred to;* and ſo on in the plural. When this ſimple view of the ſubject is taken, no one can feel any myſtery in the origin of pronouns. The firſt plan would undoubtedly be, to uſe the names themſelves; and ſuch is the firſt procedure in childhood: "Mamma loves Mary, and hopes Mary will be a good girl." Children uſe pronouns by degrees only; and thoſe of the firſt and ſecond perſons much later than thoſe of the third, for the obvious reaſon that theſe latter are the moſt convenient in their limited intercourſe. The pronouns of the third perſon identify the object now ſpoken of, with that before ſpoken of, and ſave much circumlocution, and ſtill more ambiguity; the pronouns of the firſt perſon are of great convenience, in caſes where the name of the ſpeaker or hearer is unknown, where there are others of the ſame name, and in the plural eſpecially where ſeveral names muſt otherwiſe be often repeated. —The pronoun is then a very valuable, but not a neceſſary part of ſpeech. How it might be formed, the very probable procedure in a few inſtances will ſufficiently ſhew. Horne Tooke ſhews that *it,* formerly written *hit,* is the paſt participle of the verb ηλιτλη, *to name,* and therefore means the perſon or perſons, thing or things *named* or *aforeſaid;* and accordingly it was applied by all our old writers indifferently to plural and to ſingular nouns. We do not know whether a ſimilar opinion as to the origin of pronouns had been previouſly laid before the public, but the philoſophical Greek profeſſor of Glaſgow (who in his very intereſting and important inveſtigations, has often anticipated Horne Tooke) long ago delivered it as his opinion, that ſome, at leaſt, of the pronouns, are participles, and, if we miſtake not, traced the origin of εγω and *ipſe* as follows: Εγω, in one of its earlier forms, was εγων, which is an obvious abbreviation or corruption of λεγων, ſo that εγω (whence the Latin and other languages have their firſt pronoun) ſignifies the perſon *ſpeaking. Ipſe* is the Latin paſt participle from επω; and though this verb is not to be found in Latin writers, thoſe who know how much the Latin is a dialect of the Greek, will not feel this to be a material difficulty: on this derivation *ipſe* ſignifies the *ſaid* perſon, &c. Whatever be the origin of *ille,* it is obvious that it is in itſelf merely an adnoun, (exactly correſponding to our *that,*) employed to *point out,* and probably accompanied in the firſt inſtance by the *action* of pointing out: now from this demonſtrative adnoun, (a pronoun only by a ſubauditur,) the French have taken not only their demonſtrative *le,* but alſo their legitimate pronoun *il. Ille* is never employed without a ſubſtantive expreſſed or underſtood; *il* will not admit of a ſubſtantive; and this fact, among many others which meet us at every ſtep of our inveſtigations, ſhould prevent us from imagining that a procedure cannot have been, becauſe we can now find no traces of it: the origin of *il* was an *adnoun;* it is itſelf a pronoun. We ſhall add one more example of the probable origin of pronouns. *Tu* is found in the form *tute; tute* is the vocative of *tuitus* or *tutus,* from *tueor, to ſee, to obſerve,* and ſignifies a *ſeen* perſon: we look at the perſon we ſpeak to, and, by direct inference, *tute* denotes the perſon *ſpoken to*. It may be objected that *tu* is from τυ, a form of συ; it appears to us in no way unreaſonable to ſuppoſe that the Latin has preſerved a verb from the early Greek dialect which the common forms of the Greek have loſt.

We do not think it neceſſary to enter any farther into the ſubject of the origin of oral language. It can ſcarcely be doubted, by thoſe who have ſtudied the nature of the other parts of ſpeech, by means of the light which the reſearches of Horne Tooke and others have afforded, that all have been derived from the noun and the verb; and, admitting this, all that is incumbent upon thoſe who profeſs to ſhew the original cauſes of language, is to preſent a probable origin of thoſe claſſes of words. In thoſe procedures which have been here ſtated, there is nothing which ſuppoſes metaphyſical reſearch, or much obſervation; and to render any procedure probable, it muſt wear the marks of ſimplicity. In the preſent period of the language, we ſee the grammarian pointing out the analogies which are found to exiſt in language, and thence proceeding to the formation of new words upon theſe analogies: this is art; but the early formers of language, in their inventions, followed only the dictates of circumſtances; and whatever regularity we may perceive in their inventions, muſt be attributed to the ſimilarity of thoſe circumſtances. We ſee the philoſopher inventing a new term, agreeably to prevailing analogies, to expreſs ſome power of the mind, or ſome emotion which had not received any denomination; but thoſe who originally gave names to mental feelings, derived them ſimply from ſome analogy, fancied or real, between the internal and an external object, and thoſe names which now ſuggeſt to us ideas the moſt ſubtle and refined, were originally only the names of objects obvious to the ſenſes. The reaſoner, when he uſes a word whoſe meaning has not been accurately aſcertained, defines the ideas which he intends to attach to it, and uſes it accordingly; in the early and even in the more refined periods of language, the ideas connected with words have been the reſult of caſual aſſociations, produced by local circumſtances, by the cuſtoms of the age, or the appearances of nature in particular ſituations.

In languages in which the coaleſcence between the verb and its adjuncts has taken place, and alſo the coaleſcence between nouns and their connective words, much greater liberty of inverſion is practicable than in thoſe in which ſuch coaleſcence has not at all occurred, or but incompletely. In other words, where the noun, adnoun, and verb, admit of flexion, there the arrangement depends, in many inſtances, more upon the ſound than upon the ſenſe; and nearly in all caſes may be made ſubſervient to the former. This gives ſuch languages conſiderable advantage over thoſe which admit of but few changes, ſo far as reſpects their modulation; and farther, the coaleſcence renders them much more forcible, where emphaſis or any of the fractional parts is not required. Whenever flexion increaſes perſpicuity, the advantage is deciſive and obvious; with reſpect to modulation, though an object of ſome conſequence (ſince we may ſometimes find the way to the head and heart by pleaſing the ear), yet all cultivated languages will be found to poſſeſs ſufficient power of pleaſing the native ear; and among thoſe who made ſound ſo much an object, ſenſe was often ſacrificed to it: with reſpect to force it may fairly be doubted whether the advantage of greater preciſion by means of more accurate emphaſis, does not counterbalance it. We are willing to admit, on the whole, that the advantage is ſomewhat in favour of thoſe languages in which flexion is extenſively adopted; but we can by no means admit the opinions of thoſe, who think it neceſſary to a perfect language. That language is not the moſt perfect, which enables us to expreſs our thoughts in a great variety of ways, but that which enables us to expreſs any thought with preciſion and perſpicuity; and contemptible as our own uninflected language may appear to thoſe, who can think nothing good, but what accords with the objects of their early taſte, we are diſpoſed to believe that in its real powers, it riſes beyond all the ancient languages and moſt of the modern.

Before we leave the ſubject of oral language, we muſt pay ſome attention to the following inquiries; whether words are originally imitative; whether they were long; and of what kind of articulations they were compoſed. The latter are of importance in tracing the gradation from hieroglyphics to alphabetical writing.

Words in their preſent ſtate are ſimply arbitrary marks, uſed to denote ideas, or combinations of other words; the ſound of ſome appears to be "an echo of the ſenſe," but in the greater number of inſtances in which there is ſuppoſed to be this reſemblance, very much may be attributed to the fancy of the obſerver. It is obvious, however, that there are ſome words which are formed upon ſound, and are truly imitative; ſuch, for inſtance, as denote the various ſounds of animals. When we carry our enquiries further back, we are led to ſuppoſe that this might be the caſe in the earlier ſtages of language; that the original words would be formed from ſome reſemblance, real or imagined, between the ſound and the thing ſignified. What elſe, at firſt, could induce them to fix upon one ſound rather than another? We have already ſeen that ſenſible objects were the firſt which obtained names; and of ſenſible objects, the number is conſiderable which either emit ſome imitable ſound, or perform ſuch motions as have generally ſome connection with ſound. Of theſe latter the number is evidently ſmall; waving and regular, rapid and ſlow motion, violent and ſmooth motion, appear to be all the varieties which ſound would denote. With reſpect to ſounds, whether produced by animate or by the motion of inanimate objects, theſe might and probably would be imitated; and the names of thoſe objects which were connected with the ſounds would be derived from thoſe imitative ſounds. The Otaheitans give to the gun the appellation of *tick-tick-bow*, evidently imitative of the cocking and report of the gun; and the Kamtſchatkans denominated the Ruſſian clergyman *bog-bog*, becauſe he often repeated the ſound *bog*, which in the Ruſſian language ſignifies God. With reſpect to qualities totally unconnected with ſound, particularly mental qualities, this principle of imitation is not directly applicable. We immediately ſee the incongruity of colour and ſound, when, for example, we call to mind the idea of the blind man, that a ſcarlet colour was very much like the ſound of a trumpet. A circumſtance which appears to have miſled ſeveral ingenious writers on this ſubject, is, that obſerving certain letters applied to denote a claſs of ideas which have, among others, ſome common features of reſemblance, they have ſuppoſed that thoſe letters were ſignificant of that common feature; for example, that *c* denotes cavity or hollowneſs. Now ſuppoſing that there is that general idea, variouſly modified, in every word in which the *c* forms a principal part, does it follow from this that the *c* ſignified by its *ſound* cavity or hollowneſs? We can diſcover no ſuch ſimilarity. We apprehend that the coincidence may be better accounted for in a different way, that the original word denoting hollowneſs, which has entered, variouſly modified, into the words in queſtion, was *c* with ſome vocal ſound. That is the extent of the inference which may be juſtly drawn from the coincidence; that it was ſo applied, but not that it was ſignificant of the quality. We have been accuſtomed to uſe ſounds in given connections with ſuch regularity and conſtancy, that they appear to us to have a connection of real ſignification inſtead of merely arbitrary inſtitution. Frequently, from our acquaintance with the ſenſe, we read a combination of words as the ſenſe dictates, and ſuppoſe that imitation in the words, which in reality exiſts only in our mode of enunciation; but it is only with words ſeparately, conſidered from their connection with other words, that we are here concerned; and with reſpect to them we cannot but confine the reſemblance of their ſound to their ſenſe, to caſes in which they denote either ſound, or motion, uſually accompanied with ſound.

In tracing the tranſition from hieroglyphics to alphabetical writing, the probability of the theory advanced will much depend upon the ſhortneſs of the words of that language in which the tranſition was made. It is generally ſuppoſed that this was the Egyptian; but of the ancient Egyptian we have no remains, excepting ſome words which the modern Egyptian or Coptic has preſerved, many of which, however, are monoſyllabic. It will be worth while, therefore, to ſtate it as a general enquiry, whether the original words of original languages were long or ſhort. Lord Monboddo ſuppoſes that all human ſounds were originally inarticulate cries; and that the firſt articulate ſounds were imitations of the cries of animals, and conſequently were of great length. "For ſuch cries of almoſt all animals have a certain tract and extenſion (as his lordſhip expreſſes himſelf) ſuch as the lowing of an ox, the neighing of a horſe, the braying of an aſs, the roar of a lion, &c. And that we may not think them an exception to this rule, we need only attend to the dumb perſons among us who utter inarticulate cries, ſometimes very loud, but always of a conſiderable length." There are few looſer reaſoners than his lordſhip, at leaſt among thoſe who poſſeſs ſuch a fund of information as his lordſhip certainly did. To adduce dumb perſons as an example of what men poſſeſſed of the powers of articulation would do when they firſt began to uſe thoſe powers, ſeems a very incorrect mode of argument. We muſt, however, remember that lord Monboddo ſuppoſes men to have ariſen from the ſtate of mere brutality. We ſuppoſe, and on far better authority than that on which he reſts his faith, that man was never a brute, and that the firſt man was led by divine interpoſition to uſe his powers of articulation. We have already ſeen that it is probable that the ſounds to denote objects emitting ſounds, would be ſignificant; and the cries of different animals would therefore furniſh names for thoſe animals. If we confine imitation to this, great length of words is unneceſſary and improbable: unneceſſary becauſe one or two diſtinct articulations would generally be ſufficient for diſtinction; thus, *bow-wow* would anſwer the purpoſe to denote a dog, as well as a continuation of the ſound to a hundred ſyllables. It is improbable, becauſe articulation is at firſt very difficult, and it is therefore ſcarcely ſuppoſeable that more articulations would be uſed, than were neceſſary to expreſs diſtinctly what object they were intended to denote. If we extend the principle of imitation further, and ſuppoſe that man imitated thoſe cries in order to expreſs his feelings merely, his cries would have no claim to the higher title of words, and at any rate would throw no light on our inquiries.

At firſt ſight, the hypotheſis that the original words of language were long, appears to draw conſiderable confirmation from the vocabularies of the North American Indians. Of three that are given us by Mackenzie, two appear to be compoſed of words, of from two to ſeven ſyllables; with ſcarcely any of one. The third, on the other hand, is compoſed ſolely of words of one or two ſyllables. With reſpect to the former, even where words actually denote objects of ſenſe, our inferences that they are uncompounded ſhould be carefully drawn. The moon is expreſſed by two words, *Tiliſca-peſim*, ſignifying the *night-ſun*; and ſeveral others appear clearly to be circumlocutions. In like manner the ſavages on the river St. Laurence, near Montreal (who are Catholics) give the French prieſts the appellation of the maſter of life's man; and it is by far the moſt probable ſuppoſition, that, in uncultivated nations, names of new objects would, when poſſible, be formed rather by ſignificant combination of words in uſe, than by the formation of new words. Thus, as we learn from Mr. Park, the Mandingo nation uſe the following (among many) circumlocutions: *fruit* is eree-ding, *child of the trees*; *noon*, teeleekoniata, *the ſun over head*; *finger*, boullakonding, *child of the hand or arm*; *brother*, ba-ding-kea, *mother's male child*; *ſiſter*, ba-ding-mooſa, *mother's female child*. Some others we have already noticed.

Lord Monboddo is very unfortunate in the choice of examples of his theory; for not one is of that claſs of names, which, in all probability, were the original ones, names of ſenſible objects. They are the following: *wonna-weucktuckluit*, ſignifies *much*, and *mikkeuawkrook*, *little*, in the Eſquimaux language; and *poellarrarorincourac*, is the name for three among ſome South American Indians. With reſpect to the two former, the examples above adduced, authorize us to conclude that they are circumlocutions, deſcriptive of the ſignification. With reſpect to the laſt we may obſerve, that the names of numbers were, probably, originally ſignificant in all languages; and that the length of thoſe names would depend upon the length of the original words, and the manner adopted in combining them. Thus *ſix* is, by the Kamtſchatkans, denoted by *innen-milchin*, *i. e. one and five*. Numbers are ſo familiar to us, and ſo diſtinctly arranged in groups, that perhaps in no inſtance are our ideas more clear. Yet this clearneſs entirely depends upon the diſtinctneſs of the ſigns we uſe to denote them. We ſpeak of ten and twenty, &c. and all ſeems very clear; but it is evident that if we attempt to form a conception of ten, twenty, &c. we muſt paſs over every one ſingly, and endeavour to combine them together by proceſſes which will be varied by the habits of the individual. If we give a freſh name to every group of objects, and then conſider thoſe groups as units, and ſo on, we are capable of extending our ideas of number indefinitely, and of ſpeaking and thinking of them with accuracy; but if the ſmall extent of our intellect, or the circumſtances of our ſituation, prevents this grouping, and we confine our attention to individuals, our arithmetic muſt be very confined. Thoſe nations which reckon only by a computation with their fingers, carry their ideas of numbers no farther than ten; thoſe who with the Kamtſchatkans take in the toes, go as far as twenty; theſe people can reckon no farther, and when they have advanced to this limit, they ſay "where ſhall we go now?" It is difficult to conceive what circumſtances could bound the arithmetic of lord Monboddo's Indians to three, or rather what ſhould induce them to chooſe ſo troubleſome a mode of procedure; but it appears probable that they joined the names of three different men or other animals; and if they had proceeded further, would have joined four together, &c. Why they did not uſe ſhorter words to form the combination, we cannot conjecture, unleſs it were that their tribe was originally very ſmall, and that they mentioned the names of one, two, or three in order to denote thoſe one, two, or three; and that theſe names, being proper names of perſons, would be ſomewhat long. But this is entirely hypothetical. It ſeems a more natural procedure to repeat the word as often as there were numbers to be denoted, but the ear would not readily follow this repetition.

If lord Monboddo had looked into the vocabulary of the Mexicans, he would have thought that his theory derived great confirmation from their words. Clavigero informs us, that they had words of fifteen or ſixteen ſyllables; but he expreſsly ſays that they are compounds. He gives us one ſpecimen of their mode of combination. It is a title of addreſs, *Notlazomahuitzteopixcatalzin*, and ſignifies *my very worthy father*, or, *revered prieſt.* It is compounded of five words (taking away eight conſonants and four vowels), prefixing *no*, which correſponds to *my*, and adding *tzin*, which is a particle expreſſive of reverence; ſo that there are no fewer than ſeven words compounded together. Their language is very copious; and one cauſe of the length of their words is probably the deficiency of conſonants, which would render a combination of ſounds neceſſary for diſtinction. It is entirely deſtitute of the *b, d, f, g, r, s*, but abounds with *l, x, t, z, tl, tz*.

We have before remarked, that the importance of the enquiry to us reſults principally from its connection with the origin of alphabetical writing. Now we may admit that the languages of theſe North American Indians favours the hypotheſis of long words without any injury, for among them alphabetical writing never exiſted; and we ſhould have enlarged leſs on this point, if it had not led us to notice ſome curious procedures of language. Yet it ſeems reaſonable to admit, as an inference, that the original, or rather ſecondary words of language, would have been long (though not to the degree lord Monboddo ſuppoſes), if the circumſtances of man had not required a varied vocabulary; for the more confined the number of articulations, the more extent muſt be given to ſome words to diſtinguiſh them from others. But when we advance further, and inquire of what kind the original words of man really were, we ſhall ſee ſufficient reaſon to conclude them to be ſhort. Language was firſt uſed in the Eaſt, and there, too, writing was firſt invented. We have already mentioned, that of the ancient Egyptian words which are preſerved in the Coptic, a conſiderable number are monoſyllabic. The Chineſe, which, as far as original language is conſidered, appears to have undergone little alteration, or combination, and is probably nearly an original language, is compoſed entirely of monoſyllables. Probably, indeed, this was the very cauſe that the Chineſe never advanced into the alphabetical mode of writing. They had no compounds of ſounds; and they varied their words by inflection of voice inſtead of additions of articulation. The original words of the Hebrew, Greek, &c., that is, thoſe which are not varied by the addition of other words, are ſhort, frequently only of one ſyllable, ſeldom of more than two. And of the vocabularies which we have had an opportunity of conſulting, of the uncivilized nations of the Eaſt, the words are generally monoſyllabic or diſſyllabic.

Having now attended to the two former of the inquiries with which we propoſed to finiſh the ſubject of oral language, we ſhall proceed to the laſt—Of what kind of articulations the early languages were compoſed. It appears that in the early languages conſonant ſounds were at leaſt generally accompanied by vowel ſounds; but though this is a material point in tracing the tranſition from hieroglyphic to alphabetical writing, it will not be neceſſary to enlarge much upon it. We think this poſition proved, by the following, in ſome meaſure unconnected, conſiderations. 1. Vowel ſounds are by far the moſt eaſy; and conſequently they conſtitute the earlieſt vocal ſounds of children, and a large proportion of the vocal ſounds of uncivilized nations. Several words among the South Sea iſlanders are compoſed entirely of vowel ſounds; and ſo great is the difficulty which theſe people find in pronouncing conſonants together, that they called ſir Joſeph Banks, *Opano*. From this conſideration we may fairly infer, that vowel ſounds would be frequent in the original words of the early languages, which were formed before articulation was become eaſy. 2. Yet as the ſhades of diſtinction between them, when employed alone or together, are too nice to furniſh, at leaſt to the unpractiſed ear, many obviouſly different words; and as man was not at firſt in that low ſtate of intellect in which he has ſometimes appeared, a vocabulary formed of ſuch ſounds would be very inadequate to his wants; and, therefore, we muſt ſuppoſe that in the early languages there would be very few words without conſonant ſounds. 3. Some of the firſt articulations of man were without doubt employed in naming thoſe of the inferior animals with which he was concerned. Now their names would almoſt certainly be given from their diſtinguiſhing cries, and the cries of ſuch animals conſiſt of conſonant ſounds, each followed by a vowel ſound. 4. Its articulation would at firſt be nearly as difficult as we now perceive it to be in children, the firſt words would be compoſed of ſimple articulations, that is, of conſonant ſounds, each followed by a vowel; and new words would be formed by the combination of ſuch; ſo that in the early languages all compounds would be formed by the combination of ſimple articulations. 5. The greater part of conſonant ſounds, cannot be ſounded ſingly without vowels, nor together without vowels intervening. In many caſes this is evident to the ear; and when it is not perceived, it often is the fact, though the acquired rapidity of utterance may render it very little perceptible. 6. Some languages do not admit of any two conſonant ſounds together. The Tartar language always requires a vowel between two conſonants. The Ruſſians, we believe, does the ſame. The Chineſe never join two conſonants, unleſs we muſt except *ng*; but this appears to be only a ſimple ſound, though repreſented by two of our letters. With reſpect to the Chineſe the point is of conſequence, becauſe there is great reaſon to believe that they came from the ſtock of the Egyptians, before there had been any conſiderable addition to their vocabulary by combinations of ſounds, and before the tranſition had been made from hieroglyphical to alphabetical writing. It is true many of the Chineſe words end in conſonants, which ſeems to render improbable the poſition advanced; but it is to be obſerved, that in ſuch caſes the words ſhould be conſidered as of two ſyllables; for it is impoſſible, in continued ſpeaking, to utter a complete conſonant ſound at the end of a word, without emitting a vowel ſound. 7. That the Hebrew (which is to be conſidered as a repreſentative of all the cognate eaſtern languages) never ſounded a conſonant without a vowel, may be inferred from this circumſtance, that thoſe who invented the denotements of vowel ſounds, while at leaſt the leading features of the pronunciation remained, thought it neceſſary to add or ſuppoſe underſtood a vowel ſound after every conſonant.

Having gone over the principal topics relative to oral language, we proceed to written language. Writing has been juſtly conſidered as one of the moſt noble and beneficial inventions which human ingenuity can boaſt. We ſhall not expatiate upon its advantages in embodying and perpetuating our thoughts, but ſhall proceed to give a hiſtory leſs enveloped in obſcurity in moſt of its ſtages than that of oral language. Difficulties indeed attend it, as muſt occur in every inveſtigation into antiquity; but we have here data on which to found our concluſions, which the fleeting nature of oral language would not permit.

Viſible language firſt uſed marks as the ſigns of *things;* and we can trace it through its various ſtages from the ſimple picture to the arbitrary mark. The rudeſt ſpecies of viſible communication with which we are acquainted, is that of the Peruvians; it was by means of knotted cords of various colours. We have reaſon to believe, however, that this was not the only ſpecies of viſible communication among them; and it was evidently very defective. The Quipos, as they are called, have been celebrated by authors fond of the marvellous, as if they had poſſeſſed regular annals of the empire; but it ſeems reaſonable to heſitate here. They might have ſome ſignificancy by agreement, but without oral interpretation they could denote little more than that ſomething was to be remembered, in the ſame manner as perſons of weak memories ſometimes adopt the contrivance of tying a piece of ſtring round their finger to remind them that recollection is neceſſary. According to the opinion of the beſt informed judges, they ſeem to have been a device for rendering calculation more expeditious and accurate. By various colours, different objects were denoted, and by each knot a diſtinct number: ſo that they might ſerve as a kind of regiſter of the number of inhabitants in each province, or of the quota they furniſhed to the general treaſury of the nation. As they had picture-writing, though to no great extent, and numbers muſt be denoted by arbitrary ſigns to render calculation at all extenſive, this account is by far more probable than that of thoſe who ſuppoſe them deſigned for hiſtorical purpoſes. In this view they could anſwer no farther purpoſe than the twelve ſtones which Joſhua ſet up after the paſſage of the Iſraelites over the Jordan.

The Mexican picture-writing was the firſt ſtep in the progreſs towards alphabetical writing. The eſſential difference which it will be deſirable to keep in mind between the latter and all the intermediate ſteps, is, that in alphabetical writing we uſe ſigns for ſounds only; except with the deaf, they are in the firſt inſtance ſignificant of things or ideas only by an intermediate ſtep: picture-writing, in all its various ſtages, preſents ſigns for things or ideas directly, and only for ſounds as being the denotement of them.

The ſimpleſt ſpecies of picture-writing was that in which a mere delineation of the thing to be denoted was employed; thus, to expreſs man or dog, &c. a drawing of the animal would be given. This we learn from ſir William Johnſon is the procedure of the North American Indians: when they go to war they paint ſome trees with the figures of warriors, often the exact number of the party, and if they go by water they delineate a canoe. When they gain a victory, they mark the handle of their tomahawks with human figures, to ſignify priſoners; and draw the bodies without heads to expreſs the ſcalps they have taken. To theſe ſimple annals the warrior truſts for renown; and pleaſes himſelf with the belief, that by their means he ſhall receive praiſe from the warriors of other times. Thus, too, the Mexicans, when the Spaniſh invaders firſt arrived on their coaſts, ſent large paintings on cloth as expreſſes to their emperor Montezuma. But the Mexicans had made much greater advances than their ſavage countrymen; except in ſome few inſtances they did not indeed go further than ſimple delineation, but by a proper diſpoſition of their figures they could exhibit a more complex ſeries of events in hiſtorical order. They could deſcribe, for inſtance, the occurrences of a king's reign from his acceſſion to his death; the progreſs of an infant's education from its birth to the years of maturity; the different recompences and marks of diſtinction conferred upon warriors, in proportion to the exploits they had performed. Some very curious ſpecimens of this picture-writing are preſerved; the moſt valuable one has been publiſhed, and may be found in Purchas's Pilgrim. It is divided into three parts. The firſt contains a hiſtory of the Mexican empire under its ten monarchs; the ſecond is a tribute roll, repreſenting what each conquered town paid into the royal treaſury; the third is a code of their inſtitutions, domeſtic, political, and literary.

The defects of this mode of painting muſt have been early felt. It was, where applicable, a tedious operation; and no objects but thoſe of ſenſe could be denoted by it. The human intellect, ſtimulated by the neceſſity of improvement, would probably have gone through the ſame courſe in the new world as it had done in the old, and have proceeded from the picture to the ſimple hieroglyphic, then to allegorical ſymbols, and laſtly, to arbitrary characters; but a ſtop was early put to the progreſs of their improvement by the deſtruction of their moſt cultivated empires. In the ſimple hieroglyphic, a principal part or circumſtance of the ſubject is made to ſtand for the whole; and to this the Mexicans had made approach. In the hiſtorical painting before mentioned, the conquered towns are uniformly denoted by the rude delineation of a houſe, to which is added ſome diſtinguiſhing emblem. The kings themſelves, or the leaders of their armies, are in like manner denoted by heads of men with ſome emblematic mark conjoined. Theſe emblematic marks were denotements, not of their qualities, but of their names, as we learn from Clavigero, who farther informs us, that the names of places were formerly ſignificant compounds. They advanced ſtill further, and made uſe of the mere figurative hieroglyphic. When they wiſhed to expreſs a monarch who had enlarged his dominion by force of arms, they placed the repreſentation of a target, ornamented with darts between the figure of the king and that of the towns which he had ſubdued. To denote numbers, arbitrary ſigns were uſed. It will be ſeen from this account, that the Mexicans had actually in ſome inſtances paſſed through all the intermediate ſtages of writing, though the ſhort duration of their empire prevented them from extending thoſe rudiments to a regular ſyſtem. Indeed Clavigero juſtly complains, that injuſtice is done his countrymen. They evidently made conſiderable uſe of the ſimple hieroglyphic; their marks for months and other portions of time, for the air, the earth, &c. were ſymbolical, and their cyphers were arbitrary; yet they are generally ſuppoſed to have made no advances beyond mere picture-writing. Their manner of denoting numerals was as follows. They painted as many points as there are units to twenty; this number had its proper character; then they doubled it, &c. for 20 times, that is, to 400, which had a new character; this they doubled, &c. in like manner, that is, to 8000, which again had a new character, and which they doubled, &c. as before. So that with theſe three characters, and the points, they expreſſed numbers as far at leaſt as 20 times 8000, *i. e.* 160,000. At leaſt, however, it muſt be acknowledged, that the annals of a nation, conveyed in the manner we have deſcribed, muſt be very ſcanty and imperfect. And accordingly Clavigero admits, that their paintings ought not to be conſidered as a regular full hiſtory, but only as monuments and aids of tradition. The parents and maſters took the greateſt pains to inſtruct the riſing generation in the hiſtory of the nation. They made them learn ſpeeches and diſcourſes which they could not expreſs by the pencil; they put the events of their anceſtors into verſe, and taught them to ſing them. This tradition diſpelled the doubt and ambiguity which painting alone would have occaſioned; and by the aſſiſtance of theſe monuments perpetuated the memory of their heroes, their mythology, their laws, and their cuſtoms. See Robertſon's America, vol. iii. p. 173—180, and Clavigero, vol. i. p. 409—11.

This ſimple picture-writing would ſoon be contracted by neceſſity; parts of the object, or the principal circumſtances of the action, would be delineated to denote the whole of the object or action which it was intended to repreſent. This would correſpond to what we ſhould call in writing a plain ſtyle; but it is obvious, that language, whether written or ſpoken, if confined to words denoting objects of ſenſe merely, would be very meagre and imperfect. To enlarge the powers of viſible communication, the real or ſuppoſed inſtrument of a thing was placed for the thing itſelf. And a ſtill more refined ſpecies of hieroglyphic is, where qualities, &c. were repreſented by objects which had ſome real or ſuppoſed analogy to them; this correſponds to a figurative ſtyle. We here ſpeak of hieroglyphics as intended for the purpoſe of communicating, not concealing knowledge. It was long ſuppoſed that the latter was their firſt and only purpoſe; but biſhop Warburton has ſatisfactorily proved that this uſe was not made of them after the other was rendered unneceſſary by the invention of alphabetical writing. It is for the purpoſe of communication that we wiſh to conſider them. Warburton ſeems to conſider theſe three kinds of hieroglyphics as in reality three diſtinct ſpecies of communication; but as De Guignes juſtly obſerves, this difference regards the ſtyle alone. And though probably the moſt ſimple hieroglyphics were thoſe firſt uſed, yet as language muſt have made ſome progreſs by the uſe of permament viſible communication, it was found neceſſary, and conſequently muſt have given metaphorical meanings to the names of many ſenſible objects, it is not to be ſuppoſed that the hieroglyphics would be confined thus even in their very earlieſt ſtages. We muſt remember, too, that even the rudeſt kind is an improvement upon the picture-writing; ſo that we are not to conſider them as the firſt attempts of men to embody their thoughts.

The moſt ſimple ſpecies of hieroglyphics was when the delineation of part of the object or action repreſented the whole; thus the ancient Egyptians painted a man's two feet in water to repreſent a fuller: ſmoke aſcending, to denote fire; two hands, one of which held a buckler, the other a bow, to denote a battle, &c. Now if we direct our attention to oral language, we ſhall perceive that it ſtill retains many of theſe contractions, particularly in poetry. The ſail, for inſtance, to denote the whole ſhip; the hand, to denote the whole man, &c.; where, however, it muſt be remarked, that theſe contractions are for the purpoſe of denoting the part of the object, &c. which is moſt to be attended to in the given circumſtances, and therefore come under the ſecond kind of hieroglyphics, where the real or ſuppoſed inſtrument is uſed to denote the performer or the thing performed. And indeed ſo long as oral language denotes ſenſible objects, there is no advantage with reſpect to brevity in placing the name of a part to denote the whole, ſince, except in peculiar caſes, the name of the whole may be pronounced with as great facility as of the part. Examples of this ſecond claſs of hieroglyphics, are the eye and the ſceptre to denote a king; a ſword to denote a bloody tyrant; the mouth for ſpeech and voice; an eye placed in an eminent poſition, to denote the preſence of God; and the ſun and moon in like manner were uſed to denote the ſucceſſion of time. Inſtances of ſimilar metaphors in common language are very numerous; to take the laſt two inſtances, we ſay the eye of God is upon us, meaning that the omniſcience of the Supreme Being extends to us; and though perhaps it would be too bold even for our poetry to uſe the expreſſion of ſun for the time of his apparent revolution; yet we might employ moon to denote the time of a lunation. The laſt kind we mentioned, was that which employed, to repreſent one thing, another which had ſome reſemblance or analogy to it. Hence was the laſt proceſs in the invention of oral as well as pictured language, and it is perfectly ſimilar to what at preſent we conſider as an ornament, figurative language. For it muſt be obſerved, that what we conſider as a beauty, was originally the invention of neceſſity. For inſtance, among the Egyptians the dog's head, (as among the Chineſe the dog's voice,) was the ſymbol for ſorrow; ſcience was denoted by dew falling from heaven. This very metaphor is expreſſed in the form of a ſimile, in Deut. xxxii. 2. “My doctrine ſhall drop as the rain, my ſpeech ſhall diſtil as the dew, as the ſmall rain upon the tender herb, as the ſhowers on the graſs.” Theſe ſymbolical hieroglyphics would be very frequently derived from very fanciful analogies, founded frequently on the popular prejudices of the times. As an inſtance, may be mentioned the figure of an hyæna, which was uſed to denote a man who ſupported his miſfortunes with courage, and roſe ſuperior to them. This took its riſe in the opinion that the ſkin of the hyæna rendered the wearer fearleſs and invincible. The laſt we ſhall mention, is the famous inſcription at the temple of Minerva at Sais, where we find the figures of an infant, an old man, a hawk, a fiſh, and a river horſe. The hawk and fiſh were one character; this kind deſtroys fiſh, and is therefore the ſymbol for hatred. The river horſe was the ſymbol for impudence, and the infant and the old man were intended to denote all men. The hieroglyphic therefore means “young and old hate impudence;” or, more literally, “old man, infant, hatred, impudence.” It has been more diffuſely rendered; “all ye who enter into the world, and who go out of it, know that the gods hate impudence.” We may remark, as we proceed, that this tends to confirm the hypotheſis, that originally all words, even verbs, were nouns. This hieroglyphic was a plain admonition, deſigned for the inſtruction of the people; for it was engraved on the veſtibule of a public temple; and is therefore juſtly conſidered by Warburton, as one proof that the original hieroglyphics were for the purpoſe of communication, not of concealment. If the Scythian king had been able to delineate objects, he would perhaps have ſent a painting to Darius inſtead of the real objects. The picture of a mouſe, a frog, a bird, a dart, and a plough would have anſwered the ſame purpoſe as the things themſelves, and have been leſs inconvenient. They would then have been real hieroglyphics.

The firſt object of thoſe who invented hieroglyphics, was to preſerve the memory of events, and to make known laws and regulations for the conduct of the citizen and the man. Such ſymbols therefore would firſt be employed as were of obvious interpretations. Figures founded on their language (which, as we have already obſerved, muſt have made conſiderable advances towards improvement,) would be readily underſtood, even if the analogies which gave birth to the words were forgotten. By degrees they were employed for the more refined purpoſes of philoſophy; and analogies and reſemblances were the foundation of hieroglyphics, which would be intelligible only to thoſe who were acquainted with the ſciences from which thoſe analogies were deduced. This progreſs, as we ſhall afterwards ſee, is the ſame with that of the Chineſe language, which in all its ſtages is an object worthy of our curioſity. Still, however, there was nothing done for concealment. The purpoſe of communication was ſtill kept in view, and knowledge of the theories of the times alone was ſufficient for their interpretation. But by degrees ſuperſtition appropriated them for the purpoſe of concealment, and thoſe whoſe dominion over the vulgar conſiſted in the poſſeſſion of myſteries, after the invention of alphabetical writing, which would otherwiſe have annihilated the uſe of hieroglyphics, ſtill employed them to keep the ſecrets of the prieſthood from the eyes of the profane vulgar. Their ſymbols, which for the purpoſes of communication ſhould have had an obvious analogy, were introduced from far-fetched reſemblances. A cat was uſed to denote the moon, becauſe they perceived a difference in the ſize of its pupil at the full moon, and in different periods of its apparent magnitude. Egypt (which in the common hieroglyphic was denoted by a crocodile,) was in the ſacred hieroglyphic denoted by a burning cenſer with a heart upon it. In the natural progreſs of hieroglyphics, qualities would be denoted by the objects which would be conſidered as poſſeſſing them in a great degree; as we have ſeen in the inſcription at Sais. But to make the hieroglyphic a real myſtery, one animal or ſenſible object was made to denote a variety of contrary qualities; thus the hawk denoted ſublimity, humility, victory, excellence, &c. And on the other hand, the ſame idea was denoted by various hieroglyphics. It was this uſe, which was probably poſterior to the invention of alphabetical writing, that has attached to the hieroglyphical ſyſtem the character of myſtery.

It is obvious that the exact manner of delineation would be tedious, as well as voluminous. The more uſe was made of viſible communication, the more we may expect to find the written characters depart from the ſimple picture, and become arbitrary marks. Not, indeed, arbitrary in their original invention, but perfectly arbitrary to thoſe who afterwards uſed them. We ſee, from the remains of the Egyptian hieroglyphics in their early ſtages, that they paid conſiderable attention to the delineation of their figures: they filled up the outline of their pictures; in proceſs of time they uſed only the outline; and theſe, again, they changed, as the convenience of the writer dictated, till at laſt it loſt every reſemblance to the object which it originally repreſented. The changes that our written characters have undergone, and are continually undergoing, might be adduced as an exemplification of this procedure, from delineation to the curſive hieroglyphic. The mark for *and*, for example, was originally ſignificant; it did not, indeed, repreſent an object, but it was a correct picture of a word. Some of the forms yet ſhew its derivation; & is obviouſly *et*; but continual changes have been made upon it, till the & of the writer no longer bears marks of its origin. We ceaſe now to conſider the letters of which it is compoſed; it is the repreſentative of an idea, and, conſequently, of the word denoting it in the reſpective nations that uſe it. We uſe it for *and* without conſidering at all the meaning it originally had. The uſe of the curſive hieroglyphics would, in like manner, take off the attention from the ſymbol, and fix it upon the thing ſignified; a progreſs which we equally obſerve in oral language, where the words employed to denote mental affections were originally denotements of ſenſible objects; then of mental affections bearing ſome reſemblance to them; and, laſtly, in many inſtances, of thoſe mental objects, without any reference to the original meaning.

We have now advanced to the verge of alphabetical writing. So far has generally been regarded as ſimple, and as the actual procedure; but it is imagined that ſtill there is a great gulf, whoſe depth is unfathomable. Many of the preceding obſervations have been made with a view to this diſcuſſion; and by their means it does not appear difficult to aſcertain the exact procedure. Perhaps we ſhall not be able to trace all the minute ſteps of the mind's march; but the general tract we ſhall find no difficulty in purſuing. Truth, Horne Tooke obſerves, has generally been ſuppoſed to be at the bottom of a well; he thinks it lies much nearer the ſurface. More has been ſuppoſed neceſſary than could have been done, at leaſt than is probable, at the periods of which we ſpeak; and this has deterred thoſe who ſaw the neceſſity of ſimplicity from attempting any thing. We ſhall ſee that much was not neceſſary; certainly not ſo much as to render requiſite the exertions of genius, aided by the light of philoſophical reſearch. Signs, we have ſeen, become at laſt arbitrary marks for ideas or words. From this ſtage we may conſider written language as taking two different courſes; in one the ſign became merely the ſign of the *ſound*, and its combinations the ſigns of thoſe of ſound; in the other the ſign was conſidered as the ſign of the *idea*, and its combinations did not correſpond with any combinations in oral language, but were repreſentative of combinations of ideas. The former we may expect to occur where oral language was copious, the latter where it was ſcanty; the former where learning was conſiderably diffuſed, the latter where it was confined to a ſmall proportion of the perſons uſing the language. Where the viſible ſigns became merely ſigns for ſounds, alphabetical writing, as we ſhall hereafter ſee, eaſily followed; where they were arbitrary ſigns for ideas, every new combination not attended by a correſpondent combination in oral language, placed the introduction of alphabetical writing at a greater diſtance than ever. This latter we ſhall find to be the caſe with the Chineſe language, to which, as far as reſpects the objects of the preſent diſcuſſion, we wiſh now to call the attention of our readers; as preſenting ſome moſt important features in the hiſtory of language.

We have ſeen that written language originally conſiſted of pictures of the things to be denoted; then of abbreviated forms of the ſame; that theſe pictures and abbreviations were employed to denote, not only the objects they repreſented, but others which had ſome real or ſuppoſed reſemblance to them; and finally, that through gradual changes and abbreviations of the written character, it became at laſt, inſtead of a picture, a mere arbitrary character. Through all theſe ſtages has the written language of China paſſed: from cauſes, ſome of which we can trace, they here ſtopped. Other nations proceeded further, and uſed theſe marks as the ſigns of ſounds and of ideas through their intervention; the Chineſe employ them as the ſigns of ideas, without the intervention of ſounds, and their combinations and changes have no correſponding combinations and changes in their ſpoken language.

Before the time of Fohi, the firſt Chineſe emperor, the Chineſe uſed knotted cords, ſimilar to thoſe of the Peruvians. Fohi, in the place of theſe knots, employed two horizontal lines, the one whole, the other divided, and by their various combinations in threes, formed the text of the moſt ancient work among the Chineſe, known under the name of Ye King, or the book of production. The Chineſe regard this work as a precious monument of the moſt ancient philoſophy; but, notwithſtanding the numerous commentaries which have been publiſhed upon it, ſome ſo early as 1100 years before Chriſt, it is ſtill unintelligible. They are, however, ſuppoſed to contain, in a few lines, the moſt ſublime truths, and are ſtill employed for the purpoſes of divination. Subſequent to the trigrams of Fohi, Xin-nang, the next in ſucceſſion, is ſaid to have invented ſixty-four hexagrams, which are ſuppoſed to expreſs the whole circle of human knowledge, and, together with the trigrams, are to be conſidered as the moſt ancient written characters of the Chineſe. It is ſuppoſed that theſe characters were taken from the knotted cords; and it appears to us highly probable that they expreſſed no more. It does not appear at all likely that theſe marks ſhould be intended to denote the myſteries of philoſophy, whether we conſider the time of their invention, which is carried back to the age of Noah, or their inadequacy to expreſs any thing but numbers. It is allowed that the earlieſt writing of the Chineſe was the reſult of the rotation of numbers by the knotted cords. In fact, the preſent numerals of the Chineſe appear to have an equal right to be conſidered as the myſterious denotements of myſteries. The preſent Chineſe characters are not to be deduced from theſe combinations of lines, but from pictures and ſymbols. Their preſent form does not preſent any objection to this ſuppoſition. Many of them, indeed moſt of them, bear little or no reſemblance to their original form; but the progreſs can be traced in very many caſes, and hence it is a fair inference that they were deduced from pictures and ſymbols, even where the connecting ſteps are loſt. Several examples of this are given in the Philoſophical Tranſactions for 1769, vol. lix.

Before we proceed further in the conſideration of the written character of the Chineſe, we ſhall find it expedient briefly to conſider the ſingular ſtructure of their oral language. This, as we have before obſerved, is entirely monoſyllabic; and every word may be expreſſed by an European conſonant and a vowel, and about one-third of the words end with *n*, or the naſal ſound of *n*. We muſt not expect to find a monoſyllabic language very copious in ſounds; and we ſhall expect a ſtill ſmaller variety of words when we find that their conſonant ſounds are leſs numerous than our's, as they are deſtitute of the *b*, *d*, *r*, and *x*; in fact, the number of their words is not more than 330. This number is ſo ſmall, that we ſhould ſuppoſe it inadequate to the purpoſes of life, much more ſo to thoſe of ſcience. The capabilities of their oral language are, however, very much increaſed by the variation their words undergo by means of tones, or other inflections of the voice. For inſtance, the word *Fu*, differently pronounced, denotes a huſband, to help, a town, a father, and to conceal. There are other modifications of ſound which the ſame word undergoes, which enables them to extend its meaning without confuſion, and this to things very oppoſite, or at leaſt very different in their nature. Theſe nice diſtinctions certainly require a very diſcriminating eye to perceive them, and very flexible organs to expreſs them; but we know the power of habit. We have in our own language inſtances of words approaching ſo nearly in ſound, that many never pronounce them correctly, yet ſeldom leave any room for ambiguity; for inſtance, *hair*, *air*, *heir*, *are*, *hare*, are all different ſounds, but their ſimilarity is ſo great, that many confound them in pronunciation. Staunton obſerves, that ſynonymous words are very much uſed in converſation; and this muſt materially leſſen the ambiguity. This, however, muſt be only for the ſake of thoſe who have any difficulty; for it ſeems to be the genius of the Chineſe language to expreſs the ideas of the ſpeaker in as few words as poſſible. "The Chineſe," ſays a writer in the Philoſophical Tranſactions, vol. lix. p. 495. "ſpeak as faſt as we do, ſay more things in fewer words, and underſtand each other." The laſt reſort to diminiſh the occaſional difficulty in conveying their ideas by oral language is to trace the written ſign in the air, or in a more permanent manner.

A language in which we find not more than 1500 diſtinct ſounds cannot be conſidered as copious. It is probably ſufficient for all the purpoſes of life, but for the purpoſes of ſcience very inadequate. Moſt nations have improved their oral language; the Chineſe have directed all their attention to the improvement of their written language. They have refrained from combinations of words to expreſs combinations of ideas; and what appears ſtill more ſingular, the combinations which have been formed in their viſible, have not been carried into their oral language. In fact, the Chineſe writing may be conſidered as totally diſtinct from their oral language. One might have ſuppoſed, as Freret ſays, that it was invented for thoſe who do not poſſeſs the capacity of ſpeech. The written not having been founded on the ſpoken language, the improvements and changes of each are independent of the other. Their characters were originally ſigns of ideas; and as it is much more eaſy to introduce changes in the language of ſcience, than of the vulgar, the philoſophers combined, and combined their combinations of characters, but did not, perhaps could not, carry their combinations into oral language. Thus, for inſtance, the character for *houſe* named *mien*, and that for *fire* named *bo*, when combined denote *calamity*, expreſſed in oral language not by *mien-bo*, but by *tſai*. On the other hand, as our writing is a denotement of ſound, every combination of written words will have a correſpondent combination of ſound: and no combinations will be formed except ſuch as can be ſpoken. We may compare the Chineſe characters to the arithmetical cypher, or to algebraic or aſtronomical characters, which may be underſtood by thoſe who are unacquainted with the words we expreſs to denote them. Preſent an arithmetical calculation, or algebraic demonſtration, to ten mathematicians of ten different countries, every one underſtands it immediately. In the ſame manner the Chineſe characters are intelligible not only in all the provinces of this vaſt empire, but farther in Japan and Cochinchina, whoſe ſpoken languages are totally different from that of the Chineſe. If theſe nations converſe they employ an interpreter, but the obſtacles to communication vaniſh, as ſoon as they trace their written character. There appears, however, a conſiderable difference between the common uſe of the arithmetical cypher, and the uſe the Chineſe philoſophers make of their characters. We always think of *one*, *two*, &c. if we uſe 1, 2, &c.; at leaſt this muſt be the caſe with all who are not in the habit of calculation; and the viſible ſign is ſo ſtrongly aſſociated with the audible, that we apprehend few perſons read to themſelves without the intervention of ſound, real or conceived. When we think in words (as we always do when we reaſon, and frequently when we feel), it is to the audible and not to the viſible ſign that we attend: and we apprehend that it is generally the caſe where the habit of ſolitary ſtudy and ſecluſion from the world has not been formed. Our written words are more or leſs exact repreſentatives of the ſound, and it is therefore difficult to ſeparate them even in imagination: but the Chineſe characters have no connection with ſound, except by their common connection with ideas. And as they have no viſible repreſentation of the ſound, its intermediate aſſociation cannot be ſufficiently ſtrong in the minds of their literati to render it neceſſary in the train of reaſoning to uſe the ſound at all.

All the Chineſe characters are compoſed of 214 *clefs*, *keys*, or *tribunols* (as the Chineſe themſelves call them). Theſe repreſent the moſt ſimple ideas, and by their combinations are produced, expreſſions for the more complex ideas. In fact, theſe keys expreſs *fire*, *water*, *earth*, *air*, *wood* (which are the fiuer elements of the Chineſe), *the ſun*, *the moon*, *bird*, *man*, different kinds of *animals*, *mountains*, *vallies*, &c. *father*, *mother*, *ſon*, *life*, *death*, the *body*, and different *parts of it*, and ſome *veſſels* and *inſtruments*, and many other things ſimilarly ſimple. All theſe can be traced to ſimple paintings or ſymbols; and hence the whole written language may be juſtly conſidered as deducible from the more ſimple writing of the Mexicans and the Egyptians. Indeed, the reſemblance between the ancient Chineſe character and the Egyptian hieroglyphics is ſo ſtriking, and this in caſes where the analogy on which both are founded is not an obvious one, that De Guignes conſiders them as derived from the ſame ſource. The actual number of the keys at preſent is 214; anciently they were more or leſs numerous, but this has been owing rather to the different opinions of the philologers of the time, than to any real change in their number. Theſe keys are formed at preſent from ſix ſimple ſtrokes, a horizontal line, two perpendicular lines, the one pointed at the bottom, the other blunt, a point, a line curved to the right, and another to the left. We are not, however, to ſuppoſe, that the inventors of the Chineſe characters fixed upon theſe ſix elements, and compoſed all the characters from them methodically: this is the procedure of art. But as writing gradually paſſed from painting, it loſt its correctneſs of delineation, and then the object was to facilitate, as much as poſſible, the labour of writing. It reduced all the characters by degrees; the more compounded, to others leſs ſo; and theſe again to ſimple ſtrokes, ſuch as have been mentioned. Theſe 214 keys are each employed alone, as a character ſerving to expreſs an idea, or differently combined one with another when they are conſidered only as parts of a group. The ſeveral parts of this group, or combination, form a kind of phraſe expreſſive of the idea it is intended to communicate. Thus, the Chineſe character for *night*, is compoſed of three characters, ſignifying *darkneſs*, the *action of covering*, and *man*, which rendered literally, ſignifies *darkneſs covering man*; a phraſe which perfectly expreſſes the idea of night, and which is ſimilar to the language of poetry. Both, in fact, iſſue from "the cradle of the human race." This figurative kind of language (the offspring of neceſſity) is what we admire ſo much in the ſacred writings; it comes home to our feelings and our boſom; it points to our minds, and calls up their conception forcibly and correctly. Hence it is juſtly deemed a beauty, and whenever the language of feeling is neceſſary to excite the mind to activity, will generally be found a prevailing trait.

We might ſuppoſe that all the Chineſe characters, being compoſed of ſimple characters, might be eaſily underſtood, when the meaning of the keys compoſing them is known; as is the caſe in the two examples which have been given. If it were actually ſo, the Chineſe would be the moſt eaſy of all languages, and might be adopted as a general or philoſophical language; but the analogies and metaphors on which the compoſition is founded, are often forced and often erroneous. Their principles of philoſophy furniſhed a wide field for combination; but frequently theſe are abſolutely falſe: their ancient cuſtoms and their popular ſuperſtitions all afforded ſcope for the invention of new characters; and to underſtand the compound characters of the Chineſe, without the aid of oral inſtruction, we muſt underſtand their ancient phyſical and religious dogmata, and join to this an acquaintance with the fleeting cuſtoms and opinions of the times in which they were formed. This is not peculiar to the Chineſe language; in order to trace the origin of words, the ſame references are often neceſſary, but we have more frequently the data requiſite to enter into them. For inſtance, *candidus* in Latin ſignifies *white*, *candidatus*, a *candidate* (a perſon who offers himſelf to fill a lucrative or honourable ſituation), a *perſon dreſſed in white*. We ſhould have been unable to follow this analogy if we had not been informed by hiſtory, that among the Romans all *candidates* for places wore white robes. In a ſimilar manner the Chineſe character, *pao*, *to run*, is compoſed of two, that of *wrapping*, and that of *feet*; this is not an obvious procedure, and the Chineſe do not retain any explanation of it; but we know that the ſavages of Louiſiana, when about to undertake a long march, *wrap* up their *feet* in cloth to prevent their being torn; and it is highly probable that the combination of *pao* muſt refer to a ſimilar cuſtom.

We have now traced the various procedures which have been adopted to perpetuate the remembrance of actions or opinions. We have ſeen the artleſs contrivances of men in early ſtages of cultivation; we have obſerved the progreſs of the art of viſible communication from the rude quipos of the Peruvians to the curſive hieroglyphic of the philoſophic Egyptians. We have found that when the viſible marks loſt their original correctneſs of delineation, they became mere arbitrary characters. From this ſtage two procedures have been purſued; ſome nations have ceaſed to conſider them as ſigns for things, and have retained them as ſigns for ſounds; others have continued to uſe them as ſigns for things without any immediate connection with ſound. The latter have combined, and combined theſe combinations to form expreſſions for ideas without any regard to analogous combinations of ſound; the former have combined them to expreſs combinations of ſound, and of ideas only by their intervention. In the one the written language is a picture of the ſpoken, in the other it is a picture of thought. We now proceed to the object we have all along had in view—the inveſtigation of the other procedure, where viſible marks became ſigns for elementary ſounds.

In tracing the origin of oral language, we derive ſome aſſiſtance from the Moſaic records; we aſcertain the degree of divine inteference. In tracing the origin of alphabetical writing we muſt expect no ſuch aſſiſtance; the art of writing is no where referred to a divine original, and while revelation is thus ſilent it becomes us to be ſilent too. Upon the principle that we ought not to ſuppoſe miraculous interpoſition merely from the difficulty of accounting for a phenomenon, we ſhould argue *à priori*, that no miraculous interpoſition took place in the preſent inſtance. This would not weigh in the leaſt if we were aſſured by the ſcriptures of the reality of that interpoſition; but it weighs very much againſt all preſumptive arguments for it. However, though revelation is ſilent on this head, yet there are ſome arguments in favour of the theory of the divine origin of alphabetical writing, which it will be deſirable to conſider. After ſtating theſe and the anſwers which occur to obviate or leſſen the difficulties they preſent, we ſhall point out what appears the moſt probable account of the tranſition of hieroglyphics to letters.

1ſt. Alphahetical writing may be traced to one ſource. Now if it were an invention of man, eſpecially if it be a ſimple invention (as it muſt be ſhewn to have been, in order to give any plauſibility to the hypotheſis), there is no reaſon why it ſhould not have been an independent invention.

Two anſwers may be given to this argument. 1. If we examine the alphabets of Aſia, we ſhall find it difficult to admit that they may be traced to one ſource; there is ſo great a degree of diſſimilarity among them, that it requires ſtronger evidence than any we have yet ſeen to prove it. When, however, we conſider the changes that we know have actually taken place in the ſame character, we may admit the poſſibility of the original identity, and perhaps other circumſtances may induce us to admit its probability; but this probability cannot, we apprehend, become ſo great as to give any force to the argument in queſtion. But even admitting its certainty, we obſerve, (2) that this can only prove the high antiquity of the invention. That it originated before mankind were much ſeparated from each other; and that the ground-work being laid by thoſe who had made the greateſt advances in cultivation, was built upon by thoſe people who afterwards penetrated to a diſtant part of the continent.

But it is urged, in the *ſecond* place, that we have not only no inſtance of independent diſcovery, but have even an example of a nation, which had no communication with the original inventors, remaining in total ignorance of it, and employing a procedure which now incapacitates them for the reception of alphabetical writing: and the force of this objection is materially increaſed by the circumſtance, that their writing, equally with the alphabetical, originated in hieroglyphics, and actually went through the ſame ſtages, *viz.* from the ſimple picture to the arbitrary mark.

This ſingular procedure of the Chineſe, which certainly preſents a difficulty againſt the theory of the human origin of alphabetical writing, may probably be obviated by the four following conſiderations: (1) The written language of China was cultivated more for the purpoſes of philoſophy than of common life. Their combinations were founded on their philoſophy; and it probably would not have been in their power to have carried theſe combinations into the oral language of the vulgar. A complete nomenclature of chemiſtry has been introduced, founded on the prevailing theory of chemiſtry. This is univerſally received, wherever the new ſyſtem is embraced; but it would have been impoſſible for the philoſophers, who invented this beautiful ſpecimen of philoſophical language, to have induced the illiterate of a whole nation to change their language, or adopt a new one, however expreſſive and correct. The philoſophers of China might indeed have formed an oral language upon their characters; but the genius of the Chineſe ſeems rather to direct them to ſtudy than to converſation, and abſtract philoſophy is better taught to the ſtudious by written than by oral communication. Beſides, (2) the ſpoken language of China did not favour the plan of making their writing repreſentatives of ſound; for their words being all monoſyllabic, and not very numerous, there would not be the ſame neceſſity for attention to elementary ſounds: and what is more important, they did not vary the *articulation*, but the *tone*, in order to expreſs a variation of meaning. It appears to us, that alphabetical writing could not, from the very nature of their ſpoken language, have originated among the Chineſe: and to theſe conſiderations we may add, (3) that the empire of China, with its dependencies, was ſo extenſive, that there muſt be a very great variety in the Chineſe dialects; and this would contribute to increaſe the attention of their literati to the written language, ſince this (as we have ſeen it actually is) might be underſtood independently of their ſpoken words. (4) If we admit the very probable hypotheſis of De Guignes, that the Chineſe characters were brought from Egypt, and that they had originally no connection whatever with the ſpoken language of the country into which they were introduced,—that, in fact, they were applied to denote names different from thoſe with which they had before been connected,—we ſhall perceive at once the reaſon why, originally, the combinations of the characters were not attended with ſimilar combinations of ſound. After this, there is no difficulty in admitting that the written muſt continue independent of the ſpoken language, eſpecially among people ſo little addicted to innovation as the Chineſe appear to be.

It is urged, in the *third* place, that the invention of writing is, by many of the ancients, aſcribed to the gods; and that Pliny, in particular, expreſsly ſays that the uſe of letters was eternal.

To this it is replied, that the ancients univerſally aſcribed to the gods all inventions of which they knew not the origin; and that as for Pliny, he expreſsly ſays elſewhere, that the Phœnicians were famed for the invention of letters. The moſt that this argument can prove is the antiquity, but not the divine origin, of this invention.

Such appear to be the principal arguments from fact, in favour of the divine origin of alphabetical writing. There are ſome arguments *à priori*, which remain to be conſidered: theſe are, *firſt*, the difficulty of the invention in any ſtage of human progreſs; and, *ſecondly*, its antiquity, which very much increaſes the improbability of its human origin.

Firſt, With reſpect to the difficulty of the invention, it is obſerved, that we are to ſuppoſe that the inventors decompoſed the ſounds of words, not only into ſyllables, but into letters; obſerving the component parts of ſyllables, and denoting theſe parts by appropriate marks; and uſing marks for theſe elementary ſounds in the viſible repreſentation of other words, into which thoſe ſounds were found to enter. This diſtinction of the articulate ſounds of man, tracing them through all their various combinations, and expreſſing them by a few ſimple marks, whoſe combinations may expreſs every poſſible combination of ſound, appears to ſuppoſe a habit of patient experiment, of diſcriminating examination, and of generalization, which ill accords with the uncultivated ſtate of the human intellect in the early periods of ſociety. But, *ſecondly*, when we conſider the antiquity of the invention, when we are forced to carry it ſo far back as to have been in a ſtate of perfection as early as the time of Moſes, this difficulty appears inſuperable. We muſt admit, it is urged, that men, in the earlieſt ages, ſtepped at once from a tedious and awkward, frequently unintelligible, method of communication, to a method which anſwers every purpoſe of communication, in the ſhorteſt way; and that, unlike all other inventions, it was brought at once to ſuch a ſtate of perfection, that no ſucceeding alphabet has any real ſuperiority over the ancient Hebrew.

This objection againſt the human origin of letters is more weighty in appearance than in reality. With reſpect to the difficulty of the invention, the objection loſes all its force, as ſoon as a ſimple and eaſy procedure, ſuch as might be adopted in the circumſtances of the caſe, can be pointed out. To obviate the difficulty ariſing from the *apparent perfection* of the original invention, we may obſerve, (1) that if the perfection of an alphabet conſiſts in its capability of expreſſing all the ſounds of ſpoken language, there is no known alphabet which is perfect. Every letter ſhould expreſs only one definite ſound, and every known ſound ſhould have a correſponding letter. We do not mean that it is neceſſary that the alphabet of one language ſhould be capable of expreſſing all the ſounds of another, but of its own. Now we have no inſtance of this among living languages; and we cannot, therefore, ſuppoſe that it was the caſe in any former language. But even admitting this, we may obſerve, (2) that no known alphabet, however ancient, is in the ſtate of its original invention. Cadmus, who was born in the Eaſt, carried with him into Greece only ſixteen letters; the leaſt copious alphabets we are acquainted with have twenty-two. It is not in the leaſt probable that Cadmus would introduce fewer than he poſſeſſed: it is more probable that he introduced more, to expreſs ſounds of which he had no repreſentation, but which were found among the Aborigines of Greece.

We have ſaid, that if a procedure can be pointed out, ſimple as the intellect of the inventors of language, and capable of eaſy introduction in the early periods of mental culture, all arguments *à priori* fall to the ground. It has generally been ſuppoſed of late that alphabetical writing was formed from hieroglyphics: it appears nearly certain that it was ſo; but the tranſition was never, we apprehend, explained with probability before the time of De Guignes. His hypotheſis appears to have been unobſerved by ſubſequent writers, who have attempted to trace the tranſition; and the only ſatisfactory ſtatement which we have noticed in our own language is in a paper in the Iriſh Philoſophical Tranſactions, by Dr. Hearney, who advances one important ſtep, by ſuppoſing that letters originally repreſented ſyllables. Dr. Hearney, however, ſpeaks of the human mind as accuſtomed to analyſis, when the tranſition took place; and ſupports his hypotheſis on the ſubject with arguments which appear little concluſive.

"Perhaps," ſays De Guignes, "we have done too much honour to the inventor of letters (whoever he was), in ſuppoſing that he diſſected the voice into two parts, and invented marks of two kinds, ſome to expreſs conſonants, the others vowels. It is more natural to ſuppoſe that the hieroglyphical writing was abridged by little and little, by ſuppreſſing a great number of figures; and that thoſe which they adopted preſerved always the ſounds which they had before; that they read them as they had read hieroglyphics; that they were always words, but very ſimple, and words whoſe baſe was a ſingle conſonant; that finally reduced into a regular order, (which we call the alphabetical,) they were regarded as conſonants, capable of being differently modified by a ſimple vowel ſound."

Our ideas on the tranſition from hieroglyphics to letters, (derived in a great degree from De Guignes,) may be thus ſtated:—The hieroglyphics, with their exactneſs of delineation, loſt their original ſignificancy, independent of ſpoken language. This muſt firſt be the caſe with words of the moſt frequent recurrence, and which entered moſt into combination with other words. Having become ſimple denotements of ſound, they were employed to expreſs their reſpective ſounds in combination of other monoſyllabic words, which in like manner had loſt their original ſignificancy. Hence, by degrees, they would become repreſentative of the component parts of all words into which their reſpective ſounds entered. They were always words, but very ſimple, conſiſting only of a conſonant and a vowel. Variation in the pronunciation of the vowel would occur in different dialects: and hence theſe marks would gradually be regarded as conſonants, capable of being differently modified by ſimple vocal ſounds. Letters, at firſt monoſyllabic words, then became marks for the component parts, or ſyllables of diſſyllabic or polyſyllabic words; and then for the unchangeable part of thoſe ſyllables, that is, for conſonants. In the moſt ancient ſtate of the oriental languages, vowel ſounds had no diſtinct marks; in the latter, marks were joined to the conſonants, to expreſs the different ſounds with which the radical conſonant was inveſted. Among the weſtern nations, a different procedure was adopted. In ſome caſes, they uſed the marks which they had received from the oriental nations, for an *aſpirate and vowel*, to denote the *vowel itſelf*; and having once commenced the uſe of diſtinct marks for vowels, the procedure was continued, and new marks adapted to expreſs noticed variations of vocal ſounds.

In ſupport of this hypotheſis, may be adduced the following obſervations:

1ſt. We have ſeen that hieroglyphics did become ſignificant of *ſounds*; and that words originally ſignificant of one claſs of ideas being applied to a ſecond, loſt their connection with the former, and became directly ſignificant of the latter.

2. We have reaſon to believe that words were originally monoſyllabic in thoſe nations where alphabetical writing was invented, and that the combination of old ſounds, or the uſe of them uncompounded, to expreſs new ideas, was the mode employed to extend the capabilities of their language. Hence the ſame word would frequently occur in combination, and though its different ſignifications muſt originally have been repreſented by different hieroglyphics, yet as theſe loſt their ſignificancy, they would eaſily become as extenſive in their meaning as the ſounds themſelves. And it is obvious that the moſt ſimple of thoſe hieroglyphics which were uſed for the ſame ſound, would be employed to repreſent the ſound.

3. It has been ſhewn to be highly probable that originally every conſonant had its vowel ſound. Hence all ſyllables might be repreſented by two, or at moſt, three European letters. This circumſtance would materially diminiſh the varieties of ſyllabic ſounds.

4. The probability of the theory advanced depends greatly upon the hypotheſis that originally letters were ſyllabic. The following facts appear to prove this. The ancient oriental alphabets had no denotements for vowels; and even if this be diſputed, it muſt be admitted that they had many words into which none of the ſuppoſed vowel marks entered. The Ethiopian alphabet is entirely ſyllabic. The ſimple letters denote a conſonant and a ſhort *a*, and marks were added to them to denote other vowels, where uſed. What is doubly ſingular and important, they have in many caſes added marks to theſe ſyllabic characters, to denote that they have no vowel belonging to them. In the Coptic and Arabic, there are ſyllabic characters. The alphabets of the eaſtern Aſiatics are principally ſyllabic, ſome with *ă*, others with *ŏ* joined to a conſonant. Theſe circumſtances render very probable the account here given of the tranſition from hieroglyphics to letters. The following obſervations more directly tend to aſcertain its high probability.

5. The letters of ſome of the ancient alphabets have ſo great a reſemblance to the hieroglyphical characters, indeed are ſuch exact tranſcripts of them, that a ſimple inſpection is ſufficient to convince us that hieroglyphics were the origin of letters, and this point is almoſt univerſally admitted. This however proves little as to the nature of the invention of alphabetical writing, except that it was ſubſequent to the uſe of hieroglyphics. But,

6. Theſe characters in many inſtances retained their original ſignificancy, which proves them to have been, as De Guignes ſuppoſes, denotements for words. We muſt not expect to find this ſignificancy in all words of which they form component parts; but in ſuch only in whoſe viſible repreſentation the original hieroglyphic formed a component part. Now we muſt obſerve, firſt, that the names of ſeveral of the oriental letters are ſtill by themſelves ſignificant, and that ſome of theſe letters are ſimilar to the Chineſe clefs which have the ſame ſignification. Thus the Hebrew י, *yod*, ſignifies the *hand*. Its form in ſome alphabets reſembles the Chineſe character for *hand*. The ד, *daleth*, of the Hebrews, Phœnicians, and Ethiopians, ſignifies *a gate*, and the *action* of *opening*. The hieroglyphic which among the ancient Chineſe repreſented *a gate*, is exactly ſimilar to this letter. The פ, *phi*, of the Hebrews, and of the Ethiopians, ſignifies the *mouth*. The Chineſe characters for the mouth all reſemble it. The ע, *ain*, ſignifies the *eye*. The Phœnicians and Chineſe employed the outline of the eye as a denotement of the object. The ש, *ſhin*, in Hebrew ſignifies the *teeth*, and its figure is ſtill found among the Chineſe, with the ſame ſignification. The מ, *mem*, ſignifies *water*. The correſponding Samaritan and Ethiopian characters have a clear reſemblance to the Chineſe hieroglyphic for water. Laſtly, the א, *aleph*, (originally perhaps ſignifying *ox*) ſigni-

ſies *unity*, the *action of conducting*, *pre-eminence.* The Phœnician form of this letter exactly repreſents the Chineſe character for *one*, and *every action by which we are at the head of others.* But theſe letters are not only ſignificant by themſelves, but ſecondly in combinations. Thus י was expreſſed by the monoſyllable *ya*, *ye*, or *yo*; to this another monoſyllable, which had equally a ſignification relative to the figure being added, formed a word of two ſyllables. For inſtance, inſtead of the preſent denomination of ד, *daleth*, we may reaſonably ſuppoſe its original ſound to have been *da*. The word יד, *yada*, hieroglyphically repreſented by *a gate* and *a hand*, is found in the Hebrew with a ſignification derived from that of the letters compoſing it; *to caſt out*, (as we might ſay, *hand* him to the *door*,) *to extend.* Add to this the word עי, *ain*, (originally, probably, ſounded *ho*,) which ſignifies the *eye*, and we have *yadaho*, which ſhould ſignify *to open the eyes*, *to extend the view*, &c. and metaphorically, *to know*, *to underſtand*; and in fact this is the ſignification of ידע in Hebrew. But this is not all, for exactly the ſame procedure has been adopted by the Chineſe. *Ki*, which ſignifies *to examine*, is compoſed of three radical characters, of which the firſt ſignifies *the hand*, the ſecond *a gate*, the third *the eye.* So alſo *Kia* is compoſed of three characters, one ſignifying *the teeth*, the other two, *gate* or *opening*, which ſignifies *to break through*, *to make a great opening.* In Hebrew, שדד is ſimilarly compoſed, and ſignifies *to plunder*, *to lay waſte.*—*Tchi* is a *large collection of water.* It was compoſed of the characters for *hand* and *water.* The ſame compound was formed among the Hebrews, and ים, *yam*, ſignifies *a great collection of water*, or *the ſea.* In Arabic the letters *thet*, i. e. *earth*, and *mim*, i. e. *water*, form the word *tham*, and ſignify a *flood.* The Hebrew *then* is compoſed of the *thet* or *earth*, and the *nun*, which ſignifies *man*, i. e. *man of the earth*, and further, *to form*, *to create.* In both theſe inſtances the Chineſe correſpond in their combinations with the alphabetical writing.—Many other inſtances might be brought. We will adduce one, to which there is no correſponding combination in the Chineſe language. *Ab* or *Haba* ſignifies *father*; the component parts of it ſignify *principal of the houſe.*

The papers of De Guignes, to which we are very greatly indebted on this ſubject, are to be found in Memoires de l'Academie des Inſcriptions et des Belles Lettres, vol. 34, &c. See ALPHABET, HIEROGLYPHICS, LETTERS, WORDS, and WRITING.

LANGUAGE, *Structure of*, comprehends the nature and arrangement of the different parts of ſpeech. See each under its proper head. (See alſo GRAMMAR.) No grammatical rules, however, have ſufficient authority to controul the firm and eſtabliſhed uſage of language. Eſtabliſhed cuſtom, ſays Blair (Lectures, vol. i.), both in ſpeaking and writing, is the ſtandard to which we muſt at laſt reſort, for determining every controverted point in language and ſtyle. But it will not follow from this, that grammatical rules are ſuperſeded as uſeleſs. In every language, which has been in any degree cultivated, there prevails a certain ſtructure and analogy of parts which is underſtood to give foundation to the moſt reputable uſage of ſpeech; and which, in all caſes, where uſage is looſe or dubious, poſſeſſes conſiderable authority. In every language, there are rules of ſyntax which muſt be inviolably obſerved by all who would either write or ſpeak with any propriety. For ſyntax is no other than that arrangement of words in a ſentence, which renders the meaning of each word, and the relation of all the words to one another, moſt clear and intelligible. See SYNTAX.

Uſage and cuſtom, ſays F. Buffier, are the rule of a language; and theſe hold their empire independent of reaſon, or any other cauſe: nor has reaſon any thing to do in language, unleſs to ſtudy or teach it, ſuch as it is. Here then commences grammar; a juſt plan of which ſuppoſes a language already introduced by uſe, and, without pretending to alter or amend a tittle, only furniſhes reflections, called *rules*, to which the manners of ſpeaking uſed in that language may be reduced; which aſſemblage of reflections is what we call the *grammar of that language.* This remark may obviate an abuſe introduced among grammarians, who are ever crying out, "Uſage is, in this point, oppoſite to grammar; or the language here frees itſelf from the rules of grammar, &c."

It is chance then to which we owe uſage, and uſage that makes the rules and meaſures of language. Uſage, indeed, is ſomewhat dubious, and may be divided into *good* and *bad.* If it be aſked, wherein the difference between theſe lies? it is in this: that the one is better eſtabliſhed, or authorized, than the other; and if it be aſked, wherein that difference of authority conſiſts? it is anſwered, that in dead languages, that which makes the good uſage is the writings of the beſt authors in that language: and if it be farther queſtioned, which are the beſt? thoſe are allowed ſuch, who wrote when the ſtate was in its greateſt glory. Thus the age of Auguſtus, being the moſt diſtinguiſhed by great men, who then flouriſhed, we call that *good* Latin which is conformable to the manners of ſpeaking uſed by authors, who wrote within fifty years before, and fifty after, the reign of that emperor. As to living languages; the good uſage, or mode, is that which obtains among the moſt eminent perſons, whether as to quality and authority, or as to learning and the reputation of writing well.

With this view it is, that M. Vaugelas defines uſage of a language, the manner of ſpeaking uſed by the ſoundeſt or beſt part of the court, conformable to the manner of writing among the beſt part of the authors of the time. But this definition, how judicious ſoever, may occaſion infinite doubt; for which is to be deemed the beſt part of the court, and of the writers? Each party, doubtleſs, thinks itſelf the beſt. F. Buffier, therefore, very juſtly, inſtead of the beſt part, ſubſtitutes the greateſt part, which brings the matter nearer to a certainty: the moſt numerous part being ſomething fixed and palpable; whereas the moſt ſound part may be inſenſible or arbitrary. There is found a conſtant reſemblance between the genius or natural complexion of each people, and the language they ſpeak. Thus the Greeks, a polite, but voluptuous nation, had a language perfectly ſuitable, full of delicacy and ſweetneſs. The Romans, who ſeemed only born to command, had a language noble, nervous, and auguſt: and their deſcendants, the Italians, are ſunk into ſoftneſs and effeminacy, which is as viſible in their language as in their manners. The language of the Spaniards is full of that gravity and haughtineſs of air which make the diſtinguiſhing character of that people.

The French, who have great vivacity, have a language that runs extremely briſk and lively. And the Engliſh, who are naturally thoughtful, and uſe few words, have a language more conciſe and ſententious, though far from being deficient in reſpect of copiouſneſs.

LANGUAGES, *the Diverſity of*, is generally allowed to have taken its riſe from the confuſion at the building of the tower of Babel. See CONFUSION *of Tongues*, and DISPERSION *of Mankind.*

As to the point of *antiquity* and *priority* among languages, that has been extremely controverted. Herodotus tells us, that in the diſpute between the Egyptians and Phrygians about the antiquity of their languages, Pſammetichus, king of Egypt, ordered two children to be brought up, with expreſs prohibition not to have one word pronounced before them, but to leave nature to ſpeak of herſelf; and the firſt word they ſpoke happened to be *beccos*, which, in the Phrygian language, ſignifies *bread*. The Egyptians, however, were not convinced with this proof. The Arabs diſpute the point of antiquity with the Hebrews; but the Jews, jealous, even to exceſs, of the honour of their nation, poſitively inſiſt on it, that the Hebrew tongue, ſuch as it is found in the Holy Scriptures, is the primitive language, and that ſpoken by the firſt man. For the arguments alleged in favour of this opinion, ſee HEBREW *Language*.

Of all the oriental languages, except the Hebrew, the Syriac has had the greater number of advocates, eſpecially among the eaſtern authors. They have alleged, that a dialect of this language was ſpoken in Meſopotamia, Chaldæa, and Aſſyria, where mankind firſt ſettled after the flood, and where, it is preſumed, the language of Noah and his ſons remained: to which argument they add, that the names of perſons and places mentioned by Moſes are eaſily derived from that language. Beſides thoſe kindred languages, which are commonly called the oriental tongues, the Armenian, the Celtic, and the Coptic, pleading the antiquity of their nations; and the Armenians, that the ark firſt reſted in their country: the Greek, on account of its great extent and copiouſneſs, the Teutonic, from which ſome have pretended to derive even the Hebrew itſelf, and the Chineſe, have aſpired to preference, in point of antiquity.

The pretenſions of the Chineſe, in particular, have been ſupported not only from the great antiquity of that nation, their early acquaintance with arts and ſciences, and their having preſerved themſelves ſo many ages from any conſiderable mixture or intercourſe with other nations; but alſo from the ſingularity of the tongue itſelf, which conſiſts of few words, all monoſyllables, and is moſt ſimple in its conſtruction, having no variety of declenſions, conjugations, or grammatical rules. Beſides, it is urged, that the Chineſe are the poſterity of Noah, and that Fohi, the firſt king of China, was Noah.

Mr. Webb, an ingenious writer in the reign of Charles II., ſtrenuouſly maintains that this is the only original language, and that they now talk in China the language of Paradiſe.

Others maintain, that the language ſpoken by Adam is loſt; and that the Hebrew, Chaldee, and Arabic, are only dialects of the original tongue. So far are they from giving the priority to the Hebrew, that they maintain Abraham ſpoke Chaldee before he paſſed the Euphrates; and that he firſt learned the Hebrew in the land of Canaan; ſo that this was not a ſpecial language conſecrated to the people of God, but was originally the language of the Canaanites.

M. Le Clerc is of opinion, the Hebrew is far inferior to the Greek, both in copiouſneſs, elegance, and perſpicuity; it is dry, and deſtitute of ornaments, inſomuch that, wanting expreſſions to vary the phraſe, the ſame periods are perpetually returning. The rabbins, converting its poverty into an excellence, ſay, it is ſo pure and chaſte, that it has no proper names for the parts of generation, nor for thoſe by which the excrements are diſcharged. See HEBREW.

The Arabic is held the moſt copious of all languages. See the Preliminary Diſcourſe to Sale's Koran.

LANGUAGE, *Euphony of, for Singing*. It ſeems as if the vocal muſic of every country depended on the purity of the vowels, neat articulation of the conſonants, and eaſy utterance of the words of which a language is compoſed; and there can be doubt but that the dialect which has the greateſt number of open vowels mixed with its conſonants, is the moſt favourable for vocal purpoſes. The tones of voice can only be heard with purity and clearneſs by the aſſiſtance of vowels: as the words, *vowels* and *voice*, are equally derived from *vocalis*, which implies a *ſound*, a *muſical tone*, vocal melody, or modulation. And it is not only from the general facility with which the ſyllables of a language can be uttered with neatneſs and articulation that it is rendered favourable to the ſinger, but from the number of *vocal terminations*, or words ending with vowels, which allow the voice to expand, and finiſh a muſical phraſe with eaſe and purity.

It is generally allowed that the French language is *naſal*, the German *guttural*, and the Engliſh *ſibilating*, and loaded with conſonants, naſal ſyllables ending with *ng*, and other harſh and mute terminations. We have, indeed, filed off the Saxon roughneſs in words where *gh* occur: as *cough*, *trough*, *laugh*, *plough*, *through*, *eight*, *freight*, *enough*, &c. which uſed to be pronounced in the Teutonic manner, and which are ſtill guttural words in Scotland, and ſome parts of England.

But beſides the obſtructions which the voice meets with in its paſſage, from claſhing conſonants in the middle of words, we have a greater number of terms that end with abſolute mute and abrupt conſonants, than either the French or Germans: ſuch are thoſe which terminate in *b*, *d*, *g*, *k*, or hard *c*, *p*, and *t*. And it is not eaſy to defend our language from the *hiſſing* of which it is accuſed by foreigners, on account of the frequent uſe of the letter *s* at the end of words, and the great number of words which terminate with a double *s*. For though the plural number of French nouns is diſtinguiſhed in writing by an *s*, as well as the Engliſh, yet the final *s* is never pronounced. The German plurals too are terminated by the letter *n*: as *haus*, *hauſen*; *ſtraſs*, *ſtraſſen*; *pferd*, *pferden*; &c. in the ſame manner as *houſe* uſed to be *hauſen* in the plural, *hoſe*, *hoſen*; and as the ſubſtantive *ox* ſtill has *oxen* in the plural. And the letter *n* being a liquid, renders the words which it terminates leſs difficult to utter, as well as leſs offenſive to the ear, than the letter *s*, with which we have more words begin and end than with any other letter in the alphabet. Indeed, modern refinements or corruptions in pronouncing our language have greatly augmented the ſibilation with which we are juſtly charged, by changing the *eth* and *ath* of verbs into *es* and *as*; and ſaying *gives* for *giveth*, *has* for *hath*, &c.

The learned Dr. Wallis, a profound muſician, in his treatiſe "De Loquela," prefixed to his Grammar of the Engliſh Tongue, has conſidered with great exactneſs the accurate formation of all ſounds in *ſpeaking*, to which few have attended before; but with reſpect to *ſinging*, the work is ſtill to be done.

Dr. Holder, who was a very learned muſician and a compoſer, though he has admirably analyſed the principles of pronunciation, and deſcribed the organs of utterance, with reſpect to colloquial language (Elements of Speech; an Eſſay of Inquiry into the natural Production of Letters, 1669), has not pointed out the means by which the muſical voice in articulating words is aſſiſted or impeded in its formation and delivery, or the cauſes of its arriving at the ear with more or leſs clearneſs and purity. It was a ſubject that did not immediately concern the purport of this excellent eſſay, which was written with the benevolent intention of aſſiſting perſons born deaf and dumb to comprehend the ſpeech of others by the eye, from its effect on the external organs; and, therefore, the omiſſion of ſuch enquiries as ſeem neceſſary in this place cannot be termed a defect.

Rouſſeau, in his ingenious and ſpirited "Lettre ſur la Muſique Françoiſe," has confined his remarks chiefly to the vices of the French language; but to all, except the natives of France, a leſs eloquent and forcible writer might eaſily have proved it unfit for every kind of vocal muſic, ſuperior to a "Vaudeville," or "Chanſon à table:" for the words of theſe compoſitions being their principal merit, the hearer is the leſs inclined to judge ſeverely of the muſic, or the ſinger, provided he loſes none of the wit or ingenuity of the poem. And, indeed, it is at the *ſerious* French opera, and by the performance of *ſlow muſic*, and *airs tendres*, that thoſe accuſtomed to good ſinging are moſt offended. However, in the parallel which Rouſſeau has drawn between the languages of France and Italy, after deſcribing all the inconveniences ariſing to a ſinger from the compound, mute, naſal, and dead ſyllables, of the French language; he aſſerts, that the paucity of ſonorous vowels, and abundance of conſonants and articulations, force the lyric poet to exclude many words, and allow the muſical compoſer to give only elementary, or ſhort and ſingle ſounds, to the others. There is no language in which *all* the words of its vocabulary are equally fit for muſic, or lyric poetry; according to Salvini, out of forty thouſand words in the Italian language, only ſix or ſeven thouſand can be adopted by the writers of ſerious muſical dramas. Indeed, ſome of theſe rejected words, by their want of dignity, as well as ſoftneſs, may be unfit for lyric compoſitions. Hence, the melody neceſſarily becomes inſipid and monotonous, and its movement ſlow and tireſome; for if the time of ſuch muſic be at all accelerated, its velocity reſembles that of an angular body rumbling on a pavement. He goes on with his ſtrictures, and ſuppoſes, that "ſuch a language as he hath been deſcribing, has a bad proſody, unmarked, without exactitude and preciſion; that the long and ſhort ſyllables have no ſenſible and determinate proportion between them in duration, or numbers, by which the rhythm can be rendered agreeable, exact, and regular; that it has both long and ſhort ſyllables of an uncertain duration, with others that are neither long nor ſhort; and that the difference between them is wholly incommenſurable.

"Theſe vices and inconveniences," he adds, "have ſuch an effect upon the time or meaſure of muſic, when applied to ſuch words, as to render it wholly unmarked, irregular, and disjointed.

His character of the Italian language, and deſcription of its beauties, and advantage over all others, for vocal purpoſes, are ſo appoſite to the preſent enquiries, that we ſhall faithfully tranſlate the whole paſſage.

"If it ſhould be aſked what language is the moſt grammatical, I ſhould anſwer, that of the people who reaſon the beſt; and if it ſhould be aſked what people are likely to have the beſt muſic, I ſhould ſay, thoſe that have the beſt language for it. Now if there is in Europe one language more favourable to muſic than another, it is certainly the Italian: for this language is ſoft, ſonorous, melodious, and more accentuated than any other; four qualities peculiarly important to vocal muſic. It is *ſoft* from its articulations being uncompounded; from the infrequency of claſhing conſonants; and from every word in the language being terminated by a vowel. It is *ſonorous* from moſt of its vowels being open; its diphthongs uncompounded; from having no naſal vowels; and from its articulations being few and eaſy, which render the ſound of each neat and full. It is *melodious* from its own native ſweetneſs, which renders it vocal even in declamation and common ſpeech, without the aſſiſtance of muſical notes. But what renders the Italian language more peculiarly mellifluous, as well as more expreſſive of ſentiment, than any other, is the great compaſs and variety of its tones, and the choice it allows in painting the paſſions. To prove this, let any one who imagines it to be only the language of love and tenderneſs, take the trouble of comparing the two following ſtanzas of Taſſo."

"Teneri ſdegn i e placide è tranquille
Repulſe e cari vezzi e liete pace,
Sorriſi, parolette, e dolce ſtille
Di pianto e ſoſpir, tronchi e molli bacci
Fuſe tai coſe tutte, e poſcia unille,
Et al foce tempro di lente faci;
E ne formo quel ſi mirabil cinto
Di ch' ella avena il bel fianco ſuccinto."
Canto IV. Stanza xxxiii.

"Chiama gl' abitator de l'ombre eterne
Il rauco ſuon de la tartarea tromba;
Treman le ſpazioſe atre caverne,
E l'aer cieco a quel romor rimbomba;
Ne ſi ſtridendo mai de la ſuperne
Regione del cielo il folgor piomba,
Ne ſi ſcoſſa giammai trema la terra
Quando i vapori in ſen gravida ſerra."
Canto XVI. Stanza xxv.

It will be found, perhaps, equally difficult to expreſs in any other language the ſweetneſs of the one or the vigour of the other of theſe ſtanzas. But the roughneſs of the laſt ſtanza does not conſiſt in hard and uncouth words; they are all ſonorous, and, though rough to the ear, eaſy of utterance.

Theſe ſtanzas, however, which Rouſſeau, and, after him, almoſt all muſical writers have inſtanced as of remarkably eaſy utterance, ſhould have been confined to reading and declamation; for better lyrical or vocal verſes may be found in Metaſtaſio, and, indeed, in almoſt all Italian lyric poets, ſince it has been found that the vowel *a* is the beſt for diviſions, and all the other vowels have been long in diſuſe for ſuch purpoſes, by the beſt Italian compoſers for the ſtage. In the ſtanza cited as a model of ſoftneſs, in vocal verſes, there are but two words, to which, in a lively air, diviſions would be given: *Cari*, *pace*. But even theſe, in which the vowel *a* occurs in the *firſt ſyllable*, would have no long diviſions aſſigned them, if there was a *final ſyllable* terminated by that letter, as in the third perſon ſingular of the future tenſe of verbs, *vedrà*, *ucciderà*, *farà*, *darà*, *parlerà*, *cantarà*, *fuggirà;* in the eliſion of the infinitive mood, *trionfar*, *ripoſar*, *ſcordar*, *luſingar*, *naufragar;* and in the ſubſtantives, *fedeltà*, *pietà*, *felicità*, *libertà*, *crudeltà*, and *Mar*.

In ſetting Metaſtaſio's early operas, till about the middle of the preſent century, we find the beſt compoſers giving diviſions to the vowels *o* and *e;* as in *morirò*, *dovrò*, *fugiro*, *re*, *te*, *fè*, *freme*, *ſpeme*, *vender*, *voler*, *è*, *mercè*, &c. but never to *i* or *u*.

Rouſſeau declined diſcuſſing the accents of the Italian tongue; but if, as has been imagined, the Greek accents were uſed as a notation of the tone or tune of voice in reading or ſpeaking; the acute accent raiſing the voice, the grave depreſſing it, and the circumflex keeping it at a middle pitch or tone, the Italian would afford a more varied and pleaſing melody than any of the other European dialects.

All *tuneable ſounds*, ſays Dr. Holder, of which the human voice is one, are produced by a regular and equal vibration of the ſonorous body and undulation of the air, proportioned to the acuteneſs or gravity of the tone. And, according to Dr. Wallis, this gravity, or acuteneſs of tones in ſpeech, depends on the openneſs of the aperture in the larynx, which is the ſeat of the voice; and roughneſs and ſmoothneſs of vocal tones, he refers to the ſtate of this organ.

But as theſe learned philologers have only diſſected our alphabet, and analyſed the pronunciation of our language, as far as concerns its articulation in ſpeech, we ſhall examine it with reſpect to lyric poetry and ſinging, to which our remarks will be ſtrictly confined.

If it be conſidered that of the five vowels in European alphabets, only two, *a* and *o*, are favourable to the clear emiſſion of vocal ſound; that of the nineteen conſonants eight are abſolutely mute, as *b*, hard *c* and *g*, *h*, *k*, *p*, *q*, *t*; ſeven ſemi-mute, that is, allowing only a murmuring noiſe, but no muſical ſound, as *f*, *m*, *n*, *ſ*, *v*, *x*, *z*; that the ſoft *g* and conſonant *j* are likewiſe of this kind; and that *r*, though accounted a liquid, only admits of a ſnarling, canine kind of a noiſe; *l*, indeed, is a true liquid, allowing a continuation of ſound after it is formed; and *w* and *y* may be accounted ſemi-vowels; yet ſo numerous are the impediments to a neat, clean articulation, as well as ſweetneſs and purity of muſical tones, that ſome care ſhould at leaſt be uſed by the lyric poet in the *ſelection* of words, as well as great precaution by the compoſer, who gives them a melody.

If our alphabet be critically examined, in order to diſcover the effect which each letter has upon the voice in ſinging; it will be found that peculiar letters, as well as combinations of letters, have peculiar vices and tendencies to impede or corrupt muſical ſounds, both in their formation and paſſage: that *f* admits only of a whiſper; for though regarded as a ſemi-vowel on account of its allowing us to breathe after it has been pronounced, without altering the form of the mouth; yet, as Dr. Holder has well obſerved, "it is one thing to *breathe*, and another to *vocaliſe* that breath." *M*, *n*, and *ng*, likewiſe allow us to breathe; but as it is only naſal breath, the ſound we are able to emit is *ſnuffling* and impure. *S*, and its ſubſtitute, ſoft *c*, are *hiſſing*; *v* and *z* afford only a *jarring* buz, by the vibration of the teeth and underlip, like that of a waſp or bee; *th*, cannot be uttered without a *liſp*; and the Saxo-Norman ſyllables *ble*, *cle*, *fle*, *gle*, *kle*, *ple*, *tle*, are all unmuſical, and of difficult utterance.

The vowel *a*, according to our manner of ſounding it in the words *all*, *ball*, *call*, &c. affords the pureſt and moſt open paſſage to the voice through the mouth; and long diviſions and vocal effuſions ſhould be appropriated as much as poſſible to this vowel, which is ſtill more convenient to the ſinger when combined with no other letter, which alters the form of the organ. *O*, allows a free paſſage to ſound; yet, as it ſeparates the lips and teeth leſs than the letter *a*, it is in leſs favour with ſingers: however, the Engliſh words *blow*, *flow*, *glow*, *ſlow*, *woe*, &c. are well calculated for muſical diviſions. *E*, *i*, and *u*, partake of the nature of conſonants, by putting the organs of ſpeech in motion when they are firſt ſounded; and in dwelling upon theſe vowels no *voce di petto*, no voice can be produced from the cheſt, as they confine it to a ſmall part of the mouth, or render it naſal. Indeed, the *u*, by almoſt cloſing the lips, allows but a very narrow and inconvenient paſſage to the voice; the *i* and the *e* are more favourable to a falſet, a *voce da teſta*, or feigned voice, than to a true *portamento*, or conduct of the voice.

Toſi, in his "Opinioni de' cantori antichi e moderni, o ſieno oſſervazioni ſopra il canto figurato," or florid ſong, fourſcore years ago, recommended the exerciſing of the voice upon the three open vowels, which, with the Italians, are *a*, *e*, *o*, equivalent to our *aw*, *a*, *o*. The Italian *i*, ſounded like our double *e*, and *u* as our double *o*, are never honoured with diviſions or long ſounds by the beſt compoſers or ſinging maſters of Italy.

As open vowels are the moſt deſirable to ſingers; ſo diſtinct, determinate, and uncompounded conſonants, are the beſt crutches for the voice to lean on; for a neat, clear, and articulate pronunciation of conſonants is as neceſſary to the intelligence of what is ſinging, as open vowels are to its being well ſung. The letters *p*, *t*, *k*, for inſtance, are ſuch clear and diſtinct articulations, that the voice, after any one of them, is delivered with a gentle kind of exploſion, which conſiderably augments its force.

The *i*, in Engliſh, as it is ſounded in the word *ſmile*, and which is ſo peculiar to Engliſh mouths, ſeems a diphthong, compounded of *e* feminine, and *y*, or the Greek diphthong *ει*, or rather the German *ei*, as ſounded in *eiſenac*, *eichner*, &c. and not a ſimple, or original vowel. Indeed, moſt of the diphthongs in our language require action in the organ, and ſpring in the muſcles, as *ay*, *oy*, *eu*, *ou*, in the words *bay*, *boy*, *Europe*, *our*.

As accent and emphaſis have great influence in varying the ſound of oral language, they are not indifferent to vocal melody: the Italian tongue, though it is eaſy to pronounce, and ſoft and mellifluous to the ear, from the openneſs and frequency of its vowels; yet the articulations of its conſonants are more firm, vigorous, and poignant, than in any other language; and as every dialect has peculiar inflections of voice which form a kind of *tune* in its utterance, the Italian ſeems to have a greater compaſs and variety of intervals in this colloquial *tune*, or *cantilena*, than any other with which we are acquainted.

Diomedes calls accent the ſoul of ſpeech, *anima vocis*. And every word of more than one ſyllable in proſe, muſt have one emphatic or accented ſyllable among the reſt. However, in verſe, this rule cannot be obſerved without abſurdity.

> "Of mān's firſt diſobēdience, and the frūit
> Of that forbidden trēe," &c.
>
> "Awake my Sāint John, leave all meaner thīngs
> To low ambītion, and the pride of kīngs."

In each of theſe two laſt verſes, were they ſet in recitative, which is the beſt muſical criterion of accenting any language, there can only be two emphatic, accented ſyllables: as in Handel's opening of "Alexander's Feaſt;"

> "'Twas at the royal feāſt, for Perſia wōn."

A ſyllable in Engliſh, as well as Latin, which has two conſonants after a vowel, is long, except one of theſe conſonants be mute, and the other a liquid, as in rĕgrēt, rĕplēte. Indeed, the accented ſyllable in our words which have double conſonants, is ſhort: ſo that accent and long do not always imply the ſame thing. In the caſe of double rhymes this rule ſhould be obſerved: as *pleaſure*, *meaſure*, *manner*, *banner*; which ſhould all have ſhort notes. Here *accent* and *quantity* certainly differ. By applying Italian melody to Engliſh words, we ſeem to loſe in ſenſe what we gain in ſound. The univerſality of double rhymes in Italian poetry muſt have an influence upon vocal melody, which our ſingle rhymes but aukwardly imitate.

Dacier, in a note to his tranſlation of Plutarch's Life of Lycurgus, ſays, that "the progreſs of muſic, in all times, has ever been proportioned to the genius and language of the people." The ancient Romans, though great in arms, agriculture, and literature, were not ſucceſsful cultivators of the fine arts ; and nothing was achieved in them, throughout their empire, but by Grecian artiſts. For this we may, however, account, by the ſlaves only being allowed to cultivate the polite arts, among the Romans ; whereas, in Greece, on the contrary, they were wholly prohibited their uſe.

No viſionary innovation, or fantaſtical change, is here intended, in a language ſo excellent as our own for every purpoſe of reaſon, ſcience, philoſophy, and we may ſurely add, poetry ; all we would recommend, is care to our lyric poets in the ſelection and arrangement of ſyllables, as well as unity of ſubject (ſee Italian Tour. p. 48, and our articles SONG, SYMMETRY, and UNITY *of Melody*), and attentive obſervance to the compoſers who ſet them to muſic, not to dwell on harſh, mute, naſal, or guttural words, which either preclude or vitiate all muſical ſound.

Song and *ſing*, unfortunately, the two moſt common words in our lyric poetry, begin by a *hiſs*, and end with a ſound entirely naſal ; and if we examine the ſyllables which terminate each line in Dryden's Ode on St. Cecilia's Day, the beſt of our lyric poems, and perhaps the moſt noble production, to *read*, of modern languages, we ſhall find that the dead letter *d* predominates ; terminating in the courſe of the poem no leſs than two or three and thirty lines ; in more than half of which, this hard and dumb letter is preceded by *n*, which, though it does not wholly ſilence the voice, yet allows it no paſſage, but through the noſe. However, this junction is not ſo injurious to vocaliſed ſound, as *ng* in the words *ſung*, *young*, *beginning*, *winning*, *deſtroying*, *enjoying* ; or *ſ* and *z* in *ears*, *hears*, *ſpheres*, *comes*, *drums*, *prize*, *ſkies*, &c. which terminate each muſical phraſe or period with a hiſs. The impervious conſonant *t*, in *ſate*, *ſtate*, *fate*, &c. preceded by a vowel, is leſs difficult to pronounce, and leſs offenſive to hear, than the ſibilation in *breaſt*, *oppreſt*, &c.

Admirable and ſublime as this ode is in the peruſal, ſome of the lines are extremely difficult to ſing, without injuring either the poet or muſician ; the firſt, by a languid and inarticulate utterance, or the latter by a pronunciation too rough and violent. The recitatives may, with propriety, admit of ſtrong accentuation, as only ſuch a portion of ſound is wanting as will render the words more audible, and nearer ſinging, than mere ſpeech : but as recitative is the medium between declamation and muſical air, ſome attention ſeems neceſſary in ſelecting the words, and poliſhing the verſes, even for this narrative melody ; in ſhunning harſh alliterations, ſuch as in the lines, *thrice he ſlew the ſlain— the ſweet enthuſiaſt from her ſacred ſtore*, &c. where there is a conſtant and unavoidable hiſſing upon all the accents ; and in placing ſuch words at the pauſe, or hiatus, in the middle as well as at the end of each line or verſe, where the punctuation requires a repoſe, or long note, as will neither wholly ſilence the voice, nor impede its expanſion. If ſuch precautions ſhould be thought neceſſary for words of quick utterance in *recitative*, ſtill more ſolicitous ſhould the lyric poet be in the choice and arrangement when he writes an air, where every ſyllable is lengthened and vocaliſed, and where the vowel in each is all that the compoſer can tune, or the ſinger ſweeten and refine.

It is very natural for poets to wiſh that the language, in ſetting it to muſic, ſhould be more reſpected than it has generally been, particularly in our church compoſitions, by old maſters, which the late Mr. Maſon, in his "Anthem Book for York Cathedral," has very juſtly cenſured ; but he commends Tucker, who was gentleman of Charles IId's chapel, for his very accurate attention to accent and length of ſyllables ; and ſums up the excellencies and defects of our eccleſiaſtical compoſers brought up in the King's chapel, after the Reſtoration, by ſpeaking with exact diſcrimination of "the pleaſing melodies of Wiſe ; pathetic airs of Clarke ; majeſtic movements of Blow ; and ſublime ſtrains of Purcell."

But Purcell, the pride of every Engliſhman who loves muſic, was, in general, not only accurate, but happy and touching in the expreſſion of words. Many of his melodies are, however, now become wholly obſolete and uncouth, from the temporary graces, with which he overloaded them, for the ſake of ignorant ſingers ; and, indeed, he wrote for no other. But theſe being the furbelows and flounces of a particular period, are very ſhort-lived, and ſoon diſgrace that melody which they were intended to embelliſh.

LANGUAGES are in general divided into *original* or *mother-tongues* ; as the Hebrew and Arabic, in the Eaſt ; the Teutonic and Sclavonic, in the weſt.

LANGUAGES, *Secondary*, or *derivative*, which are thoſe formed out of a mixture of ſeveral others, as Latin, French, &c.

Kircher will have the Coptic a mother-tongue independent of all others. See COPTIC.

Du Jon maintains the Gothic a primitive language, and the mother of all the Teutonic tongues ; that is, of all thoſe ſpoken in the north. See GOTHIC.

Some add the Baſque, or Biſcayan, and Bas Briton, to the number of mother-tongues, imagining them to have been thoſe of the ancient Celtæ, or Gauls.

LANGUAGES, *Learned*, or *Dead*, are thoſe which only ſubſiſt in books, and which muſt be learned by the rules of grammar ; as the Greek, Hebrew, Syriac, and Chaldee.

Raimond Lully ſolicited the eſtabliſhment of the ſtudy of the learned languages a long time, in the thirteenth and fourteenth centuries. At length, in the year 1312, pope Clement, and the council of Vienne, appointed, that in the court of Rome, and in the univerſities of Paris, Oxford, Bologna, and Salamanca, there ſhould be inſtituted profeſſors of each, who ſhould have ſalaries from the reſpective courts. The monks, however, vigorouſly oppoſed the ſpreading of theſe ſtudies ; and with ſo much ſucceſs, that Eraſmus tells us, in his time, "Græce noſſe ſuſpectum, Hebraice prope hæreticum."

LANGUAGES, *Living*, are thoſe ſtill ſpoken in ſome country or other ; and which may be learned by converſation. The moſt popular among theſe are the French, Italian, Spaniſh, and Engliſh.

The Spaniards ſeem to place the nobleneſs and gravity of their language in the number of ſyllables, and the ſwelling of words ; and ſpeak leſs to be underſtood, than to be admired. Their terms are ſonorous ; their expreſſions haughty ; pomp and oſtentation run through all they ſay ; their language cannot paint a thought to the life ; it always magnifies it ; frequently diſtorts it ; and does nothing, if it does not exceed nature.

The Italian tongue does not ſwell up things to that degree, but it adorns and embelliſhes them more ; yet theſe ornaments and embelliſhments are not real beauties. The Italian expreſſions, thus rich and brilliant, are like thoſe faces covered with patch and paint, which make a fine ſhow ; but the finery is all deceit.

The French language (as ſome of their authors expreſs themſelves) is ſimple, without lowneſs ; bold, without indecency : elegant and florid, without affectation ; harmonious, without ſwelling ; majeſtic, without pride ; delicate, without ſoftneſs ; and ſtrong, without roughneſs. Though, as to the points of ſtrength and majeſty, the French muſt give way to the Engliſh ; which in theſe, as well as in copiouſneſs, exceeds moſt of the living languages ; as far as it is inferior to ſome of them in ſmoothneſs and delicacy.

Of all the modern languages, the French is generally allowed to be the moſt clear, and fit for philoſophical and critical ſubjects ; the chaſteſt and moſt reſerved in its diction ; the moſt judicious and ſevere in its ornaments.

The language of France, for vocal purpoſes, may be compared with that of Italy. That the Italian language is favourable to the pure emiſſion of ſound, and conſequently to ſinging, and the French the contrary, none but a native of France will diſpute. Yet M. Framery, a man of taſte and knowledge of muſic, and who ſometimes ſeems to feel and acknowledge the defects of French muſic and its language for vocal purpoſes, ſays in the Encyclopédie Methodique, p. 235 : " de celébres compoſiteurs, Meſſrs. Duni, Gluck, Piccini, Sacchini, ont dit, ont ecrit, qu'ils aimoient mieux compoſer ſur la langue Françoiſe que ſur la langue Italienne !" *credat Judæus.* M. Framery never ſurpriſed us more, or convinced us leſs. Theſe compoſers may have ſaid ſomething flattering to the French, in public about their language, while at Paris ; but in private, Gluck and Sacchini, to our knowledge, ſpoke of French as a muſical language with no great reſpect. The Italians have often pretended, in Scotland, to prefer Scots tunes, and in Ireland, Iriſh, to Italian muſic. Geminiani and Tenducci did this in both countries ; but in England, and among their own countrymen, they turned to ridicule both theſe national muſics, more than they deſerved ; for though, when ſung by fine ſingers, they loſe their chief merit of originality and ſimplicity, when ſung by the natives, they are extremely pleaſing, and often truly touching.

Of all others, the Engliſh is ſaid to be the moſt honeſt, open, and undeſigning language. With all its ſublimity, it is gay and pleaſant on occaſion ; but its gaiety is ſtill moderated and reſtrained by good ſenſe ; it hates exceſſive ornaments ; and, for the greater ſimplicity, would almoſt chooſe, as ſome ſay of the French, to go naked ; it never dreſſes more than decorum and neceſſity require.

The Engliſh language is derived from ſo many and ſuch different ſources, that, on this account, it is deficient in regularity and analogy. Yet we have this advantage to compenſate the defect, that what we want in elegance, we gain in copiouſneſs, in which laſt reſpect few languages will be found ſuperior to our own. See English.

Ennius and Cecrops are celebrated for their knowledge of many languages. Mithridates, king of Pontus, it is ſaid, underſtood twenty-two tongues, which was the number of different people over whom he commanded ; and thoſe languages he knew ſo well, that he was able to harangue each of his people in their own tongue. It was a ſaying of Charles V. " That ſo many languages as a man underſtands, ſo many times he is a man." Sultan Soliman's interpreter ſpoke perfectly well ſeventeen different languages. But among the moderns, none has been more remarkable in this way than Poſtellus ; who, beſides a perfect knowledge of all the dead languages, was ſo well acquainted with the living, that it is ſaid he could have made the tour of the globe, without the uſe of an interpreter. See our article Jones, *Sir William.*

Bibliander has written of the analogy and proportion of languages and letters, De Ratione Communi Linguarum, in 1518. Geſner, of the Difference of Languages, in 1572. Lazius publiſhed an Introduction to the Learning of the politer Languages, in a common Method, in 1548. Megiſſier, a ſcheme of forty different languages, and different dialects, ſpecimens of each whereof he gives in the Lord's prayer, in 1593. De Recoles, in his Addition to the World of Daviti, has publiſhed the Pater-noſter in all the languages ſpoken among Chriſtians ; and Mr. Chamberlayne propoſed to do the ſame in a hundred languages, a ſpecimen of which has been publiſhed. Albericus Gentilis wrote of the mixture of languages, in 1633. And father Reignier's Diſcourſe on Etymologies, is a work of the ſame kind. In 1613, Durer publiſhed a treaſure of the hiſtory of all the languages in the univerſe. Guichart has a treatiſe of the etymological harmony of languages, publiſhed in 1619. Brerewood has given us curious enquiries into the diverſities of languages and religions, publiſhed in 1635.

Language, *Philoſophical.* See Characters, *Univerſal.*

Language is alſo uſed, in the order of Malta, for *nation.* The knights of Malta are divided into eight languages : three whereof are for France ; *viz.* the languages of Provence, of Auvergne, and of France ; two for Spain, thoſe of Caſtile and Arragon ; the other three are the languages of Italy, England, and Germany.

Each of theſe languages has its chief, who preſides in aſſemblies of the language to which he belongs. See Malta.

Language, *Frank.* See Frank.

Language *Helleniſtic.* See Hellenistic.

Language, *Law.* See Law *Language.*

LANGUED, Langue, in *Heraldry*, is applied to ſuch animals whoſe tongues appear out of their mouths : being of a colour different from that of the body of the animal.

LANGUEDOC, Occitania, in *Geography*, a portion of Gallia Braccata, a maritime province (as it was denominated before the revolution,) bounded on the N. by Guienne, Auvergné, and Lyonnois, on the E. by the Rhone, on the S. by Foix, Rouſillon, and the Mediterranean, and on the W. by the Garonne. It lies between 42° 40′, and 45° 20′ N. lat., and between 1° 20′, and 4° 45′ E. long. In 43° 30′, the parallel of Toulouſe nearly, it extends 53 leagues from W. to E. ; but towards either extremity, it does not exceed 33. Its breadth, for the greateſt part, is 33 to 38 leagues, except towards the middle, where it ſcarcely amounts to 40 miles. The coaſt from Agde eaſtward is conſiderably augmented, the ſea having retired, as appears by comparing the ſituation of the maritime places in ancient and modern times. The ſurface of this province conſiſts of mountains and vallies, hills and plains. In the mountains, called the Cevennes and its branches, which are partly covered with foreſts, there are lead and iron mines. The lower tracts are fertile, and well watered, yielding grain, wine, and fruit ; but one-half of the province is of an ungrateful and unproductive ſoil. The principal rivers are the Rhone, Garonne, Loire, Gardon, Viſtre, Erault, Orbe, Aude, Arriege, Allier, Tarn, and Lot. In this province many canals have been formed for commercial purpoſes.

Languedoc has been ſometimes divided into Upper, Lower, and the Cevennes ; the Upper, including nine dioceſes, the Lower, containing 11 biſhoprics, and the Cevennes, comprehending three. Geographers have divided this province into Upper and Lower ; containing three archbiſhoprics, 23 biſhoprics, 61 abbies, 637 priories, 353 religious houſes, 60 commanderies, 200 towns and villages, 2 univerſities, 6 academies, 1000 eccleſiaſtics, 342,758 families, and 1,560,000 inhabitants. The eccleſiaſtical diviſion has been differently arranged ſince the revolution. The capital of Upper Languedoc was Toulouſe, and of Lower Languedoc, Montpellier. It is now divided into ſeven departments, *viz.* the Ardêche, Lozere, Gard, Herault, Tarn, Upper Garonne, and Aude.

LANGUENBRUCK, a town of Switzerland, in the canton of Soleure ; 14 miles N.E. of Soleure.

LANGUEPOUR, a town of Hindooſtan, in Bahar; 43 miles S.S.W. of Bahar.

LANGUET, JOHN BAPTIST JOSEPH, in *Biography*, ſon of Denis Languet, attorney-general to the parliament of Dijon, in which city he was born in the year 1675. He received the elementary parts of his education in his native place, and then went to purſue his ſtudies at Paris, where he reſided at the ſeminary at St. Sulpice. In the year 1698, he was admitted a licentiate of the faculty of the Sorbonne, and was ordained, ſoon after, a prieſt at Vienne, in Dauphiné. He returned to Paris, took the degree of doctor in 1703, and attached himſelf to the community of St. Sulpice, where, by the exertions of his benevolent labours, he rendered himſelf ſo uſeful that he was choſen curate to M. de la Chetardie. The duties of this appointment he diſcharged ten years, and ſold his eſtate, that he might have it in his power to relieve the neceſſities of the poor. In the year 1714, he ſucceeded to the living of St. Sulpice, and finding the church much too ſmall for the number of his pariſhioners, he conceived the deſign of building a place that ſhould excel every other church in the world in magnificence, and architectural decorations. This great work he accompliſhed by means of donations, which poured in from all quarters the moment his intentions were made known. It was conſecrated, in the year 1745, with ſo much ſplendour, that Frederic II., king of Pruſſia, was induced, from an account which he read of the proceedings on that occaſion, to ſend a polite complimentary letter to M. Languet. He eſtabliſhed likewiſe " La Maiſon de l'Infant Jeſus," intended for the accommodation of 30 or 40 poor ladies of noble deſcent. Here they were boarded and educated in a manner ſuitable to them, but at the ſame time were taught to be uſeful. They were employed, by turns, in attending to domeſtic concerns, and in other offices that would render them ſerviceable to their relations in the country. Another object of this eſtabliſhment, was to afford an aſylum to more than eight hundred poor women and girls deſtitute of the means of ſupport, belonging either to the city or country. They were provided with daily food, and were made to earn their ſupport, chiefly by ſpinning cotton and linen. Without entering into the minutiæ of the regulations of the place, it is ſufficient to ſay, that this eſtabliſhment has proved a moſt happy retreat for numerous unfortunate females, who had been abandoned, by infamous betrayers, to diſeaſe and wretchedneſs. Here, by good example and excellent moral inſtruction, they have been recalled to virtue, and habituated to induſtry, and many of them have proved uſeful and honourable members of the ſociety. For their encouragement when they quitted the houſe, they were paid in money the amount of what they had earned by their labour. Though the land attached to the houſe conſiſted of only fourteen French acres, yet it fed a ſufficient number of cows to give milk for upwards of two thouſand children in the pariſh: it alſo contained conveniences for pigs and all kinds of poultry, which were ſold for the benefit of the inſtitution; a bakehouſe, furniſhing more than a hundred thouſand pounds of bread monthly, which was diſtributed among the poor of the pariſh; ſpinning-rooms, an excellent and well cultivated garden, a noble diſpenſary, &c. The management and regularity with which every department in this houſe was conducted, either for the inſtruction, employment, or ſupport of ſuch a number of perſons, were ſo admirable, and gave ſo high an idea of the great directing hand, that cardinal Fleury propoſed that Languet ſhould be appointed ſuperintendant of all the hoſpitals in the kingdom; to whom he anſwered with a ſmile, " I have always ſaid, my lord, that the bounty of your eminence led me to the hoſpital." M. Languet's benevolent exertions were not confined to the objects already mentioned, but extended to the poor and wretched of every deſcription. No perſon was ever more active and ſucceſsful than himſelf in obtaining large alms and conſiderable legacies, which he diſtributed with admirable prudence and diſcretion. It is ſaid, on good authority, that he diſburſed about a million of livres in charity every year. Noble families reduced to poverty, were among the prime objects of his benevolent attention. At the time of the great dearth in 1725, in order that he might relieve the poor, he ſold his houſhold furniture, his pictures, and curious and rare pieces of workmanſhip, and, in ſhort, ſcarcely left himſelf the bare neceſſaries of life. He was among the firſt to be preſent at fires, or any other ſcene of public calamity, where his prudence, ſelf-poſſeſſion, and univerſally reſpected character, rendered his advice and exertions eſſentially ſerviceable. He had a wonderful talent in diſcovering the different diſpoſitions of mankind, and he knew how to employ every perſon according to his capacity. This excellent man declined the offers made of ſeveral biſhoprics; his great ambition was to do good, and he had ample means for this as a pariſh prieſt. He died in the year 1750 at the age of ſeventy-five. His piety and application to works of benevolence did not prevent him from being a lively and cheerful companion. He poſſeſſed a fine genius, and was highly delighted with cheerful and amuſing ſociety. His younger brother, named John Joſeph, born at Dijon in 1667, roſe to conſiderable eminence in the church, and was 40 years archbiſhop of Sens. He died in 1753. He took a very diſtinguiſhed part as a controverſialiſt, in defence of the bull " Unigenitus," and diſplayed much learning and acuteneſs in his polemical pieces, which were tranſlated into Latin, and printed in 1753, in two volumes folio. He was author of " A Tranſlation of the Book of Pſalms," and of diſcourſes publiſhed in the collections of the French academy. Moreri.

LANGUET, HUBERT, was born at Viteaux, in Burgundy, in 1518: after a preliminary courſe of inſtruction in his own country, he went to Italy for the ſtudy of the civil law, and took a doctor's degree at Pavia. Having met with a book of the reformer Melancthon's, he felt a great deſire of ſeeing the author, and, in 1549, procured an interview with him at Wittenberg, which terminated in his converſion to the Proteſtant faith. After this he ſpent ſeveral years in travelling over different countries in the north of Europe; in his tour he became acquainted with Guſtavus, king of Sweden, who gave him a commiſſion to invite perſons ſkilful in the arts and ſciences from France to his dominions. In 1559, he accompanied Adolphus of Naſſau, prince of Orange, into Italy; after this he was nominated by the elector of Saxony to be his envoy to the court of France. He was deputed by that prince to the aſſembly of the ſtates of Augſburg in 1568, and was employed by him in other important negociations. He was again ſent to France in 1570, when he pronounced a bold and eloquent harangue in the name of the Proteſtant princes of Germany before Charles IX. He reſided at Paris during the bloody maſſacre of St. Bartholomew, and expoſed his own life to danger by his efforts in ſaving his hoſt, Andrew Wechel, the famous printer, and his friend, Dupleſſis Mornai. After accompliſhing various other miſſions to the ſatisfaction of his employers, he died at Antwerp in September, 1581, at the age of 63, greatly regretted by all who knew him. The prince of Orange, in whoſe ſervice he had been employed, walked as chief mourner at his funeral. He was a man of pure virtue in corrupt and difficult times: " He was," ſays one of his biographers, " ſuch as many would wiſh to appear;

he lived as good men would wiſh to die." His works are "Collections of Latin Letters to the Elector of Saxony, to Camerarius, Father and Son, and to Philip Sidney:" "A Relation of the Expedition of the Elector Auguſtus againſt the Revolters of Saxony; with the Hiſtory of the Proceedings of the Emperor againſt that Prince:" "Vindiciæ contra Tyrannos," which is a ſpirited attack upon tyranny, and a defence of the rights of the people. This appeared ſoon after Languet's death, and coming out with the name of Stephanus Junius Brutus, was attributed to various perſons, but has been aſcertained to have been the production of Languet. Bayle. Moreri.

LANGUETTE, *Fr.* the tongue of a jack in a harpſichord or ſpinnet; the valve which opens and ſhuts the wind cheſt in an organ to let the wind into the pipes, when a key is preſſed down.

LANGUIDO and LANGUENTE, *Ital.* muſical terms for a languid or languiſhing air.

LANGUOR, a faintneſs and indiſpoſition to exertion, commonly accompanied with a laſſitude or wearineſs, and ariſing from a feveriſh ſtate, or from a general debility of the nervous and circulating ſyſtems.

LANGUR, in *Geography*, a mountain of Thibet; 40 miles E. of Tankia.—Alſo, a river of Mingrelia, anciently *Aſtolphus*, which runs into the Black ſea, about two miles from Anarghia.

LANGUT, a town of Pruſſia, in the province of Oberland; 10 miles S.E. of Morangen.

LANGWIESE, a town of Bohemia, in the circle of Leitmeritz; 20 miles W.N.W. of Leitmeritz.

LANJAN, LANDJAM, or *Lanjang*, a city of Laos, and capital of the kingdom, or at leaſt of the ſouthern diviſion, to which it gives name, and the uſual reſidence of the king; ſituated on the W. ſide of the river Mecon, and defended on the land ſide by ditches and high walls. The palace is of wide extent, and appears like a city, from its ſize and the number of people who inhabit it. The houſes of the principal perſons are high, elegant, and richly ornamented; thoſe of the lower people are mere huts. The prieſts alone have the privilege of building their houſes of brick or ſtone. N. lat. 18° 30′. E. long. 101° 38′.

LANIARDS. See LANNIERS.

LANJARON, in *Geography*, a town of Spain, in the province of Granada; 15 miles S. of Granada.

LANIERE, NICOLO, in *Biography*, was an Italian, who came into England early in the laſt century: there is a fine portrait of him at the Grange, in Hampſhire, by Vandyke. It was the ſight of this portrait that determined Charles I. to employ that excellent painter. Laniere profeſſionally practiſed muſic, painting, and engraving; but his greateſt excellence was in muſic. His own portrait, painted by himſelf, is in the muſic ſchool at Oxford. He etched a conſiderable number of plates for a drawing-book; was an able connoiſſeur in pictures; and had the art of giving modern paintings an air of antiquity, and putting off copies for originals. Granger's Biog. Hiſt. of Engl. vol. i. p. 539.

It is recorded in the folio edition of Ben Jonſon's works, printed 1640, that, in 1617, his whole maſque, which was performed at the houſe of lord Hay, for the entertainment of the French ambaſſador, was ſet to muſic after the Italian manner, *ſtilo recitativo*, by Nic. Laniere, who was not only ordered to ſet the muſic, but to paint the ſcenes.

This ſhort piece being *wholly* in rhyme, though without variation in the meaſure, to diſtinguiſh airs from recitation, as it was all in muſical declamation, may be ſafely pronounced the firſt attempt at an opera in the Italian manner, after the invention of recitative.

But in the ſame year, in the maſque, by the ſame author, called "The Viſion of Delight," preſented at court during Chriſtmas, there is a manifeſt diſtinction of *air* from *recitative*; in both which ſtyles the whole piece, in verſes of different meaſures, was performed. It is opened by Delight, perſonified, who, *ſtilo recitativo*, "ſpake in ſong." Then Night, likewiſe perſonified, ſung, "Break Fancy from thy cave of cloud, &c." This air ends in a chorus or *quire*. After which Fancy ſpake, in *ſtilo recitativo*. Then Peace ſung, "Why look you ſo, &c." After which an air that terminates in a quire. The ſong ended, "Wonder ſpake," in recitative. Then dancing, ſinging, and chorus.

Here we have all the characteriſtics of a genuine opera, or muſical drama of modern times, complete: ſplendid ſcenes and machinery; poetry; muſical recitation; air; chorus; and dancing.

Though the muſic of this maſque is not to be found, yet of Laniere's "Muſica narrativa" we have ſeveral examples, printed by Playford in the collections of the time; particularly the "Ayres and Dialogues," 1653, and the ſecond part of the "Muſical Companion," which appeared in 1667; and in which his muſic to the dialogues is infinitely ſuperior to the reſt: there is melody, meaſure, and meaning in it. His recitative is more like that of his countrymen at preſent, than any cotemporary Engliſhman's. However, theſe dialogues were compoſed before the laws and phraſeology of recitative were ſettled, even in Italy. His cantata of "Hero and Leander" was much celebrated during theſe times, and the recitative regarded as a model of true Italian muſical declamation.

LANIGEROUS, any thing that bears wool. Hence, LANIGEROUS, or *Lanuginous Trees*, among *Herbaliſts*, are thoſe trees that bear a woolly downy ſubſtance; as, the black, white, and trembling poplars, oſiers, and willows of all ſorts.

LANINA, in *Geography*, a town of Ruſſia, in the government of Irkutſk, near the Baikal lake; 80 miles N.E. of Irkutſk.

LANINI, BERNARDINO, in *Biography*, an hiſtorical painter, native of Vercelli, and a pupil of Gaudenzio Ferrari. He imitated the ſtyle of that maſter, in his firſt works, to a degree of illuſion. As he advanced in practice he caſt a bolder eye on nature, and, by equal vigour of conception and execution, proved to the firſt artiſts of Milano, that, like Ferrari, he was born for grand ſubjects: ſuch is that of St. Catarini, near S. Celſo; the face and attitude of the heroine anticipate the graces of Guido; the colour of the whole approaches the tones of Tiziano; the glory of the angels rivals Gaudenzio; a leſs neglected ſtyle of drapery would have left little to wiſh for. Among his copious works at Milano, and in its diſtricts, the dome of Novara claims diſtinguiſhed notice. There he painted thoſe Sybils, and that ſemblance of the eternal Father, ſo much admired by Lomazzo, and near them certain ſubjects from the life of the Virgin, which even now in a ruined ſtate of colour enchant by ſpirit and evidence of deſign. His verſatile talent indulged ſometimes in imitations of Leonardo da Vinci; and at the Baſilica of St. Ambrogio, the figure of Chriſt between two angels, in form, expreſſion, and effect, fully proves with what felicity he penetrated the principles of that genius. Fuſeli's Pilkington.

LANIS *de creſcentia Walliæ traducendis abſque cuſtuma, &c.* an ancient writ that lies to the cuſtomer of a port, to permit one to paſs wool without paying cuſtom, he having paid it before in Wales.

LANISCHLE, in *Geography*, a town of Iſtria; 16 miles S.E of Capo d'Iſtria.

LANISTA, in *Antiquity*, is ſometimes uſed to ſignify an executioner, but more frequently for a maſter gladiator, who taught the uſe of arms, and had always people under them, ready to exhibit ſhows of that kind. For which purpoſe they either purchaſed gladiators, or educated children, that had been expoſed in that art.

LANISTA was alſo uſed to denote one who taught game-cocks to fight.

LANIUS, in *Ornithology*, a genus of the rapacious tribe, having the bill rather ſtraight, with a tooth, or notch, on each mandible near the end; the baſe naked; and the tongue jagged at the tip. To this character, aſſigned by Gmelin after Linnæus, may be added, that the noſtrils are generally round, and covered with ſtiff briſtles. Dr. Latham obſerves ſtill further, that the birds of this genus are not furniſhed with a cere at the baſe of the bill, and that the middle toe is connected to the next as far as the firſt joint. Laſtly, according to Scopoli, the ſegments of the ſkins are ſeven in number.

Linnæus, in the various editions of his Syſtema Naturæ and other works, has referred this genus of birds to ſeveral diſtinct families, having ſometimes placed it with the chatterers, ſometimes with the titmice, and then again, from its habits of rapacity, with the accipitres, in which laſt-mentioned order it ſtands in the Gmelinian edition of that author's publication. Before the time of Linnæus, our countryman, Ray, had claſſed this tribe among the ſhort-winged hawks: Buffon alſo had arranged it after the falcons; but Briſſon, on the contrary, includes them with the thruſhes and the chatterers, two analogous genera, which obviouſly belong to the order paſſeres. Kramer introduces it under the paſſerine order; Scopoli under the pies; and Pennant, in his "Genera of Birds," with the accipitres; from which, however, the latter writer removes it to the order picæ, in a ſubſequent edition. Gmelin retains it ſtill in the accipitrine order. In Latham's "Synopſis," and alſo in his "Index Ornithologicus," the example of Scopoli is followed; the ſhrikes are diſpoſed at the head of the order picæ, and this arrangement has obtained the ſanction of the French ornithologiſts. We are far from wiſhing to intrude a ſolitary ſuggeſtion againſt eſtabliſhed opinions, and thoſe too of acknowledged merit; yet, on a point in which ſo much difference has prevailed, a ſuggeſtion may be allowed. The ſhrikes then appear to us, at leaſt in a general view, leſs intimately connected with the pies than the falcon tribe, though confeſſedly allied to both; and in defining the preciſe line between, it is not impoſſible that a future era will concur in the accuracy of Gmelin, who incorporates them with the accipitres; or, in reverting ſtill farther back to the example of Ray, our enlightened countryman, place them as the laſt of the falcon tribe.

The birds of this genus are diſperſed throughout moſt parts of the globe: they are generally of a noiſy, reſtleſs, quarrelſome, and ferocious diſpoſition; prey on all the ſmaller kinds of birds as well as inſects. The manner in which they deſtroy their prey is almoſt, if not entirely, peculiar to themſelves, and evinces a degree of addreſs and cruelty that has not inaptly obtained them the name of butcher-birds. After pouncing upon their deſtined victim, which they uſually ſeize upon in a defenceleſs ſtate, while young, and in the neſt, they bear it away to ſome thorny buſh, and by the dint of dexterity force it upon one of the ſtouteſt and ſharpeſt ſpines; after which they proceed to tear the yet living creature into pieces, ſeparating its mangled remains by the aſſiſtance of their bill and talons, and diſperſing on different ſpines of the buſh ſuch remnants of the fleſh, after being for the preſent ſatisfied, as are reſerved for future meals. In this manner, the ſhrike tribe alſo treat the larger kinds of inſects, as well as birds.

Species.

FORFICATUS. Tail forked; frontal creſt erect; body greeniſh-black. Linn. *Drongo*, Buff. *Gobe-mouche huppé de Malabar*, ibid. *Fork-tailed ſhrike.*

Length ten inches; ſize of a black-bird; tail long, and much furcated; creſt ſometimes wanting. Inhabits the Cape of Good Hope, Madagaſcar, and China.

CÆRULESCENS. Tail forked; body blueiſh-black; belly white. Linn. *La pie-grieſche a queue fourchue de Bengale*, Briſſ. *Le fingah*, Buff. *Fork-tailed Indian butcher-bird*, Edwards.

Inhabits Bengal, where it is called fingah: the Engliſh ſettlers call it alſo the king of the crows, from the hoſtile diſpoſition they conſtantly evince againſt thoſe birds. Its length is ſeven inches and a half; the tail much forked, the outer feather ſpotted with dirty white.

MALABARICUS. Body blueiſh-black; quill and tail-feathers black; outer tail-feathers long, and without webs, except on the outer ſide near the tip. Lath. Ind. Orn. *Gobe-mouche de Malabar*, Son. *Drongo de Malabar*, Buff. *Malabar ſhrike.*

Length ſeventeen inches and a half. This ſpecies inhabits Malabar.

CASTANEUS. Tail cuneated; body above cheſnut, beneath white; crown, nape, and hind-head cinereous. Lath. *Lanius caſtaneus*, Gmel. *Cheſnut-backed ſhrike.*

Country unknown. The bill, wings, and legs black; front black. Length ten inches.

LUCIONENSIS. Tail cuneated; body reddiſh-grey; tail-feathers banded with brown at the ends; a black ſpot on the head, behind the eye. *Lanius lucionenſis*, Linn. *La pie-grieſche de Luzon*, Briſſ. *Luzonian ſhrike.*

Length ſeven inches and a half; bill and body above grey-brown; beneath, and on the ſides, reddiſh, with white lines; tail rufous-grey; the tip of each feather, except the two middle ones, rufous white; legs and claws brown. According to Briſſon, the inhabitants of the iſland of Luçonia, which it inhabits, call this bird *cabeçote.*

CRISTATUS. Tail cuneated; head creſted; body reddiſh, beneath waved with tawny and brown. Gmel. *Bengalenſis rufus*, Briſſ. *Creſted red*, or *rouſſet-coloured butcher-bird*, Edwards *Creſted red ſhrike.*

CANADENSIS. Tail cuneated; head creſted; body reddiſh, beneath whitiſh. Gmel. *Lanius Canadenſis*, Briſſ. *Pie-grieſche hupé de Canada*, Buff. *Creſted ſhrike.*

Length ſix inches and a half; the bill and claws black; creſt reddiſh; cheeks duſky, with white ſpots; throat and breaſt yellowiſh-red; belly cinereous; wing-coverts black, edged with white; tail black, with white dots. This ſpecies inhabits Canada.

LUDOVICIANUS. Tail cuneated and cinereous; body above cinereous, beneath whitiſh. Gmel. *Pie grieſche de la Louiſiane*, Buff. *Louiſiane ſhrike.*

Inhabits Louiſiane. Length eight inches; under the eyes a black band; ſix middle tail-feathers black, the reſt white at the baſe and tip.

NENGETA. Tail cuneated, white at the tip; body cinereous, beneath whitiſh. Linn. *Cotinga cinerea*, Briſſ.

Guiraru nheengeta, Ray. *Guirarou*, Buff. *Grey pye of Braſil*, Edw. *Grey ſhrike.*

Inhabits northern Europe, Braſil, Surinam, and other parts of South America, frequenting marſhy places. Length nine inches. In this ſpecies the wings and tail are blackiſh; wing-coverts black, with the tips dull white; primary quill-feathers black, outer tail-feathers at the tip white.

Curvirostris. Tail cuneated; body white; back black; firſt five quill-feathers with a white ſpot. Gmel. *Collurio Madagaſcarienſis*, Briſſ. *Ecorcheur de Madagaſcar*, Buff. *Vanga ou becarde a ventre blanc.* Buff. *Hook-billed ſhrike.*

Both mandibles reflected at the tips; hind-head greeniſh-black; greater tail-coverts obliquely ſpotted with white; tail-feathers in the middle, within cinereous, without black, tip white; legs lead colour, claws blackiſh. A native of Madagaſcar, where the inhabitants diſtinguiſh it by the name of vanga. It feeds on fruits, and is ſaid to whiſtle well.

Collaris. Tail cuneated;, body black, beneath white; firſt quill-feathers white at the baſe. Gmel. *Pie grieſche du Cap de Bonne Eſperance*, Buff. *Collared ſhrike.*

Native of the Cape of Good Hope. Length twelve inches.

Excubitor. Tail cuneated, white at the ſides; back hoary; wings black, with a white ſpot. Linn. *Lanius cinereus*, Briſſ. *Lanius cinereus major*, Geſn. *Caſtrica palombina*, Olin. *Great cinereous ſhrike*, Arct. Zool. Donov. Brit. Birds, &c.

This ſpecies inhabits many parts of North America and Europe, and is the largeſt of its tribe found in Britain, where, however, it is extremely rare. The length is ten inches. The male differs very little from the female, except that the parts beneath in the former are entirely white, while thoſe in the female are marked with fine ſemicircular browniſh lines. The female makes her neſt of heath and moſs, lined with wool and other ſoft ſubſtances. The ſpecies chiefly inhabits woods: it feeds on inſects and ſmall birds, the latter of which it ſeizes by the throat, then fixes them on a ſharp thorn, and tears them to pieces. When confined in a cage, it will often, if poſſible, contrive to affix its food againſt the wires, that in like manner it may pull it aſunder with its claws and bill. In countries where theſe birds are abundant, the huſbandmen treat them with regard, being eſpecially uſeful in the deſtruction of rats, mice, and other vermin. There are ſome diſtinct varieties of this bird: in one the body is white, the legs yellowiſh, and the bill and claws blackiſh; and another in which the leſſer wing-coverts and ſhoulders are reddiſh.

Collurio. Tail ſomewhat cuneated; back grey; four middle tail-feathers unicolour; bill lead colour. Linn. Fn. Suec. *Lanius minor rufus, &c.* Ray. *Merulæ congener alia*, Ray. *Ecorcheur*, Buff. *Leſſer butcher bird, fluſher, &c.* Will. *Red-backed ſhrike*, Donov. Brit. Birds, &c.

Length ſeven inches and a half; the head and lower parts of the back light grey; upper part of the back, with the wing-coverts, ferruginous; the tail black, with all the feathers, except the two middle ones, more or leſs white at the baſe; the outer web of the outer feather white; breaſt, belly, and ſides bloſſom-colour; legs black. In the female, the head is dull ferruginous, mixed with grey; breaſt, belly, and ſides dirty white, with ſemicircular duſky lines; tail deep brown, the outer feather only white on the outer web. This ſpecies is not very uncommon in Britain, where it is conſidered as a bird of paſſage. It lays ſix white eggs, marked with a rufous brown circle towards the large end. The neſt is generally placed in a hedge or low buſh, near which, it is aſſerted, no ſmall birds have the temerity to build, as it not only feeds on inſects, but alſo on the young of other birds, which it ſeizes in the neſt by the neck, and kills by piercing the ſkull with its bill, the brain and eyes being the parts it firſt devours. It is remarkably fond of graſshoppers and beetles, which it eats by morſels; and when ſatisfied, transfixes the remains on a thorn, to be eaten at another opportunity. This, like the grey ſhrike, has no note peculiar to itſelf: it is merely an adept in the imitative art, as its note is varied to that of any other birds it wiſhes to decoy within its power. Writers deſcribe two or three varieties of this ſpecies, the moſt probable of which is the variegated ſhrike, l'Ecorcheur varie of Briſſon. This is grey on the upper part of the body, and rufous-white beneath, the whole marked with tranſverſe brown ſtriations; the ſcapulars rufous-white, bounded by a parallel black ſtripe; the tail black, the three outer feathers rufous-white at the baſe and tips, the outer one wholly rufous-white on the outer edge. It is the leſſer variegated butcher bird of Willughby, and is admitted as a variety by Gmelin and Latham. Gmelin is, however, miſtaken in placing the following bird as another variety of the ſpecies collurio.

Rutilus. Crown and nape rufous, ſurrounded with fuſcous; front, ſcapulars, ſpot on the wing, and whole ſurface beneath whitiſh. Donov. Br. Birds. *Lanius rufus*, Briſſ. *Lanius rufus* (*γ Collurio*), Gmel. *Lanius rufus*, Lath. *Lanius rutilus*, Ind. Orn. *Lanius pomeranus*, Muſ. Carlſc. *Lanius minor cineraſcens*, Ray. *Lanius minor rutilus*, Klein. *Ampelis dorſo griſeo*, &c. Linn. Fn. Suec. *Pie-grieſche rouſſe*, Buff. *Buſerola*, Zinnan. *Wood-chat*, Albin, &c.

Extremely rare in Britain. Its ſize is equal to that of the common or red-backed ſhrike, and its manners, ſo far as we are acquainted with the ſpecies, are nearly the ſame, except that it never frequents woods, keeping conſtantly on the elevations or among the low buſhes in the open plains; it inhabits Africa and Southern Europe chiefly. There is an apparent error among writers in conſidering the bird called by Buffon la pie-grieſche rouſſe á tete noire du Senegal, as a variety of Lanius rufus. Levaillant deſcribes Buffon's bird under the name of Tchagra, from the peculiar ſound of its note, which reſembles the repeated repetition of the words *tcha-tcha—tcha-gra*, and aſſures us it is no other than a variety of the following ſpecies.

Senegalus. Grey, beneath whitiſh; crown, band through the eyes, and tail-feathers black; the laſt, except the two middle feathers, white at the tips. *Lanius Senegalus*, Linn. *Lanius Senegalenſis cinereus*, Briſſ. *Senegal ſhrike.*

Length nine inches. Very common in Senegal.

Antiguanus. Tail long and cuneated; body above yellowiſh rufous, beneath white, head, bill, wings, legs, and tail above black. Gmel. *Pie-grieſche d'Antigue*, Sonnerat. *Antiguan ſhrike*, Lath.

Inhabits the Philippines and Panay iſles.

Niger. Black; tail ſomewhat cuneated. Gmel. *Black ſhrike.*

Native of Jamaica. Length ſeven inches.

Leverianus. Tail long, cuneated, black at the tip; bill, head, neck, middle of the breaſt, and legs black, the reſt white. Gmel. *Lanius picatus*, Lath. *Magpie ſhrike.*

Inhabits South America; length ten inches; greater wing-coverts and ſecondary quill-feathers white at the edge; two middle tail-feathers as long again as the reſt, the whole black with white tips.

Rufus. Rufous, beneath white; head greeniſh-black.

Linn. *Lanius Madagaſcarienſis rufus*, Briſſ. *Schet-bé*, Buff. *Rufous ſhrike.*

Length eight inches, the bill, legs, and claws lead-colour.

LEUCOCEPHALUS. Greeniſh-black; head, neck, and body beneath white. Gmel. &c. *Lanius Madagaſcarienſis major viridis*, Briſſ. *Tcha-chert-bé*, Buff. *White-headed ſhrike.*

Size of the laſt, and inhabits the ſame country.

ATRICAPILLUS. Tail cuneated, and with the neck, crown, ſhoulders, and wings black; body above mouſe-colour, beneath blueiſh-aſh. Merrem.

Native of Surinam. The length five inches; wings ſhort; wing-coverts and ſecondary quill-feathers edged with white; tail-feathers, except the two middle ones, tipped with white.

POMERANUS. Body above black, beneath white, hind head and back of the neck dark ruſty, ſurrounded with black; two ſpots on each ſide the wings and rump white. Sparmann.

Inhabits Pomerania; bill, legs, and wings black.

TYRANNUS. Body cinereous, beneath white; crown black, with a longitudinal tawny ſtreak. Gmel. *Muſcicapa tyrannus*, Briſſ. *Tyran*, Buff. *Tyrant ſhrike.*

Native of America. Length eight inches. Builds in hollow trees, is fierce and audacious, and will even attack the eagle, faſtening upon its back, and continuing to ſcream and peck with its beak till it forces the eagle to retreat. There are ſeveral varieties of this bird.

MAJOR. Grey; each ſide the head reddiſh; tail longer than the body, and pointed. *La grande pie-grièche*, Sonnini.

Size of the black-bird, the plumage greyiſh-aſh; bill citron-yellow; legs browniſh, claws black.

AFRICANUS. Body above black, beneath white, and a band of the ſame on the wings. *La pie-grièche ſilencieuſe*, Sonnini.

Size of the common red butcher-bird of Europe, the bill horn-colour; iris and legs brown, and claws black. The female is rather ſmaller than the male, and the colours more obſcure. The neſt, which is conſtructed with much art, is placed among trees, and commonly contains from three to four eggs of a pale green colour. The young in plumage reſemble the female. Inhabits Africa.

SCHACH. Body yellowiſh; front and wings black. Linn. *Lanius a ſcack*, Oſbeck. *Chineſe ſhrike.*

Native of China, in ſize reſembling the ſpecies tyrannus. Head and neck on the upper part grey; neck beneath dull reddiſh-white; back and belly reddiſh.

PITANGUA. Body black, beneath yellow; crown with a tawny ſtreak; band over the eyes white. Gmel. *Lanius pitangua*, Linn. *Pitangua guaca*, Ray. *Tyrannus Braſilienſis*, Briſſ. *Bentaveo, ou Cuiriri*, Buff. *Braſilian ſhrike.*

Length nine inches; bill thick, throat white; wings beneath yellow. Native of South America.

BARBARUS. Black, beneath red; crown and thighs tawny. Gmel. *Lanius Senegalenſis ruber*, Briſſ. *Gonolak*, Buff. *Pie-grieſche du Senegal*, ibid. *Barbary ſhrike.*

Length nine inches; the bill, wings, tail, feet, and claws black, head, neck, vent, and lower wing-coverts yellow. Inhabits Barbary.

SULPHURATUS. Fuſcous, beneath yellow, head blackiſh, ſurrounded by a whitiſh band. Gmel. *Lanius Cayanenſis luteus*, Briſſ. *Pie-grieſche jaune de Cayenne*, Buff. *Becarde a ventre jaune*, ibid. *Yellow-bellied ſhrike.*

Native of Cayenne, the length nine inches; chin and throat white; legs grey; bill and claws blackiſh; wings and tail brown, edged with rufous.

CAYANUS. Cinereous; head, tail, and primary quill-feathers black. Linn. *Lanius Cayanenſis cinereus*, Briſſ. *Pie-grieſche griſe de Cayenne*, Buff. *Cayenne ſhrike.*

Size of a black-bird, the length eight inches and a half, bill at the baſe red, at the tip black; legs cinereous, claws black. Buffon deſcribes a ſuppoſed variety, about the ſame ſize, that differs in having a longitudinal black ſtreak down each feather. This is from Cayenne, as is likewiſe another variety of ſmaller ſize, with the front yellowiſh.

MADAGASCARENSIS. Cinereous, beneath whitiſh; lores black; tail-feathers reddiſh. Gmel. *Lanius Madagaſcarienſis major*, Briſſ. *Cali-calic et Bruja*, Buff. *Madagaſcar ſhrike.*

Length ſcarcely five inches, and inhabits Madagaſcar. In the male, the chin and throat is black; in the female, white mixed with rufous.

AURANTIUS. Tawny yellow; chin, throat, and breaſt reddiſh; head, above the eyes, and nape black; wings and tail brown. Lath. Ind. Orn. *Orange ſhrike.*

Native of Cayenne. Length ſeven inches.

NOOTKA. Tail rounded; body above black, beneath white; crown black; collar white. Gmel. *Nootka ſhrike*, Lath.

Length ſeven inches; bill and legs black; above the eyes a white line reaching to the nape, and a black one beneath the nape; leſſer wing-coverts black, greater white; tail-feathers black, the four outer white at the tips. Native of New Zealand.

EMERIA. Grey, beneath white, temples and rump red. Gmel. *Lanius Bengalenſis fuſcus*, Briſſ. *Muſcicapa emeria*, Linn. *Rouge queue*, Buff. *Bengal red ſtart*, Albin. *Bengal ſhrike.*

Length five inches and a half; the bill greyiſh-brown; crown and hind head black; abdomen and upper tail-coverts red; each ſide the neck four black curved ſpots. Native of Bengal.

JOCOSUS. Tail rounded; body grey; lower eye-lid purple; vent ſanguineous red. Linn. Amœn. Acad. *Merula ſinenſis criſtata minor*, Briſſ. *Jocoſe ſhrike.*

Size of a lark; length ſeven inches and a half, and inhabits China, where it is called Kowkai-kon.

BICOLOR. Blue, beneath white, frontlet black. Linn. Mant. *Loxia Madagaſcarina*, Syſt. Nat. *Pie-grieſche blue de Madagaſcar*. *Blue ſhrike.*

Length ſix inches and a half; the bill, head, margin of the quill-feathers, two middle tail-feathers, and outer margin of the four next blue, the feathers ſurrounding the bill, the quill-feathers, except at the baſe, outer tail-feathers, legs, and claws black; female beneath dirty white; tail ſlightly cuneated. Native of Madagaſcar.

LEUCORHYNCOS. Body above blackiſh, beneath whitiſh; bill, breaſt, belly, and rump white. Gmel. *Lanius Manillenſis*, Briſſ. *Pie-grieſche de Madagaſcar*, Buff. *Longraien*, ibid. *White-bellied ſhrike.*

Inhabits Manilla; length ſeven inches; wings, tail, legs, and claws black; tail equal.

FERRUGINEUS. Body above black-brown; throat and breaſt dirty-white; belly ferruginous. Gmel. *Ferruginous ſhrike*, Lath.

A native of the Cape of Good Hope; ſize the ſame as the cinereous ſhrike; the bill lead colour; tail duſky brown; legs black.

TABUENSIS. Body above olive; chin and breaſt cinereous; belly yellowiſh-brown; tail and legs brown. Gmel. *Tabuan ſhrike.*

Length eight inches; the bill brown; crown greeniſh; wings black on the outer edge. Firſt deſcribed by Dr. Latham, them, from a ſpecimen in the Leverian Muſeum. It inhabits the Friendly iſles.

Pacificus. Black; head and neck approaching to greeniſh; belly and tail more duſky. Gmel. *Pacific ſhrike,* Lath.

Deſcribed from an example of the ſpecies in the Bankſian collection, found in one of the iſlands of the South ſeas. The bill is duſky; feathers of the head and neck very narrow; tail three inches long, duſky and even at the end; toes divided to the baſe, the middle one very long.

Septentrionalis. Bill black; legs lead colour; body above brown; chin and breaſt cinereous; belly and vent browniſh. Gmel. *Northern ſhrike,* Lath.

Length eight inches; four middle tail-feathers brown, the reſt within white at the tip, and each two inches long; legs ſhort; claws ſtout and brown. Native of North America.

Pileatus. Head black and creſted; body cinereous; throat and breaſt black; wing-coverts barred with white; tail black at the tip. Lath. Ind. Orn. *Black capped ſhrike.*

Native of Cayenne. Length ſix inches. Female without creſt; throat and breaſt cinereous.

Viridis. Head, wings, and body above duſky green, beneath white; tail black. Gmel. *Tcha-chert,* Buff. *Green ſhrike.*

Size of the laſt; the wings long; two middle tail-feathers duſky-green, the reſt black at the outer edge; legs and claws black.

Varius. Body above cinereous brown; chin and breaſt yellow-buff; belly, rump, and vent dirty browniſh-white; interſcapulars white; tail and wings brown. Gmel. *White ſhouldered ſhrike,* Lath.

Deſcribed by Pennant as a native of Braſil; the legs and bill are black; front and cheeks with paler ſpots.

Leucocephalos. White; body above greeniſh-black; head, neck, and under parts of the body white. Lath. &c. *Tcha-chert-bé,* Buff. *White-headed ſhrike.*

Length eight inches. This ſpecies inhabits Madagaſcar.

Dominicanus. Black; belly and rump white. Gmel. *Pie-grieſche Dominicaine,* Sonnerat.

Inhabits the Philippine iſlands; exceeds the ſparrow in ſize; flies ſwift, is bold and troubleſome to crows. Is by ſome preſumed to be a variety of the preceding ſpecies.

Panayensis. Bill and legs black; head, throat, breaſt, and belly red; crown, wings, and tail brown. Gmel. *Panay ſhrike.*

Seven inches in length, and inhabits the iſland Panay.

Albus. White; bill, tail, legs, and greater part of the wings, black. Gmel. *White ſhrike.*

Inhabits ſame place as the former.

Nævius. Body above black; beneath cinereous; an oblong ſpot of white on the wing-coverts. Gmel. *Spotted ſhrike.*

Native of Cayenne; the bill and legs black; tail-feathers white at the tip.

Obscurus. Body above duſky-black, beneath white; over each eye a white line. Gmel. *Duſky ſhrike,* Lath.

Suppoſed to inhabit America; in ſize correſponds with L. nævius; the bill is horn-colour; wings and tail more duſky than the body, and the legs brown.

Fuscus. Above brown, beneath white; lores, tips of the ſecondary quill-feathers, and edges of the primary, yellowiſh. Gmel. *Brown ſhrike,* Lath.

Bill at the tip, and legs black.

Ruber. Red; wings and tail with ocellar ſpots, black at the tips. Gmel. *Red lanius, or butcher-bird of Surinam,* Bancr. *Red ſhrike.* Native of Surinam.

Americanus. Black; ſpot on the firſt quill-feathers, cheeks, and chin white; breaſt and belly cinereous. Gmel.

Inhabits North America.

Minor. Cinereous; chin white; breaſt and belly roſy; front, line over the eyes, and tail black. Gmel. *Pie-grieſche d'Italie,* Buff.

Native of Italy, Spain, and Ruſſia, and reſembles the grey ſhrike.

Melanocephalus. Bill, head, and chin black; body olive above, beneath paler; tail with a broad black band, at the tip yellow. Gmel. *Black-headed ſhrike,* Lath.

Length ſix inches, the legs duſky; and inhabits the South Sea iſlands.

Brachyurus. Head above ruſty grey; eye-brows white; a black band from between the eyes to the ears; body above cinereous, grey, beneath yellowiſh-white; tail rounded. Pallas. *Short-tailed ſhrike.*

Size of the red-backed ſhrike; wings blackiſh; tail-feathers ten, brown-grey, and, except the middle ones, white at the tip. Native of Hungary.

Boulboul. Black; breaſt and belly tinged with cinereous; wings brown, with two white bands. Lath. Ind. Orn. *Boulboul ſhrike.*

Size of the field-fare; bill and legs yellow. Inhabits India.

Phœnicurus. Body above reddiſh-grey, beneath yellowiſh-white, tail long, rounded, and with the rump bright red; orbits croſſed by a black band. Pallas.

Inhabits rocky places on the river Onon; ſize of the laſt.

Doliatus. Tail rounded; body cloſely varied with black and white lines. Linn. *Pied ſhrike.*

Native of Cayenne; the length ſix inches and a half; bill duſky, claws and legs brown; feather on the hind head long, and when erected form a creſt; wings and tail with tranſverſe white ſpots.

Faustus. Grey, beneath ferruginous; a white line between the eyes; tail rounded. Linn. Amœn. Acad.

Size of the field-fare; bill and legs pale; wings rounded; quill-feathers browniſh, grey at the edges, tail brown, and all marked with light brown decuſſating lines.

LANKA, in *Geography,* a poſition of ſome importance, referring both to the ſcience and hiſtory of the Hindoos. It is the generally received opinion, that Lanka is Ceylon; but in a note of the Ayin Acbaree (vol. iii. p. 36, Calcutta ed.) it is aſſerted, that Lanka is not Ceylon, but a place determined by the interſection of the equator and the meridian of Delhi, anſwering to the ſouthern extremity of the Maldevy iſlands. "Indeed," the note continues, "there are many reaſons for concluding Lanka to have been part of the Taprobane of the ancients, and that Taprobane, or more properly Tapobon, which in Sanſcrit means the wilderneſs of prayer, was a very large iſland, including the whole, or the greater part, of the Maldevy iſlands, which have ſince been deſtroyed by inundations. This agrees very well with Ptolemy's deſcription, and his iſland of monkies ſeems to relate to thoſe of the Ramayana." See Ramayana and Taprobana.

On this note it is obſerved, in the Hindoo Pantheon, p. 328, whence this article is chiefly taken, that therein is an avowed obſcurity, and an exiſting error ſomewhere; for that many arguments, if not proofs, may be adduced in ſupport of the identity of Lanka and Ceylon, and perhaps Taprobane. Lanka was the theatre of Rama's exploits againſt its tyrannical king Ravana, whoſe name is indifferently pronounced Ravan, Raban, Rabon, &c. nor can there be much doubt of the iſland that we now call Ceylon having formed a part, at any rate, of that theatre, which might in former times have been of greater extent than that iſland is at preſent.

It is ſaid, that in Sanſcrit books Ceylon is called Tapa Rawan; Tapa or Tapu, in that language, meaning an iſland, and it may be indifferently pronounced Taporaban, or indeed, in common diſcourſe, Taproban, or Taprobane. Much ſtreſs is not perhaps to be laid on conjectural etymology, but it may be obſerved, that many names of places and things on Ceylon and in its neighbourhood, correſpond with the nomenclature of the Ramayan. In the fifth volume of the Aſiatic Reſearches is an intereſting account by the Hon. Mr. Duncan, of that extraordinary traveller Purana-Puri, who notices on Ceylon a lake called the "tank of Ravan or Raban (the *b* and *v* being pronounced indifferently in various parts of India), from whom this tapu, or iſland, may probably have received its ancient appellation of Taprobane (*i. e.* the iſle of Raban): here alſo is a place called Sita Koond, or the pool of Sita, where Rama is related to have left his wife Sita, on the occaſion of the war with the raviſher Ravan." (See SITA.) In the poetical hyperbole of the Hindoos, the tears ſhed by Sita, in her lamentation for her lord's abſence and her own captivity, are ſaid to form this koonda, or pool, ſtill called by her name.

Between Ceylon and the continent is a ſeries of rocks, ſome of which appear above water, admitting a paſſage only in fine weather to veſſels of ſmall burden. This in our maps is called Adam's bridge, the Romiſh miſſionaries having placed the garden of Eden in Ceylon, and fancied this bridge his only mode of exit. In Hindoo writings this is called Rama's bridge, and in the Hindoo Pantheon a plate is given of the building of it by Rama's monkey-general Hanuman, and his Simian aſſociates. The conſpicuous part acted by thoſe animals, in the wars of the Ramayan, reminds us ſtrongly of Ptolemy's iſland of monkies, and offers another mark of identity. On the continent of India, Ceylon is to this day popularly believed to be inhabited principally by monkies, lions, and monſters; one of its names, Singala dwipa, whence Seilan diva, Selendeb, Ceylon, &c. means the country of lions. See CEYLON.

In Hamilton's account of the Eaſt Indies (vol. i. p. 142.) a map of the peninſula has one of the Maldevy iſlands marked Hunnamandow, evidently the ſame with Hanuman devy, as it would be more correctly pronounced, meaning the iſland of Hanuman; and this name occurring conſpicuouſly on thoſe iſlands gives room for imagining a connection between them and the hiſtory of Rama, Ravana, Lanka, &c. that would be farther developed if we had more knowledge of the iſlands in queſtion; a knowledge that might be abundantly obtained by a permitted admiſſion to the records at the India Houſe. Hamilton calls the ſouthern extremity of the peninſula Ram's point; this, in our more modern maps, is named Cape Comorin, and it has derived this name, which is cited by Ptolemy, from a celebrated temple of the goddeſs Iſa, or Devi, in her character of Kumari, or the Virgin. Theſe are names of *Parvati*, which ſee. Rami is another of her names, and the temple, which is generally imagined to be in honour of Rama, the avatara or incarnation of Viſhnu, may perhaps originally have been dedicated to Rami, whatever rites may now obtain there: a point that we are uninformed on; and ſhall offer no more thereon in this place than the remark that the rites of the virgin goddeſs Kumari, (whoſe magnificent temple under the name of Ramiſwara, or Ramiſeram, at the ſouthern extremity of the promontory of India, is ſtill a much venerated ſhrine, and of great reſort by pilgrims,) have a ſtriking analogy with thoſe of the Taurican Diana, a virgin goddeſs alſo, whoſe temple ſimilarly occupied the ſouthern promontory of the Taurican Cherſoneſus. See RAMI and RAMISWARA.

The firſt meridian of the Hindoo aſtronomers paſſed through Ujayini (*Oojein*, which ſee) and Lanka; the latter cannot therefore be Ceylon if confined to its preſent extent, for Oojein lies in about 76°, and the weſternmoſt part of Ceylon in 80° eaſt of Greenwich. This difficulty ſeems reconcileable only by allowing what is aſſerted in India, that Ceylon was formerly of greater extent than at preſent, and it is ſaid, that appearances between that iſland and the Maldevys, or Maldivas, as well as between it and the continent, juſtify the belief of their having once joined. See Aſ. Reſ. vol. iii. p. 44, alſo CEYLON and MALDIVES in this work.

LANKAYT, a ſmall iſland near the W. coaſt of Celebes. S. lat. 4° 57′. E. long. 119° 12′.

LANKE′, a lake of Thibet, about 45 miles in circumference; 40 miles N. of Darmadijira.

LANMEUR, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Morlaix; 6 miles N.E. of Morlaix. The place contains 2389, and the canton 13,170 inhabitants, on a territory of 182½ kiliometres, in 8 communes.

LANNARIUS, in *Ornithology*, the name of a bird of the long-winged hawk kind; the *Falco lannarius* of Linnæus, called in Engliſh the *lanner*, and the male *lannaret*. See FALCO *lanarius*.

LANNAS, in *Geography*, a town of Sweden, in the province of Angermannland; 35 miles N.W. of Hernoſand.

LANNIERS, or LANIARDS, in a *Ship*, are ſmall ropes reeved into the dead-men's-eyes of all the ſhrouds and chains. Their uſe is to ſlacken or ſet taught the ſhrouds. The ſtays alſo of all maſts are ſet taught by lanniers. That rope, which faſtens the ſtopper of the halliards to them, is called alſo a lannier: and the term is generally applied to any ſhort piece of cord or line, faſtened to ſeveral machines in a ſhip, and ſerving to ſecure them in a particular place, or to manage them more conveniently; ſuch are the laniards of the gun-ports, the laniard of the buoy, of the cat-hook, &c.

LANNION, in *Geography*, a town of France, and chief place of a diſtrict, in the department of the Northern Coaſts. The place contains 3132, and the canton 14,988 inhabitants, on a territory of 105 kiliometres, in 9 communes. N. lat. 48° 44′. W. long. 3° 22′.

LANNOY, a town of France, in the department of the North, and chief place of a canton, in the diſtrict of Lille; 6 miles E.N.E. of Lille. The place contains 923, and the canton 13,033 inhabitants, on a territory of 97½ kiliometres, in 16 communes.

LANNSTROFF, a town of France, in the department of the Moſelle, and chief place of a canton, in the diſtrict of Thionville. The place contains 338, and the canton 13,615 inhabitants, on a territory of 307½ kiliometres, in 44 communes.

LANO, a lake of the iſland Mindanao, from 15 to 20 miles broad, and about 60 miles round. See MINDANAO.

LANOUAILLE, a town of France, in the department of the Dordogne, and chief place of a canton, in the diſtrict of Nontron. The place contains 458, and the canton 9581 inhabitants, on a territory of 235 kiliometres, in 10 communes.

LANPENCKEN, a town of Pruſſia, in the palatinate of Culm; 14 miles N. of Straſburg.

LANSARD, a town of Perſia, in the province of Mazanderan,

zanderan, on the coaſt of the Caſpian ſea; 10 miles W. of Fehrabad.

LANSINBURG, New City, a town of America, in the townſhip of Troy, county of Reuſſalaer, New York, pleaſantly ſituated on the E. bank of Hudſon's river, oppoſite to one of the mouths of the Mohawk; containing about 250 houſes, a brick church for the joint uſe of the Dutch and Preſbyterians, a court-houſe, gaol, and an academy, incorporated in 1796. The library of this town was incorporated in 1775; 9 miles N. of Albany. N. lat. 42° 46′. W. long 73 34′.

LANS-LE-BOURG, a town of France, in the department of Mont Blanc, and chief place of a canton, in the diſtrict of St. Jean-de-Maurienne. The place contains 874, and the canton 4675 inhabitants, on a territory of 742½ kiliometres, in 7 communes.

LANSMANS, a town of Norway; 116 miles N. of Bergen.

LANSPESSADE, in *Military Affairs.* See Anspessade.

LANSQUENET is the name of a game at cards.

LANTA, in *Geography,* a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of Villefranche; 9 miles E. of Toulouſe. The place contains 1455, and the canton 5669 inhabitants, on a territory of 117½ kiliometres, in 16 communes.

LANTAB-LEPTEN, a ſmall iſland on the coaſt of China, near the harbour of Macao.

LANTANA, in *Botany,* ſuppoſed to be derived from *lentus,* flexible, was in that ſenſe originally applied to the Pliant Mealy Tree, *Viburnum Lantana.* It is now uſed generically for a ſet of plants, rather agreeing with that in general aſpect, than in this peculiar quality.—Linn. Gen. 316. Schreb. 413. Willd. Sp. Pl. v. 3. 315. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 2. 350. Juſſ. 109. Lamarck Illuſtr. t. 540. Gærtn. t. 56. (Camara; Plum. Gen. 31. t 2.)—Claſs and order, *Didynamia Angioſpermia.* Nat. Ord. *Perſonatæ,* Linn. *Vitices,* Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very ſhort, cohering, tubular, with four ſlight teeth. *Cor.* of one petal, nearly regular; tube cylindrical, ſlender, longer than the calyx, ſomewhat oblique; limb flat, unequally and bluntly four-cleft. *Stam.* Filaments four, extremely minute, ſituated in the middle of the tube, ſlender, two of them a little above the reſt; anthers roundiſh. *Piſt.* Germen ſuperior, roundiſh; ſtyle thread-ſhaped, ſhort; ſtigma bent backward like a hook, pointed downwards, and attached obliquely, as it were, to the top of the ſtyle. *Peric.* Drupa roundiſh, of one cell. *Seed.* Nut roundiſh, ſomewhat pyramidal, of three cells, the lowermoſt of which is barren; kernels ſolitary, oblong.

Obſ. Linnæus obſerves that the eſſential character conſiſts in the figure of the ſtigma. His L. *Africana* is now ſeparated from the reſt; and called *Spielmannia.* In the genuine *Lantanæ* there is a many-leaved involucrum, according to Linnæus, (rather to be termed a number of bracteas,) and the common receptacle of the fructification is oblong, bearing many crowded ſeſſile flowers, moſtly very unequal.

Eſſ. Ch. Calyx obſcurely four-toothed. Limb of the corolla unequally four-cleft, flat, with an open mouth. Stigma bent back like a hook. Drupa with a ſmooth nut of two cells.

The ſpecies in Willdenow are 15, but profeſſor Martyn reckons up 19. Some uncertainty attends a few, even of thoſe defined by Linnæus, at leaſt he ſuſpected his *trifolia* might not be diſtinct from *annua,* but in this he ſeems to have been miſtaken. Medicus, indeed, who took ſome pains with this genus, appears to have deſcribed *annua* for *trifolia,* which Reichard corrected. The L. *ſalvifolia* of Linnæus is properly referred in Hort. Kew. to *Buddlea.*

Good examples of the genus are,

L. *aculeata.* Prickly-ſtalked Lantana.—Linn. Sp. Pl. 874. Curt. Mag. t. 96.—Leaves ovate, ſomewhat heart-ſhaped, downy underneath. Stem prickly. Bracteas lanceolate, with a broad baſe.—Native of the Weſt Indies, where it is vulgularly called Wild Sage. It is one of the moſt commonly cultivated in our ſtoves, being readily propagated by cuttings, and flowering almoſt all the year. The *ſtem* is ſhrubby, more or leſs rough, with projecting prickles. *Leaves* ſtalked, ſerrated, pointed, roughiſh, about two inches long. *Flowers* bright yellow at firſt, then orange, numerous, in flattened heads, on ſimple, ſolitary, axillary ſtalks.

L. *Camara.* Various-coloured Lantana.—Linn. Sp. Pl. 874. (Camara meliſſæ folio, flore variabili; Dill. Elth. 65. t. 56. f. 65.)—Leaves ovate, rough on both ſides. Stem unarmed. Bracteas ovate, ſmall, downy.—Native of South America; an old inhabitant of our ſtoves. The *flowers* are changeable in colour, being, at firſt opening, yellow, then orange, finally ſcarlet; which becomes dull or browniſh as they fade, not purple, as in ſome other ſpecies.—Several of this genus are deſcribed under the Braſilian name of *Camara,* in Piſo and Marcgrave. The word is now adopted by the Portugueſe, as it ſeems, in a medical ſenſe, ſuggeſted by the colour of the flowers, for the dyſentery.

L. *annua.* Annual Lantana.—Linn. Sp. Pl. 874. Curt. Mag. t. 1022.—Leaves ovate, downy beneath. Stem unarmed, hairy. Spikes oblong. Bracteas ovate, pointed.—Native of the Weſt India iſlands, as well as of the Spaniſh Main; rarely preſerved long in our ſtoves, to which it has from time to time been introduced, becauſe the ſeeds do not ripen well here, and the plant, though ſhrubby in habit, is properly annual. The *leaves* are broad, almoſt heart-ſhaped. *Flowers* in oblong, ſtalked, axillary ſpikes, very beautiful. When cultivated in an airy light ſtove, being bright reddiſh-purple, or pink, with a white ring and yellow eye.

L. *trifolia* of Linnæus differs from the laſt very widely in appearance, and has the *leaves* growing three or four together, ovate, much more finely crenate; the heads of *flowers* rounder; *bracteas* larger, and more obtuſe.—Plumier's Icones, t. 70, quoted for this, is not at all like the Linnæan ſpecimen, but appears to be merely a three-leaved variety of the *annua.*

L. *nivea.* Venten. Malmaiſ. t. 8, appears to us a white-flowered variety of L. *aculeata;* at leaſt we can diſcover no ſpecific diſtinction, unleſs the flower-ſtalks, growing in pairs at each leaf, ſhould prove to be ſuch. This is a native of the Weſt Indies, and was ſent to the garden of Malmaiſon by Meſſrs. Lee and Kennedy. The leaves are of a full bright green; *flowers* ſnow-white, copious about the ends of the branches.

Jacquin has a few new or doubtful ſpecies in his Hortus Schoenbrunenſis; amongſt others

L. *lavandulacea,* t. 361. Willd. n. 11. White ſmall-flowered Lantana.—Leaves elliptic-lanceolate, ſerrated, downy beneath. Stem roundiſh. Heads of flowers cylindrical, ſhorter than the leaves. Bracteas nearly orbicular.—Willdenow, who firſt deſcribed this, and Jacquin, had it in their gardens, without knowing whence it came. We have a native ſpecimen, gathered by Dombey, in moiſt ſituations at Lima. It is *ſhrubby,* with round, ſlender, roughiſh branches. *Leaves* oppoſite, ſtalked, an inch long or more, rugoſe; rough above; downy, with numerous, branching, prominent ribs and veins beneath; the margin ſharply ſerrated. *Flower-ſtalks* axillary, various in length, but always much ſhorter than the leaves. *Spikes* oblong, with broad, roundiſh, pointed *bracteas;* the *flowers* white, unequally five-lobed, turning reddiſh-brown in decay. The dried leaves are aromatic, with ſomewhat of the flavour of ſage.—This ſpecies is properly placed next to L. *odorata.*

Lantana, in *Gardening*, comprehends plants of the ſhrubby, exotic, green-houſe, and ſtove kinds, of which the ſpecies cultivated are the various-flowered lantana, L. miſta; the various-coloured lantana, L. camara; the round-leaved lantana, L. involucrata; baum-leaved lantana, L. meliſſefolia; the prickly lantana, L. aculeata; the golden-flowered lantana, L. aurea.

Method of Culture.—Theſe plants are capable of being raiſed by ſeeds and cuttings of the young branches.

With regard to the ſeeds, they ſhould be ſown in pots of light mould in the early ſpring, plunging them in a bark hot-bed. When the plants have attained ſome inches growth, they ſhould be removed into ſeparate pots of a ſmall ſize, and be replunged in the bark-bed, due ſhade and air being given. The plants ſhould afterwards, when they have acquired ſtrength, be removed into an airy glaſs-caſe, or dry ſtove, where they may have a large ſhare of air in warm weather, but be protected from the cold. This is neceſſary for the young plants, which ſhould not the firſt year be expoſed to the open air, but afterwards they may be placed abroad in the warmeſt part of the ſummer, and in winter be placed upon ſtands in the dry ſtove, where they will continue long in flower, and many of the ſorts ripen their ſeeds. In winter they ſhould be ſparingly watered, as much moiſture rots their roots.

And the cuttings ſhould be planted in pots in the ſpring and ſummer months, as in May and July, and be plunged in a moderate hot-bed, due ſhade being given. They ſoon take root, and ſhould afterwards be removed into ſeparate pots filled with light earth, and managed in the ſame manner as thoſe raiſed from ſeed.

Theſe plants afford ornament and variety among collections of ſtove and green-houſe plants.

LANTARGUR, in *Geography*, a town of Lamjungh; 42 miles N. of Gorkah. N. lat. 29° 5′. E. long. 84° 18′.

LANTCHANG. See Lanjan.

LANTER-LOO, or Loo, is the name of a common game at cards.

LANTERN, or Lanthorn, a cover for a luminary, made of ſome tranſparent matter; ſerving to tranſmit the light, and, at the ſame time, to ſkreen it from the wind and rain.

The word is derived from the French *lanterne;* and that from the Latin *laterna*, of *lateo, I am hidden; eo quod lucem habet interius clauſam*, becauſe the light is hidden within, ſay Iſidore and Lambin. But according to Pezron, *laterna* comes from the Celtic *latern*, and according to Salmaſius *lantern* comes from *lato*, of *fero*, becauſe it bears a lamp or a light.

Epictetus's lantern is ſaid to have been ſold for three thouſand drachmas; that of Diogenes was held in great veneration among the ancients; and that of Judas is ſtill preſerved in the treaſury of St. Denys, as a very curious piece of antiquity.

Lanterns are made of glaſs, horn, paper, &c. Formerly they were made of the horn of a wild bull, called *urus;* which, when cut into thin laminæ, Pliny tells us, was very tranſparent. Thoſe of horn were firſt introduced into England by king Alfred, about the year 887, in order to preſerve his candle time-meaſurers from the wind. See Lens. And Hiſt. Com. vol. i. p. 45.

Lantern, *Dark*, is a lantern with only one opening or light, which, too, may be cloſed up when the light is to be entirely hid: and may be preſented to the perſon one would ſee without being perceived one's ſelf.

The ancients had their dark lanterns, but they differed from our's: they were covered with four ſkins, one on each ſide, or light, three of which were black, and only the fourth tranſparent. Caſaubon, who gives us the deſcription, took it from a manuſcript of Julius Frontinus. Theſe were principally uſed in their armies, when they were to march privately off from their enemies in the night-time.

Lanterns are uſed at ſieges in the night-time, upon the batteries; but theſe muſt be blind or dark lanterns. There is always great proviſion of them in all ſtore-houſes.

Lanterns for ſhips are made of tin and glaſs, to light thoſe parts of a ſhip where naked candles would be dangerous, ſuch as for lighting the magazine and ſtore rooms. Thoſe uſed at the ſtern are called poop-lanterns, and thoſe aloft top-lanterns.

Lanterns, *Feaſt of*, in China, is a celebrated feaſt held on the fifteenth day of the firſt month; and is ſo called from the great number of lanterns hung out of the houſes and in the ſtreets; inſomuch that it rather appears a fit of madneſs than of feaſting. On this day are expoſed lanterns of all prices, ſome of which are ſaid to coſt two thouſand crowns. Some of their grandees retrench ſomewhat every day out of their table, out of their dreſs, equipage, &c. to appear the more magnificent in lanterns. They are adorned with gilding, ſculpture, painting, japanning, &c. and as to their ſize, it is extravagant; ſome are from twenty-five to thirty feet diameter; they repreſent halls and chambers, and two or three ſuch machines together would make handſome houſes; ſo that in China they are able to eat, lodge, receive viſits, have balls, and act plays, in a lantern.

To illumine them, they ſhould have bonfires; but as that would be inconvenient, they content themſelves with lighting up in them a great number of torches or lamps, which at a diſtance have a beautiful effect. In theſe they exhibit various kinds of ſhows to divert the people.

Beſides theſe enormous lanterns, there is a multitude of other ſmaller: theſe uſually conſiſt of ſix faces or lights, each about four feet high and one and a half broad, framed in wood finely gilt and adorned; over theſe they ſtretch a fine tranſparent ſilk, curiouſly painted with flowers, trees, and ſometimes human figures: the painting is very extraordinary, and the colours extremely bright; and when their torches are lighted, they appear highly beautiful and ſurprizing.

Lantern, or *Lanthorn*, in *Architecture*, a turret raiſed above the roof with windows round the ſides, in order to light the apartment below. Lanterns are much more convenient than ſkylights; as the ſurface of the glaſs ſtands vertical, they are not ſo liable to be broken, nor ſo ſubject to the rattling noiſe of heavy rains and hail.

Lantern is alſo uſed for a ſquare cage of timber, with glaſs in it, placed over the ridge of a corridor, or a gallery between two rows of ſhops to illuminate them.

Lantern, *Magic*, in *Optics*, the name of a machine, which, in the dark, repreſents various images and ſpectres on a wall, or other white ſurface, ſo odd and ſurprizing, that thoſe who are not in the ſecret think them the effect of magic. See Magic.

Lantern-*Fiſh*, in *Ichthyology*, the Engliſh name of a fiſh of the ſoal-kind, but ſmaller and ſmoother to the touch, called in Latin *amogloſſus*.

Lantern-*Fly*, in *Natural Hiſtory*, the name of a very ſingular kind of inſect produced in the Weſt Indies, and carrying a ſtrong light with it in the night. The ſtructure of the trunk in this inſect is of the ſame kind with that of the cicada; and it wants the power of making the noiſe for which the cicada is ſo famous; it belongs, according to M. Reaumur's diſtinctions, to that ſpecies of inſect called the *procigale*, or *procicada*.

The glow-worm and the luminous beetles, with all the other luminous inſects we are acquainted with in this part of the world, diffuſe their light from a part which is near the extremity of the body, and under the belly, but the lantern-fly gives it from its head. It differs alſo greatly in the degree of light; for this, in all the inſects we are acquainted with, is very feeble; whereas in this fly it is ſo ſtrong, that Mrs. Merian, who is the firſt that well deſcribed it, ſays ſhe could read a ſmall print in a dark night by the light that one of them gave. The head of this creature, ſtrictly ſpeaking, is very ſhort, not exceeding the length of one of the rings of the body, if it be meaſured from its joining with the corcelet to its joining with the lantern, but if that part be accounted a portion of the head, then the head is equal in length to the whole body. This lantern is wider than it is deep, or thick, and has near its origin a large protuberance, which gives it a bunched or humped look. There are ſeveral tubercles and lines on it, of a reddiſh colour. The ground colour is an olive brown, and underneath it has one large rib running all the way along it, from end to end, and dividing it into two, and by the ſides of that there are ſome others. Theſe are all reddiſh, and thoſe neareſt the edges have ſmall rows of ſpines running along them. Over each of the eyes there is a round granulated prominence, which ſeems to have been a collection of ſmaller eyes: and if ſo, the animal is ſupplied with the organs of viſion in a different manner from all other known creatures. But there requires an examination of the creature on the ſpot, and while alive, in order to find out this. The upper pair of wings are not perfectly tranſparent, they are dotted with white in ſome places, and are variegated near their origin with ſeveral blackiſh ſpots. The under pair are more tranſparent than the upper; they are much ſhorter, and are broader than the others: theſe have each a large and beautiful round ſpot near the extremity, reſembling that on the wing of the peacock-butterfly. The colours of the circles of theſe eyes are brown and olive; the laſt colour very bright and clear, the other very duſky and obſcure. The ſpots are ſo large, that they appear very beautiful. Reaumur's Hiſt. Inſ. vol. ix. p. 247.

LANTERNISTS, a name aſſumed by the academicians of Thouloufe.

LANTHONY, in *Geography*, a hamlet in the pariſh of Cwmyoy, and hundred of Abergavenny, county of Monmouth, England, is noted for the fine and pictureſque ruins of its abbey-church. Theſe are ſeated in a narrow, deep valley, called "The Vale of Euras." The ſurrounding hills, called Hatteral, are lofty and grand, and from their ſteep acclivities are almoſt impaſſable for travellers. In a ſequeſtered dale among theſe hills or mountains, Hugh Lacy founded a priory of canons-regular of the order of St. Auguſtine, about the year 1108. A very particular hiſtory and deſcription of this abbey, and the ſurrounding country, with ſeveral prints, are to be found in Coxe's "Hiſtorical Tour in Monmouthſhire," 4to. 1801.

LANTIGNANO, a town of Etruria; 13 miles S. of Piſa.

LANTO, a ſmall iſland in the Baltic, between the iſland of Aland and the coaſt of Finland. N. lat. 60° 25′. E. long. 20° 36′.

LANTOOR, or Banda, the chief iſland among thoſe called Banda iſlands in the Eaſt Indian ſea. See Banda.

LAN-TSAN, a river of Aſia, which riſes in the N. part of the Chineſe province of Yun-nan, on the borders of Thibet, traverſes the province from N. to S., changing its name to Kou-long; enters the kingdom of Laos, aſſuming the name of Mecon, and afterwards diſcharges itſelf into the Eaſt Indian ſea.

LANUGINOUS. See Lanigerous.

LANUGO, in *Botany, down*; that ſoft, hairy woolly covering, which grows on leaves, ſtalks, or fruits, of divers plants.

Such is that found on the leaves of the roſe-campion, and on the fruit of the peach-tree.

LANVOLLON, in *Geography*, a town of France, in the department of the North Coaſts, and chief place of a canton, in the diſtrict of St. Brieuc; 11 miles N.W. of St. Brieuc. The place contains 1123, and the canton 15,296 inhabitants, on a territory of 147½ kiliometres, in 12 communes.

LANUVIUM, in *Ancient Geography*, a town of Latium, in Italy, S.E. of Rome, and S.E. of Alba, ſituated on the brow of a mountain near the Appian way. Milo, who killed Clodius, was born in this town. Here was a temple of Juno, worſhipped under the three names of Soſpita, Moneta, and Regina.

LANYARDS, or Laniards, on *Ship-board*. See Lanniers.

LANZA, in *Geography*, a town of Spain, in Navarre; 8 miles N. of Pamplona.

LANZETTI, in *Biography*, an eminent performer on the violoncello, during the early part of the laſt century. He was in England about the year 1740; but returned to Bologna, the place of his nativity, where he ended his days.

LANZO, in *Geography*, a town of France, in the department of the Po, on the Stura; 11 miles N.W. of Turin.

LANZONI, Joseph, in *Biography*, a phyſician, was born at Ferrara on the 26th of October 1663. From his early childhood he exhibited a ſtrong inclination for literature, which his parents indulged, by obtaining for him the beſt maſters. He diſtinguiſhed himſelf particularly in the ſchools of philoſophy and of medicine, and graduated in both theſe ſciences in the year 1683. In the following year, at the age of 21, he was appointed ordinary profeſſor, and diſplayed talents which did honour to the univerſity of Ferrara, during the long period in which he filled that office. He died in February 1730, at the age of 66.

Lanzoni acquired a high reputation by the ſucceſs of his practice, and obtained the confidence and eſteem of many illuſtrious perſonages. His attachment to ſtudy increaſed with his years; and every moment, in which he was not employed in the duties of his profeſſion, was devoted to literature, philoſophy, or antiquarian reſearch. His character as a phyſician and philoſopher, indeed, ranked ſo high, that if any queſtion upon theſe ſubjects was agitated in Italy, the deciſion was commonly referred to him. He was diſtinguiſhed likewiſe by his genius in Latin and Italian poetry; and he was the reſtorer and ſecretary of the academy of Ferrara, and a member of many of the learned ſocieties of his time. He left a conſiderable number of works, both publiſhed and in manuſcript, in the execution of which he has been reproached with careleſſneſs and incorrectneſs. It will be ſufficient to ſtate, that a collection of his works, as well of thoſe publiſhed by himſelf as of his manuſcripts, was printed at Lauſanne, in 1738, in 3 vols. 4to., with an account of his life, under the title of "Joſephi Lanzoni, Philoſophiæ et Medicinæ Doctoris, in Patria Univerſitate Lectoris primarii, &c. Opera omnia Medico-phyſica et Philologica." Eloy. Dict. Hiſt.

LAO, in *Geography*, a town of the iſland of Cuba; 25 miles W. of Havanna.

LAOCOON, in the *Hiſtory of the Arts*, is a celebrated monument of Greek ſculpture, executed in marble by Polydorus, Athenodorus, and Ageſander, the three famous artiſts of Rhodes. This remain of antiquity was found at Rome, in the ruins of the palace of Titus, in the beginning of the ſixteenth century, under the pontificate of Julius II., and ſince depoſited in the Farneſe palace. Laocoon, the prieſt of Apollo and Neptune, is here repreſented with his two ſons, with two hideous ſerpents clinging round his body, gnawing it, and injecting their poiſon. Virgil has given us the following deſcription of the fact:

> "Serpens amplexus uterque
> Implicat & miſeros morſu depaſcitur artus:
> Corripiunt, ſpiriſque ligant ingentibus, & jam
> Bis medium amplexit, bis collo ſquamea circum
> Terga dati, ſuperant capite, & cervicibus altis."

This ſtatue exhibits the moſt aſtoniſhing dignity and tranquillity of mind, in the midſt of the moſt excruciating torments. Pliny ſays of it, that it is "opus omnibus, picturæ & ſtatuariæ artis, preferendum" Lib. xxxvi. c. 5.

LAODICEA, in *Ancient Geography*, a town of Aſia, in Caria, called "Laodicea ad Lycum," not that it was near this river, which paſſed to the weſt of it, and received, to the north of Laodicea, the river Caprus, which traverſed the town, and the Aſopus, which was eaſt of it. A litle to the ſouth of Laodicea was Hierapolis. This town was more anciently called *Dioſpolis*, and afterwards *Rhœas*. It was re-eſtabliſhed by Antiochus, who gave it the name of his wife; and it became one of the moſt conſiderable and rich towns of Aſia Minor.

LAODICEA *Cabioſa*, a town of Aſia, in Syria, ſituated eaſtward near mountains, weſt of Emeſa and the river Orontes. It was favoured by the emperor Severus, on account of its attachment to the intereſts of the empire. By way of diſtinction, it was called "Laodicea ad Libanum."

LAODICEA *ad Mare*, *Latikea*, a maritime town of Syria, ſituated on an eminence, near the ſea-coaſt. Strabo ſays, that its environs furniſhed abundance of wine. In its preſent ruins may be ſeen columns of porphyry and granite, an aqueduct, and a triumphal arch, ſupported by columns of the Corinthian order. About a ſtadium weſt of this town are the ruins of a fine port, artificially conſtructed in the form of an amphitheatre, and capable of containing a conſiderable fleet.

LAODICEA *Combuſta*, a town of Aſia, in Lycaonia, eaſt of Philomelium; ſuppoſed to have derived its name from traces of ancient volcanos.

LAODICEA, a town of Aſia, on the confines of Media and Perſia Propria.—Alſo, a town of Meſopotamia, according to Pliny; being one of the ſix towns built by Seleucus under this name.—Alſo, a town of the Peloponneſus, in the Megapolitide, according to Polybius and Thucydides; the ſame with the *Ladoncea* of Pauſanias.

LAO-KUN-TIM, in *Geography*, a town of Chineſe Tartary; 50 miles S.W. of Ning-yuen-tcheou.

LAON, a town of France, and chief place of a diſtrict, in the department of the Aiſne; and before the revolution, the capital of a ſmall country called Laonnois, and the ſee of a biſhop, who was a duke, and the ſecond peer of France. The place contains 6691, and the canton 14,958 inhabitants, on a territory of 215 kiliometres, in 27 communes. N. lat. 49° 34′. E. long. 3° 42′.

LAOS, in *Ancient Geography*, a town of Italy, in Lucania, weſt of Brutium, and near it. It was ſituated on a ſmall gulf, diſtant 400 ſtadia from the town of Hyole. It was founded by a colony of Sybarites.

LAOS, in *Geography*, a country of Aſia, bounded on the north by the Chineſe province of Yun-nan, on the eaſt by Tonquin, on the ſouth by Cambodia, and on the weſt by Siam and Ava. Kæmpfer repreſents it as a powerful ſtate, ſurrounded by foreſts and deſerts, and of difficult acceſs by water, becauſe the river is full of rocks and cataracts. The ſoil is repreſented as fertile in rice, and the merchants of Cambodia were furniſhed from hence with the beſt benjoin and lacca. Exquiſite muſk is alſo obtained from Laos, with ſome gold and rubies; and the rivers ſupply the freſh water mya, which yields pearls. The religion and manners of the people reſemble thoſe of Siam; but in perſonal appearance they are like the ſouthern Chineſe. In Kæmpfer's time, the chief towns were Landjan, or Lantchang, and Tſiamaja, whence the people take the name of Landjaneſe, to which, in modern maps, is added Sandepora. Duhalde has given ſome account of this country, the capital of which is denominated Mohang-Lang by the Chineſe. (See MOHANG-LANG.) Laos, in his time, was tributary to Ava; but its chief trade was with the Chineſe. It is ſaid to have mines of gold, ſilver, and copper; near the capital is one mine of rubies; and its emeralds are of large ſize. The articles exported are tin and ſulphur, (perhaps cinnabar or realgar,) cotton, tea, and ſapan or Braſil wood. The chief river is denominated Meinam Kong, which paſſes through Cambodia; and its different branches bear different appellations. This grand ſtream, in Mr. Dalrymple's map of exterior India, is called the Kion-Long, or Maykaung. Mr. Arrowſmith derives it from the Tibetian Alps, where it is called the Satchou, and by D'Anville the Lantſankiang. Of this country Turpin, cited by Pinkerton, (Geog. vol. ii.) has given the moſt recent account. The name Laos, he ſays, denotes 1000 elephants, with which animals the country abounds. The climate is ſo temperate, and the air ſo pure, that men are ſaid to retain their health and vigour, in ſome inſtances, to the age of 100 years. The flat part of the country reſembles Siam, but the ſoil on the eaſt bank of the river is more fertile than that on the weſt. The rice is preferred to that of other oriental countries. The ivory is beautiful, but the horn of the rhinoceros is particularly eſteemed from a ſuperſtitious notion, that the poſſeſſor, who keeps it, inſures his felicity. The fields, abounding with flowers, afford food for numerous ſwarms of bees, which ſupply excellent wax and honey. In the mountains are found rich mines of tin, iron, and lead; but gold and ſilver are explored in the ſands of the rivers. Muſk, ſays this author, is not a product of the country. Before the irruption of the Tartars, the Chineſe carried on a conſiderable commerce with Laos; exchanging their velvets, ſilks, cottons, and porcelain, for ivory, opium, and medicinal plants. In the province of Laos, whence the kingdom derives its name, is a deep mine, which furniſhes rubies and beautiful emeralds, one of which, in the royal treaſury, is ſaid to be as large as a common orange. The inhabitants of this kingdom are celebrated for their honeſty and fidelity; and ſo anxious are they to maintain their reputation in this reſpect, that if a traveller be robbed, the neareſt town or village is obliged to indemnify him. At the ſame time, they are indolent and luxurious, and addicted to the ſtudy and practice of magic. The army of Laos is eſtimated by Turpin at 500,000 combatants; but he adds a circumſtance which ſomewhat affects his credibility, that a numerous army might be raiſed of men who have lived a century. The people of this country are not very diſtinguiſhed for their ſobriety and temperance, as they eat daily four repaſts of rice, fiſh, and the fleſh of the buffalo; the buffalo and veniſon being common in their markets. Marriages are eaſily contracted, and no leſs eaſily diſſolved; and the rich entertain many concubines. A funeral reſembles a feſtival; and a ſum of money is depoſited in the tomb, which is circulated, after a certain period, by the prieſts. The commerce of this country was chiefly carried on in former times with Siam; but after the irruption of the Birmas, it paſſed to Pegu; at a later period, the trade of Laos has been transferred to Cambodia. The inhabitants of Laos boaſt that the Siameſe borrowed the art of writing on palm-tree leaves from them. The tongue and characters are the ſame; but it is ſaid, that the Laoſian cannot pronounce the letters L and R.

The ancient worſhip of theſe people is ſaid to have been directed to one God, the creator of all, who was only to be pleaſed by the exercise of virtue, and not by ſacrifices, ceremonies, and the obſervance of certain days. But the purity of their faith has been corrupted by their intercourſe with the Chineſe. They believe in regular renovations of the univerſe; and that our earth has attained the age of 18,000 years. Polygamy is one of the promiſed joys of paradiſe, and the women are aſſured, that if they lead a virtuous life, they ſhall be changed into men. The prieſts take comfort, under the privations of celibacy, from a perſuaſion which they indulge, that in another world they ſhall be able, by the privilege of their order, to create females at their pleaſure. Some of their ceremonies, like thoſe of Thibet, ſeem to have been derived from the Neſtorian Chriſtians. To the rich they ſell diſpenſations and pardons; while the poor alone are condemned to perpetual miſery.

The king of Laos is ſaid to be an abſolute, independent prince, and to acknowledge no ſuperior, either in temporal or ſpiritual concerns. In him is veſted the whole property of lands, and he diſpoſes at pleaſure the effects of his ſubjects; nor can any family in the kingdom inherit or poſſeſs any thing left them by will.

LAOUR, a town of Hindooſtan, in Bengal; 40 miles N.W. of Silhet. N. lat. 25° 7′. E. long. 91° 20′.

LAPA, one of the Sooloo iſlands. N. lat. 5° 25′. E. long. 120° 42′.—Alſo, a town of Circaſſia, on the Cuban. N. lat. 44° 50′. E. long. 58° 34′.

LAPACTICS, from λαπαζω, *I evacuate*, a term uſed by the old writers in medicine to expreſs ſuch things as purged by ſtool, or at leaſt gently looſened the belly. It was ſometimes applied to the cathartic medicines, and ſometimes to thoſe foods which were of this tendency.

LA PALISSE, in *Geography*. See *La* Palisse.

LAPAROCELE, (from *lapara, the flanks*, and κηλη, *a tumour*,) a term, in *Surgery*, denoting a ſwelling, or hernia, at the ſide of the belly.

LAPARY, in *Geography*, a town of Hindooſtan, in Allahabad; 7 miles N. of Jionpour.

LAPATA, a chain of mountains in Africa, called the "Backbone of the World," extending from N. to S. about 600 miles. S. lat 12° 30′ to 20°. E. long. 27° to 33°.

LAPATHIOS, in *Ancient Geography*, a town of the iſland of Crete, on the northern coaſt.

LAPATHUM, in *Botany*, λαπαθον of the Greeks, from λαπαζω, or λαπαξαι, *to evacuate*, alluding to its medical qualities; a general name for various plants, moſtly of the Dock kind, belonging to the *Rumex*, *Rheum*, *Chenopodium*, or *Spinachia* of Linnæus.

LAPATHUS, Lapito, in *Ancient Geography*, a town on the N. coaſt of the iſland of Cyprus, at the bottom of a ſmall gulf, formed to the N.W. by the promontory called Crommyon. It was founded by the Lacedæmonians as a place of arms, and a port.

LA PAZ, in *Geography*. See *La* Paz.

LAP-DOG, called alſo *melitæus*, or *fotor*, and by Dr. Caius, in his Syſtem of Britiſh Dogs, the ſpaniel gentle or comforter, is a ſpecies of the moſt generous kind of dogs. See Dog.

Mr. Pennant obſerves, that the Malteſe little dogs were as much eſteemed by the fine ladies of paſt times as thoſe of Bologna are among the moderns. Old Hollingſhed is ridiculouſly ſevere on the fair of his days for their exceſſive paſſion for theſe little animals; which is ſufficient to prove it was in his time, *viz.* in the reign of queen Elizabeth, a novelty.

LAPEYROUSIA, in *Botany*, received its name from the Abbé Pourret of Narbonne, in honour of M. Picot Lapeyrouſe, author of a ſplendid botanical book on the genus *Saxifraga*, and who has paid great attention to the natural hiſtory of the Pyrenées. Thunberg has applied the ſame name to a Cape plant, *Oſmites calycina*, Linn. Suppl. 380, which he ſeparates in his *Prodromus*, p. 163, from *Oſmites*, ſaying the receptacle is naked, and the corolla diſcoid. In this Willdenow follows him, Sp. Pl. v. 3. 2260. On examining the original Linnæan ſpecimen, marked as communicated by Thunberg himſelf, we find ourſelves obliged to declare that neither of theſe characters holds good. The lanceolate ſcales of the receptacle are numerouſly apparent between the florets of the diſk, and the ligulate florets of the radius are no leſs viſible within the calyx; though indeed the large membranous inner ſcales of the latter equal them in length. The habit of the ſhrub, too, is ſufficiently like other ſpecies of *Oſmites*. Such being the ſtate of the caſe, and the right of priority moreover in favour of Pourret, we adopt his *Lapeyrouſia* in preference.—Ker (Gawler) in Curt. Mag. v. 16. 595, and v. 3. 1246. Ann. of Bot. v. 1. 237. Dryandr. in Ait. Hort. Kew. ed. 2. v. 1. 110.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Enſatæ*, Linn. *Irides*, Juſſ.

Gen. Ch. *Cal.* Spatha inferior, ſhorter than the corolla, of two, rarely but one, folded valves. *Cor.* of one petal, ſuperior, ſalver-ſhaped, nearly or quite equal; tube long, ſlender, triangular, its throat a little enlarged; limb in ſix deep ſegments, ſhorter than the tube, either quite equal and regular, or ſlightly irregular, in the former caſe horizontal, in the latter inclining. *Stam.* Filaments three, inſerted into the mouth of the tube, rather ſhorter than the limb, various in direction; anthers oblong, incumbent. *Piſt.* Germen inferior, roundiſh; ſtyle capillary, as long as the ſtamens; ſtigmas three, linear, deeply divided, ſpreading and recurved, downy. *Peric.* Capſule membranous, three-lobed, or with three compreſſed dilated angles, of three cells and three valves, with very ſhort partitions. *Seeds* numerous, in two rows, nearly globoſe, or ſlightly angular from preſſure.

Eſſ. Ch. Spatha of one or two folded valves. Corolla ſalver-ſhaped; limb in ſix deep ſegments, ſhorter than the tube. Stigmas three, deeply divided. Capſule membranous, triangular, with many globular ſeeds.

The moſt correct enumeration of the ſpecies of this genus, previouſly, by other writers, confounded with *Ixia*, *Gladiolus*, or *Galaxia*, is given by Mr. Ker, in Curt. Mag. v. 31. above quoted as follows.

1. L. *corymboſa.* Level-topped Lapeyrouſia. Curt. Mag. t. 595. (Ixia corymboſa; Linn. Sp. Pl. 51. Willd. Sp. Pl. v. 1. 199. Jacq. Ic. Rar. t. 288. I. criſpifolia; Andr. Repoſ. t. 35.)—Flowers regular, corymboſe; tube ſcarcely longer than the limb. Stamens widely ſpreading. Stem two-edged, ſomewhat branched.—Native of the Cape of Good Hope, from whence it was introduced by Mr. Maſſon, in 1791. It flowers in the green-houſe in May and June, and requires to be kept dry when out of bloſſom. The *bulb* is conical, with a broad baſe. *Stem* about a foot high, zig-zag, ſomewhat branched, leafy, corymboſe. *Leaves* vertical, claſping the ſtem with their broad ſheathing baſe. *Flowers* numerous, not an inch wide, blue, generally with a white ſtarry central mark, bordered with darker blue, not very unlike another beautiful Cape plant, *Roella ciliata,* however different in botanical affinity. Sometimes they vary to white.

Mr. Ker is now convinced that *Ixia faſtigiata,* Lamarck. Dict. v. 3. 337, is not ſpecifically diſtinct from the above.

2. L. *falcata.* Falcate Lapeyrouſia.—(Gladiolus falcatus; Thunb. Gladiol. n. 4. t. 1. f. 3.)—Flowers ſlightly irregular, racemoſe; tube twice as long as the limb. Stem compreſſed. Leaves nearly radical, falcate, obovato-lanceolate. From the ſame country; diſcovered by Thunberg. The *ſtem* is but five or ſix inches high. *Leaves* one or two. *Flowers* five or ſix, blue. *Spatha* of two valves.

3. L. *faſciculata.* Faſciculate Lapeyrouſia.—(Ixia heterophylla; Vahl. Enum. v. 2. 57. Galaxia plicata; Jacq. Ic. Rar. t. 292.)—Radical leaves ſword-ſhaped, erect; floral ones crowded, recurved, undulated, obtuſe, longer than the cluſtered flowers. Corolla regular; tube above twice as long as the limb. Spatha of one valve.—Native of the Cape of Good Hope. The *ſtem* is very ſhort. The *flowers* are cluſtered at its ſummit, white, with narrow equal ſegments, and remarkable for being encompaſſed with crowded floral leaves, which are longer than themſelves, recurved, undulated and obtuſe. The *foliage* is glaucous. Radical *leaves* few, long, erect, ſword-ſhaped and acute.

Vahl and Ker appear to have adopted this ſpecies from Jacquin, and they both cite his t. 291, and inſtead of 292, apparently after Willdenow in Sp. Pl. v. 1. 199, quoted by Ker 159. Thus erroneous references accumulate, for want of turning to the original authorities.

4. L. *fiſſifolia.* Split-leaved Lapeyrouſia.—(Gladiolus fiſſifolius; Jacq. Ic. Rar. t. 268. Vahl. Enum. v. 2. 107.)—Leaves deeply ſplit, and claſping the ſtem at their baſe; with a ſhort ſword-ſhaped point; floral ones rounded. Spike leafy. Corolla ſomewhat irregular, drooping; tube thrice as long as the limb.—Received from the Cape of Good Hope by Meſſrs. Lee and Kennedy, with whom it flowered in Sept. 1809. Mr. Maſſon, however, is recorded as having ſent the ſame to Kew in 1791. The leafy *ſpike* is peculiar, as well as the long deep fiſſure of the *ſtem-leaves.* The *flowers* are purpliſh, fragrant, varying in the ſize and colours of their limb.

5. L. *anceps.* Sword-leaved Lapeyrouſia.—(Gladiolus anceps; Linn. Suppl. 94. Jacq. Ic. Rar. t. 269.)—Leaves ſword-ſhaped, decurrent, toothed at the outer edge. Stem corymboſe, ſpreading. Corolla irregular; tube thrice as long as the limb.—Native of the Cape. This appears to be the original ſpecies on which Pourret founded the genus, in the Memoirs of the Society of Thoulouſe, vol. 3. It differs from the laſt in its branching corymboſe *ſtem,* winged with the narrow, decurrent, toothed baſes of the perfectly ſword-ſhaped and vertical *leaves.* The *flowers* vary with different ſhades of blue, and have a very long tube. The *floral leaves* are either large, with toothed or criſped edges, as Jacquin repreſents them; or ſmall and nearly ſmooth or even.

6. L. *ſilenoides.* Campion-flowered Lapeyrouſia.—(Gladiolus ſilenoides; Jacq. Ic. Rar. t. 270. Vahl. Enum. v. 2. 106. Willd. n. 33.)—Leaves linear-ſword-ſhaped, entire; floral ones as long as the reſt. Corolla irregular; tube five times as long as the limb, erect.—Native of the Cape, and, as it ſeems, known only to Jacquin, who has named it very happily from the aſpect of the *flower,* which is red, with a ſpot of yellow at the baſe of three of the ſegments, all on one ſide. The *ſtem* is about a ſpan high, branched from the bottom, and clothed with linear, glaucous, graſſy *leaves,* from ſeveral of the uppermoſt of which the *flowers* proceed, and their white tube is about as long as the correſponding leaf, ſtraight and rather tumid in its upper part.

Two other ſpecies are indicated as doubtful by Mr. Ker, *Gladiolus bracteatus* and *G. Fabricii* of Thunberg and Vahl, which are ſuſpected to be poſſibly not diſtinct from *L. fiſſifolia,* or from *anceps.*

LAPFIORD, in *Geography,* a town of Sweden, in a bay of the gulf of Bothnia; eight miles S. of Chriſtianſtadt.

LAPHAO, a town on the N. coaſt of the iſland of Timor, inhabited by Portugueſe or their deſcendants, ſituated at the bottom of a bay, and containing a church and about 60 houſes; the inhabitants are of a copper colour, with black hair; they carry on ſome trade with Batavia; and this port is viſited by ſome Chineſe junks and veſſels from Goa, but the port is ſafe only from March till Auguſt; at other times the hurricanes render it inſecure.

LAPHIATI, in *Zoology,* the name by which the people of Lemnos call a ſpecies of ſerpent, ſuppoſed by Bellonius to be the ſame with the elaps, or elaphis, of the ancients.

LAPHYSTIUS, in *Ancient Geography,* a mountain of Bœotia, 20 ſtadia from Coronna. It had a certain diſtrict conſecrated to Jupiter Laphyſtius, in which there was a marble ſtatue of this deity. Hercules Charops had alſo a temple at a little diſtance from it. Pauſanius, l. ix. Bœotic. c. 34.

LAPIDARY, LAPIDARIUS, an artificer, who cuts precious ſtones. See GEMS.

The art of cutting precious ſtones is very ancient; but, like other arts, its original was very imperfect. The French have ſucceeded in it the beſt; and the lapidaries of Paris, who have been a corporation ſince the year 1290, have carried it, eſpecially in cutting of diamonds called brilliants, to a very great perfection, but not ſuperior to that of the Engliſh.

There are various machines uſed in the cutting of precious ſtones, according to the quality of the matter to be cut: the diamond, which is extremely hard, is cut and formed on a wheel of ſoft ſteel, turned by a kind of mill, with diamond duſt tempered in oil of olives; and this ſerves to poliſh them as well as to cut them.

Oriental rubies, ſapphires, and topazes, are cut and formed on a copper-wheel, with oil of olives, and diamond duſt: they are afterwards poliſhed on another copper wheel with tripoli and water.

Emeralds, hyacinths, amethyſts, garnets, agates, and other ſtones leſs hard, are cut on a leaden wheel, with ſmalt and water, and poliſhed on a tin wheel with tripoli.

Turquois, of the old and new rock, lapis giraſol, and opal, are cut and poliſhed on a wooden wheel with tripoli.

LAPIDARY is alſo uſed for a virtuoſo ſkilled in the nature, kinds, &c. of precious ſtones; or a merchant who deals in them. See GEMS.

LAPIDARY *Style*, denotes the ſtyle proper for monumental or other inſcriptions.

This is a kind of medium between proſe and verſe; the jejune and the brilliant are here equally to be avoided. Cicero has preſcribed the rules of it: "Accedat oportet oratio varia, vehemens, plena ſpiritus. Omnium ſententiarum gravitate, omnium verborum ponderibus, eſt utendum."

The lapidary ſtyle, which was loſt with the ancient monuments, has been retrieved, at the beginning of this age, by count Emanuel Teſoro: it is now uſed various ways at the beginning of books; and even epiſtles dedicatory are compoſed in it, of which we have no example among the ancients.

LAPIDES PICTI, in *Natural Hiſtory*, a term uſed by Langius, to expreſs ſuch ſtones as are found with the delineations of fiſhes, trees, and ſhells, as well as leaves of ferns and other plants, very perfectly repreſenting the things themſelves, but ſcarcely at all ſtanding out above the ſurface of the ſtone, and having in themſelves ſcarcely any thickneſs. It is very evident, that the bodies repreſented are not here, in reality, but the whole configuration is owing to the natural veins of the ſtone, and the coaleſcence of the ſeveral ſmall maſſes of which each large ſtone is compoſed, and to the vapours from within the earth, getting into the natural fine cracks in the ſtones, and tinging their ſides with blackneſs.

LAPIDESCENT, any thing which has the faculty of petrifying, or turning bodies to a ſtony nature.

Naturaliſts ſpeak of a lapideſcent principle, a lapideſcent ſpirit, a lapideſcent juice, &c.

LAPIDESCENT *Waters*, or *Springs*, are ſuch as, having ſtony particles diſſolved and ſwimming in them, do depoſit the ſame on wood, leaves, and other bodies immerged therein; which, being incruſted herewith, are commonly miſtaken for petrifactions.

LAPIDIFICATION, in *Chemiſtry*, an operation whereby any ſubſtance is converted into a ſort of ſtone.

Lapidification is practiſed in metals, fixed ſalts, and ſalts of plants.

The term is alſo uſed for the making of artificial ſtones.

LAPIN, in *Zoology*, the *Rabbit*. See LEPUS *Cuniculus*.

LAPIS, in the general ſenſe. See STONE.

LAPIS *Arabicus*, in the *Natural Hiſtory of the Ancients*, the name of a ſtone of a fine white colour, reſembling the pureſt ivory; and which, though naturally of a firm, ſolid, and compact texture, yet, when burnt, became light, porous, and ſpungy, and aſſumed the figure and appearance of a pumice; and was uſed like it in the compoſitions of the ancient phyſicians for cleaning the teeth.

LAPIS *Ærosus*, in *Natural Hiſtory*, a name given to ſeveral ſorts of ſtones, and other foſſils, which had lain in the neighbourhood of copper-mines, and been impregnated with particles of copper, though not in a ſufficient degree to be thought worthy the name of copper ores. See PYRITES.

The ſame ſort of ſtones were alſo ſometimes called *chalcites*, which made ſome confuſion, as it gave occaſion to confound them with the true chalcitis.

LAPIS *Aſbeſtos*. See ASBESTOS.

LAPIS *Ætites*. See ÆTITES.

LAPIS *Armenus*. See ARMENIAN *Stone*.

LAPIS *Aſſius*, in the *Natural Hiſtory of the Ancients*, the name of a ſtone, called alſo ſarcophagus, from its power of conſuming fleſh.

It was a ſtone much uſed among the Greeks in their ſepulchres, and is recorded to have always perfectly conſumed the fleſh of human bodies, buried in it, in forty days. This property it was much famed for, and all the ancient naturaliſts mention it. There was another very ſingular quality alſo in it, but whether in all, or only in ſome peculiar pieces in it, is not known; that is, its turning into ſtone any thing that was put into veſſels made of it. This is recorded only by Mutianus and Theophraſtus, except that Pliny has copied it from theſe authors; and ſome of the later writers on theſe ſubjects from him.

This effect might probably be a kind of incruſtation, formed on ſubſtances incloſed in veſſels made of this ſtone, by water paſſing through its pores, diſlodging from the common maſs of the ſtone, and carrying with it particles of ſuch ſpar as it contained; and afterwards falling in repeated drops on whatever lay in its way, it might again depoſit them in ſuch ſubſtances, in form of incruſtations.

The place from whence the ancients tell us they had this ſtone was Aſſos, a city in Lycia, in the neighbourhood of which it was dug: and De Boot informs us, that in that country, and in ſome parts of the Eaſt, there are alſo ſtones of this kind, which, if tied to the bodies of living perſons, would, in the ſame manner, conſume their fleſh. Hill's Notes on Theophraſtus, p. 14.

LAPIS *Atramentarius*, the *copper-ſtone*. See PYRITES.

LAPIS *Bezoardicus*. See BEZOAR.

LAPIS *Bononienſis*, the *Bolonian ſtone*, a peculiar ſpecies of ſtone found in Bolonia. See BONONIAN *ſtone*.

LAPIS *Calaminaris*. See CALAMINE and ZINC.

LAPIS *Calcarius*. See LIME and LIME-STONE.

LAPIS *Caudæ cancri*, in *Natural Hiſtory*, a name given by Geſner, and ſome other writers, to the foſſil ſhells, ſince called tubuli marini concamerati, and by ſome polythalamii and ortho-ceratitæ. See TUBULI *concamerati*.

LAPIS *Ceratitis*. See UNICORNU *foſſile*.

LAPIS *Colicus*. See COLIC-*ſtone*.

LAPIS *Corneus*, *horn-ſtone*, a name given by many of the German authors to flint, which ſome of them have alſo very improperly called *pyrites*, or the fire-ſtone, becauſe it is uſed to ſtrike fire with. See HORNSTEIN and PETROSILEX.

LAPIS *Divinus*. See NEPHRITIC *ſtone*.

LAPIS *Hæmatites*. See HÆMATITES, and *Ores of* IRON.

LAPIS *Hepaticus*, *liverſtone*, or *liberſtein*, a ſpecies of the barytic genus of earths or ſtones, colour grey, greyiſh, or yellow-grey, or brown, or greyiſh-black; luſtre, 2.1; tranſparency, 1; fracture, foliated and partly ſtriated; hardneſs, from five to ſix; ſp. grav. 2.666; emitting a ſmell of liver of ſulphur when rubbed or heated to redneſs; not efferveſcing with acids. According to the analyſis of Bergman, a ſpecimen from Andraran in Scania contains 0.38 of baroſelenite, 0.33 of ſilex, 0.22 of alum, 0.07 of gypſum and 0.5 of mineral oil. Kirwan.

LAPIS *Hibernicus*. See *Iriſh* SLATE.

LAPIS *Hyænius*. See HYÆNIUS *lapis*.

LAPIS *Infernalis*. See *Lunar* CAUSTIC.

LAPIS *Iſlebeianus*. See ISLEBEIANUS *lapis*.

LAPIS *Judaicus*. See JUDAICUS.

LAPIS *Lazuli*. See LAZULITE.

LAPIS *Lucis*, the *ſtone of light*, in the *Materia Medica of the Arabs*, a name given to the braſſy marcaſite or pyrites. The Arabians have adopted this. Avicenna ſuppoſes this ſubſtance to be called ſo, becauſe it was uſed, after calcination, for diſeaſes of the eyes. It is very probable, that where vitriolic medicines take place, the caput mortuum of this foſſil, which is only a colcothar of vitriol, may be of uſe. But its virtues in this reſpect can never be ſuppoſed ſo eminent, as to have intitled it to the pompous name it bears. It ſeems more probable, that it was called the *ſtone of light*, either from its glittering appearance where freſh broken, or from its giving large ſparks of fire, when ſtruck againſt a ſteel. It was from this quality that it obtained the name of *pyrites*, or fire-ſtone, it giving fire on the colliſion with ſteel much better than flint does.

LAPIS *Lydius*. See LYDIUS *lapis*.

LAPIS *Marmoreus*, a marble ſtone about twelve feet long and three feet broad, placed at the upper end of Weſtminſter-hall; where was likewiſe a marble chair erected on the middle thereof, in which our kings anciently ſat at their coronation dinner, and at other times the lord-chancellor. Over this marble table are now erected the courts of chancery, and king's-bench. Orig. Juridical. 37.

LAPIS *Melitites*. See MELITITES.

LAPIS *Morochthus*, or *French chalk*. See MOROCHTHUS.

LAPIS *Medicamentoſus*, or the medicinal ſtone, is a compoſition of rock alum, litharge, colcothar of vitriol, Armenian bole, and vinegar, boiled to the conſiſtence of a hard ſtone. It was uſed to faſten the teeth, preſerve the gums, heal and dry up ulcers and wounds; and alſo in injections, and in compoſitions for ſore eyes.

LAPIS *Muſicalis*, the *muſic-ſtone*, in *Natural Hiſtory*, a name given by Mr. Sivers to a ſtone found in Pruſſia, carrying naturally on it all the muſical characters found on the ſhell, commonly called the *muſic-ſhell*. He deſcribes the ſtone, which ſeems to have been a ſingle ſpecimen, and as this author is the only one who ever met with it, it is much to be ſuſpected that either fraud or fancy has had a great ſhare in the matter.

LAPIS *Nephriticus*. See NEPHRITIC *ſtone*.

LAPIS *Ollaris*, See POTSTONE.

LAPIS *Specularis*. See SPECULARIS.

LAPIS *Thyites*. See THYITES.

LAPITHA, in *Ancient Geography*, a town of Cyprus, on a river of the ſame name; 24 miles W.N.W. of Nicoſia. N. lat. 35° 23′. E. long. 32° 36′. See LAPATHUS.

LAPITHÆUM, a mountain of Laconia. Steph. Byz. Pauſanias (l. iii. c. 20.) mentions a town of this name in the Peloponneſus, on mount Taygetus, in the ſame canton.

LAPLAND, in *Geography*, the moſt northerly country in Europe, extending from the North-Cape, latitude 71½° N., to the White ſea, under the Arctic circle, is inhabited by the ſame people though the country is ſubject to different powers. When the name Lapland was firſt given to the country, and that of Laplanders to the people, is uncertain. Saxo Grammaticus, in his commentaries; Adam of Bremen, in his account of the Danes; and Sturleſton of Iceland have been cited on this ſubject, as having named the people in queſtion "Scrittfinnar," "Scricfinnar," or "Finnar;" and at preſent they are generally called Finns by the Norwegians. The name of Laplanders has been ſuppoſed to originate from their attachment to ſorcery: *lapp*, in their language, ſignifying a wizard.

Lapland is bounded on the north by the North ſea and Frozen ocean; on the eaſt by the White ſea; on the ſouth by Sweden and the gulf of Bothnia; and on the weſt by Norway. On the northernmoſt ſide, are what have been denominated the Frozen Alps, or Alps of Snow, which compoſe that chain of mountains called Severnoi, the declivity of which, towards the eaſt and ſouth, conſiſts of lower mountains, deſerts, foreſts, fens, and lakes. The ſurface is ſuppoſed to contain from ſeventy to eighty thouſand ſquare miles, but its population cannot be aſcertained with any degree of preciſion.

Lapland is divided into three parts, *viz.* 1. That which is ſubject to Denmark, and is called Norwegian Lapland; this part lies between the Northern ſea, the river Pais, and the lake Enarak. 2. Swediſh Lapland, which includes all the country from the Baltic to the mountains that ſeparate Norway from Sweden. It is divided into ſix diſtricts, denominated *marcks*, or territories, which are diſtinguiſhed by the names of rivers, as Aungnerland, Elma, Peta, Lula, Torna, and Kimi. 3. The eaſtern part is ſubject to the czar of Muſcovy, ſituated between the lake Enarak and the White ſea: this part of Lapland is divided into three prefectures; namely, that of the ſea-coaſt to the north, called "Mourmankoi Leporie:" that upon the coaſt of the White ſea, denominated "Jerſkoi Leporie:" and the inland part, known by the name of "Bellamereſkoi Leporie." In Swediſh Lapland, the provinces or marcks are ſubdivided into ſmaller diſtricts called biars, conſiſting each of a number of families, among which the land is parcelled out by government. The whole country conſiſts of huge congeries of frightful rocks and ſtupendous mountains, interſperſed, however, with many pleaſant vallies, watered by an infinite number of rivulets that fall into the rivers and lakes, which diſcharge themſelves into the gulf of Bothnia. The chief towns are Kola and Tornea. There are many conſiderable lakes, as the Great Uma; the Great Windel; the Stor-avan, &c. Some of them are ſaid to extend 60 leagues in length, and contain a great number of iſlands. Stor-avan is computed to contain 365; and Enara contains ſo many, that it has been affirmed, that no Laplander has lived long enough to viſit each particular iſland. For the hiſtory of this country, we muſt refer to that of thoſe countries to which it is ſubject, and alſo to the article FINNS. The climate is exceedingly cold during the winter months; the lakes and rivers are at that ſeaſon completely frozen over, and to a great thickneſs: the whole face of the country is covered with ſnow to the depth of four or five feet. While this continues looſe, it is impoſſible to travel, but if a partial thaw takes place, the ſurface of the ſnow is formed by a ſucceeding froſt into a hard impenetrable cruſt, over which the inhabitants, by means of their rein-deer, travel with the utmoſt celerity. While the thaw continues, the air is ſurcharged with vapours, and the climate is rainy, but ſo long as the north wind blows, the ſky is beautifully ſerene, and the air is clear. The heat of ſummer is almoſt as intolerable in Lapland as the cold of winter. In the more northerly parts of the country, the ſun never ſets for three months in the ſummer, and in the winter there is an uninterrupted night of the ſame duration, but this is qualified by a conſtant revolution of dawn and twilight, by a ſerene ſky, moon-light, and aurora borealis, ſo that the inhabitants are enabled to fiſh and hunt, and to proceed with their ordinary occupations. During the ſummer ſeaſon nothing can be more enchanting in many parts, than the vaſt proſpects of mountains, foreſts, lakes, and rivers. At this ſeaſon, notwithſtanding the climate, the roſes are ſeen in full flower on the banks of the lakes and rivers, with all the beauties of colour which appear in thoſe cultivated in our gardens. In the intervals between the mountains, great part of the country is flat, covered with brown duſky foreſts of fir and pine trees, and theſe are often ſkirted by wide extended moraſſes, the ſtagnating waters of which in ſummer produce myriads of miſchievous inſects, that are more intolerable than even the cold of winter. The ſoil of Lapland is very barren, owing chiefly to the want of cultivation. In ſome diſtricts the land will bear large crops of rye; there are many varieties of berries, as currants, Norwegian mulberries, that grow on a creeping plant; raſpberries, cranberries, juniper berries, and bilberries. There are very fine woods of birch, pine, and fir, in ſeveral inſtances diſpoſed by nature, as if they had been planted in regular rows by the hand of art. The ſervice-tree, the willow, the poplar, the elder, and the cornel are found here. Among plants, the angelica is moſt cultivated, and highly eſteemed: the ſorrel is uſed as an antiſcorbutic. They have likewiſe other kinds of herbs, different ſpecies of graſs, heath, fern and moſs, but the vegetable which is in the greateſt plenty is the lichen. This moſs covers the whole ground; its colour is a pale yellow, which when dry changes to white; the regularity of its ſhape, and the uniform manner in which the ſurface of the ground is decked with it, appears ſingular and ſtriking; it has the ſemblance of a beautiful carpet. Theſe plants grow in a ſhape nearly octagonal, and approaching to a circle, and as they join each other, they form a kind of Moſaic work, or embroidery. As this moſs is very dry, nothing can be more pleaſant to tread upon, nor can there be any thing ſofter for a bed: Acerbi, and his companions, in their journey frequently ſlept upon it. In ſome places it ſeems to be the only herb that will grow; the neighbouring birches and firs appear to vegetate with difficulty, as if deprived of their nouriſhment by the moſs: in ſhort, ſays the writer, "this moſs appeared to be a royal plant, which ruled abſolute over the vegetable kingdom of the country, and diſtributed its bounty and influence among a particular race of men and animals." With reſpect to the mineralogy of the country; ſilver and lead have been diſcovered in the provinces of Pitha and Lula; in the diſtrict of Torna there are two copper mines, and ſome excellent veins of iron. Here are found cryſtals of a very large ſize, and ſo hard and fine, that when poliſhed they reſemble real diamonds. In ſome parts amethyſts and topazes are found: alſo curious ſtones too hard to be worked by the common tools of the maſon. In a few of their rivers they fiſh for pearls, which are generally pale; but ſome of them are as bright as the oriental pearls, though larger and more round. Lapland is infeſted with a great number of grey wolves and bears, with which the natives are perpetually at war. The country likewiſe abounds with elks, beavers, and otters, which live here unmoleſted, and find plenty of fiſh for their ſubſiſtence. The foreſts of this country furniſh haunts to a great number of beautiful martens and ſquirrels, which change their colour every winter from brown to grey. Here are alſo ermines, weaſels, hares, large black cats which attend the Laplanders in hunting, and little dogs trained to the purſuit of game. But the moſt remarkable animal of Lapland is the rein-deer. The woods, mountains, and rivers, are well ſtocked with wild fowl, and all ſorts of aquatic birds that build and breed in northern climates. Early in every ſpring the ſwans go thither in numerous flights from the German ocean: the lapwings follow in ſuch ſwarms that they darken the ſky. The rocks and mountains are frequented with eagles, hawks, kites, falcons, and other birds of prey. The rivers abound with ſalmon, which aſcend from the gulf of Bothnia, trout, bream, and perch of excellent flavour, and amazing magnitude. The inſects are extremely numerous; they often obſcure the face of day; and are ſo venomous that the rein-deer, to avoid them, fly to the tops of the higheſt mountains for ſhelter, and the inhabitants betake themſelves to the ſea-ſide, which is leſs infeſted than other parts by theſe peſtilent vermin.

The commerce carried on by the Laplanders is more conſiderable than one would expect in a deſert country, inhabited by a ſavage and ignorant people. They export large quantities of fiſh to Bothnia and White Ruſſia. They trade with the neighbouring countries of Norway, Sweden, Muſcovy, and Finland, by the ſale of rein-deer, fine furs, baſkets, toys of their own manufacture, and cheeſe made of the rein-deer's milk. They receive in return rix-dollars, woollen cloths, linen, copper, tin, flour, oil, hides, cutlery, ſpirits, and tobacco. The Laplanders march in caravans to the fairs in Finland and Norway; theſe are compoſed of a long ſtring of 30 or 40 rein-deer tied to one another, the foremoſt being led by a Laplander who walks in front. At night, when they have fixed upon a ſpot to reſt on, they form a large circle of their rein-deer and pulkas or ſledges, ready yoked, and the animals lying down quietly on the ſnow, are fed with moſs by their maſters. The people kindle great fires, around which they ſit and ſup, and ſmoke and ſleep. The revenue ariſing from this country is not of much conſequence; it is partly paid in rix-dollars, but chiefly in furs, and the tribute from the poorer claſſes is taken in dried fiſh. Part of the taxes is allotted for the maintenance of the clergy.

The Laplanders are ſhort, few of them being five feet high; in their dreſs they uſe no kind of linen; the men wear a ſort of pantaloons reaching to their ſhoes, and their doublet is made to fit the ſhape; over this is a cloſe coat with narrow ſleeves, which is faſtened round them with a leathern girdle. To the girdle are attached their knives, their pipes, and their inſtruments for ſtriking fire. The dreſs of the women is very much like that of the men, but in addition to it they wear handkerchiefs, ſhort aprons, rings on their fingers, and in their ears, from which among the rich are ſuſpended chains of ſilver, which paſs twice or thrice round the neck. They are much addicted to finery, and to the uſe of embroidery manufactured from braſs wire. They change their habitations according to the ſeaſon, living in houſes in the winter, and in ſummer they make uſe of tents. Their houſhold furniture conſiſts of iron or copper kettles, wooden cups, bowls, ſpoons, and ſometimes tin or even ſilver baſons, to which muſt be added the implements of fiſhing and hunting. The inhabitants are chiefly divided into fiſhers and mountaineers. The former build their habitations near ſome lake, from which they derive their ſubſiſtence. The others ſeek their ſupport on the mountains, poſſeſſing herds of rein-deer more or leſs numerous; theſe are very rich in compariſon of the fiſhermen. It is uſual to aſſign to every child at its birth a number of theſe animals, which, with their produce and increaſe are to belong to it, ſo that when he arrives at man's eſtate, he finds himſelf maſter of ſeveral hundred rein-deer. The following deſcription of a Lapland family was given from the life by an intelligent traveller: "it conſiſted of an old man and his wife, with a child about two or three months old. The infant was truſſed up in a kind of cradle, reſembling, in ſhape, a fiddle caſe, made of the thick bark of a tree, ſo formed that it exactly contained the child, which was fixed in it with a kind of braſs-chain. It was covered with fine and ſoft moſs, over which was ſpread the ſkin of a young rein-deer. The cradle was ſwung on a rope, which was faſtened to the top of the hut." The Laplanders are averſe from war, and will forſake their homes, to which they are much attached, rather than engage in it. Their manners and habits are finely deſcribed by Thomſon, who, in comparing them with the martial hordes of the north, ſays,

> "Not ſuch the ſons of Lapland: wiſely they
> Deſpiſe th' inſenſate barbarous trade of war:
> They aſk no more than ſimple nature gives;
> They love their mountains, and enjoy their ſtorms.
> No falſe deſires, no pride-created wants
> Diſturb the peaceful current of their time;
> And through the reſtleſs ever-tortured maze
> Of pleaſure or ambition bid it rage.
> Their rein-deer form their riches. Theſe their tents,
> Their robes, their beds, and all their homely wealth
> Supply: their wholeſome fare and cheerful cups."

Great pains have been taken by the Danes and Swedes to inform the minds of the Laplanders on the ſubject of religion, but the majority of them continue to practiſe ſuperſtitions and idolatries, as groſs as any that are to be met with among the moſt uninſtructed Pagans. They rely on augury and witchcraft, and have been conſidered by many of our countrymen, who have viſited thoſe parts, as ſkilful in magic and divination. Their magicians make uſe of what they call a drum, an inſtrument like the tambourine. On this, thoſe who profeſs to be Chriſtians draw the figures of their own gods, as well as thoſe of Jeſus Chriſt, the apoſtles, the ſun, moon, ſtars, rivers, &c.: on different parts of this inſtrument and its ornaments are placed ſmall braſs rings, which, when the drum is beaten with a little hammer, dance over the figures, and according to their progreſs the ſorcerer prognoſticates. They retain the worſhip of many Teutonic gods, and have among them conſiderable remains of Druidical inſtitutions. They believe in the tranſmigration of the ſoul, and have feſtivals ſet apart for the worſhip of certain genii, who, they imagine, inhabit the air, and have the direction and ſuperintendence of human actions. A black cat is reckoned one of the moſt valuable appendages in each houſe: they talk to it as to a rational creature, and in their hunting and fiſhing parties it is their uſual attendant. To this animal the Daniſh Laplanders communicate their ſecrets; they conſult it on all important occaſions; and among the Swediſh Laplanders, the drum is kept in every family for the purpoſe of conſulting the devil.

The account given by M. Maupertuis of the rigour of this climate, when he went to the polar circle to aſcertain the real figure of the earth, deſerves to be noticed in this article. He obſerves, that in the month of December ſpirits froze within their houſes; and if the door of a warm room were opened only for a moment, the external air inſtantly converted all the vapour within into a kind of ſnow, whirling it round in vortexes. When they went abroad, they felt as if the air was tearing their breaſts to pieces, and within doors, the cracking of the wood, of which the houſes were built, continually warn them by its contraction of an increaſe of cold. In ſpeaking of the atmoſpheric appearances, and of the heavenly bodies; he ſays, the brightneſs of the moonlight, the twinkling of the ſtars, and the effulgent corruſcations of the aurora borealis, afford a light ſufficient for moſt of the occaſions of life. No ſooner, ſays he, are the ſhort days cloſed, than fires of a thouſand figures and colours light the ſky, as if intended to make up for the abſence of the ſun. Theſe lights are perpetually variable. Sometimes they begin in the form of a great ſcarf of bright light, with its extremities upon the horizon, which, with the motion reſembling that of a fiſhing-net, glides ſoftly up the ſky, preſerving a direction nearly perpendicular to the meridian, and commonly after theſe preludes all the lights unite at the zenith, and form the top of the crown. It would be difficult to enumerate the different figures which theſe meteors aſſume, and the various motions with which they are agitated. Their motion is moſt commonly like that of a pair of colours waving in the air, and the different tints of their light give them the appearance of ſo many ſtreamers of changeable ſilk. "I ſaw," ſays the philoſopher, "a phenomenon of this kind, that in the midſt of all the wonders to which I was now every day accuſtomed, excited my admiration. To the ſouth a great ſpace of ſky appeared tinged with ſo lively a red, that the conſtellation of Orion looked as if it had been dipped in blood. This light, which was at firſt fixed, ſoon moved, and changing into other colours, violet and blue, ſettled into a dome, the top of which ſtood a little to the ſouth-weſt of the zenith. In this country, where there are lights of ſo many different colours, I never ſaw but two that were red, and ſuch are always taken for preſages of ſome great misfortune. It is not at all ſurpriſing, if people, with an unphiloſophic eye, diſcover in theſe phenomena armies engaged, fiery chariots, and a thouſand other prodigies. To the enlightened and rational philoſopher, Lapland every where preſents ſubjects of reflection and contemplation: no arts flouriſh here; we no where meet with temples, houſes, wrecks of columns, or of other monuments, but a fine opportunity is afforded of ſtudying among the wandering tribes the firſt elements of ſocial life; of ſociety in its moſt ancient form." Acerbi's Travels into Sweden, Lapland, &c. Confett's Tour to Lapland.

LA PLATA. See *La* PLATA.

LAPMARK. See FINMARK.

LAPOUTI, a mountain of Aſia, between Caſhgar and Little Thibet.

LAPPA, in *Botany*, the Latin name for any kind of Bur, or ſeed that ſticks to the coats of animals. See ARCTIUM, APARINE, and XANTHIUM.

LAPPAGO, a name for the *Galium Aparine*, or Gooſe-graſs, alluding to the bur-like nature of its ſeeds. (See LAPPA.) It is now appropriated by Schreber to a particular genus of graſſes; ſee the next article.

LAPPAGO, ſo named by Schreber, on account of the bur-like aſpect of the ſeed inveſted with its muricated huſks. —Schreb. 55. Willd. Sp. Pl. v. 1. 484. Mart. Mill. Dict. v. 3. Sm. Prodr. Fl. Græc. Sibth. v. 1. 76. Ait. Hort. Kew. ed. 2. v. 1. 182. (Tragus; Hall. Hiſt. v. 2. 203. Desfont. Atlant. v. 2. 386.)—Claſs and order, *Triandria Digynia*. Nat. Ord. *Gramina*, Linn.

Gen. Ch. *Cal.* aggregate, each glume of one valve, ſingle-flowered, lanceolate, pointed, ventricoſe, angular, furrowed, permanent, muricated at the back with a triple row of cartilaginous prickles, hooked upwards. *Floret* ſolitary, ſeſſile. *Cor.* of two valves, ſmaller than the calyx, awnleſs, ſmooth, membranous and whitiſh; its glumes lanceolate, acute, concave; the outermoſt oppoſite to the calyx, ribbed, inner more delicate and but half the ſize of the outer, embraced by the calyx. Nectary of two lanceolate acute leaflets. *Stam.* Filaments three, capillary, the length of the glumes; anthers ſhort, deeply divided. *Piſt.* Germen ſuperior, ovate; ſtyles two, capillary, rather ſhort; ſtigmas cylindrical, feathery. *Peric.* none, except the permanent corolla. *Seed* unconnected, elliptic-oblong, with a longitudinal furrow.

Eſſ. Ch. Calyx muricated, of one valve, ſingle-flowered, aggregate. Corolla of two valves, awnleſs.

The only known ſpecies is

1. L. *racemoſa*. Branching Bur-graſs.—Sm. Fl. Græc. Sibth. v. 2. t. 101. Hoſt. Gram. Auſtr. v. 1. 28. t. 36. (Cenchrus racemoſus; Linn. Sp. Pl. 1487. Schreb. Gram. v. 1. 45. t. 4. Gramen caninum maritimum aſperum; Bauh. Prodr. 2. Theatr. 16.)—Native of the ſandy ſea-ſhores of the ſouth of Europe, as well as of Arabia and India. It is a hardy annual with us, flowering in the warmeſt part of the ſummer. The *root* conſiſts of downy fibres. *Stems* numerous, a ſpan high, jointed, unbranched, leafy, round, ſmooth, decumbent and taking root at the bottom. *Leaves* ſpreading, lanceolate, very acute, flat, ſtriated, ſmooth, except the edge, which is fringed as well as toothed; the baſe is heart-ſhaped; the upper leaves are very ſhort: ſheaths rather ſwelling, ſtriated, ſmooth, the upper ones longeſt. *Stipula* ſhort, fringed. *Spikes* terminal, ſolitary, two or three inches long, erect, cylindrical, obtuſe, many-flowered, generally purpliſh, and of an unuſual aſpect on account of the prickly huſks. Their common *ſtalk* is hairy. *Flowers* three or four on each little zig-zag partial ſtalk, alternate,

rather diſtant, erect, the uppermoſt generally abortive. The lower part of the *ſpike* is thin and ſtraggling.

LAPPANO, in *Geography*, a town of Naples, in Calabria Citra; four miles N. of Coſenza.

LAPPO, a ſmall iſland in the Baltic, between the coaſt of Finland and the iſland of Aland. N. lat. 60° 20′. E. long. 20° 48′.—Alſo, a town of Sweden, in the government of Abo; 23 miles S. of Abo.—Alſo, a town of Sweden, in Eaſt Bothnia, and government of Waſa; 37 miles E.N.E. of Waſa.

LAPPO *Jerſoi*, a town of Sweden, in Eaſt Bothnia; 60 miles S.E. of Waſa.

LAPPOJOCK, a river of Eaſt Bothnia, which runs into the ſea, five miles below Ny-Karleby.

LAPPOREN, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 63° 23′. E. long. 20° 59′.

LAPPTRASK, a town of Sweden, in the province of Nyland; 21 miles N.E. of Borgo. N. lat. 60° 37′. E. long. 26° 12′.

LAPPULA, in *Botany*, a name given by ſome to the great caucalis, or rough-fruited ſtone-parſley, or baſtard parſley.

LAPSANA, by ſome written *Lampſana*, an old Latin name, uſually derived from λαπαζω, *to purge* or *evacuate*, on account of a ſuppoſed quality in the plant. Ambroſinus deduces it, by antiphraſis, from αλαμπης, *deſtitute of ſplendour*, becauſe of the mean appearance of the herb.—Linn. Gen. 405. Schreb. 534. Willd. Sp. Pl. v. 3. 1622. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 842. Juſſ. 168. Tourn. t. 272. Lamarck. Illuſtr. t. 655. Gærtn. t. 157. (Rhagadiolus; Cæſalp. 511. Schreb. 534. Willd. Sp. Pl. v. 3. 1625. Mart. Mill. Dict. v. 4. Juſſ. 168. Tourn. t. 272. Lamarck. Illuſtr. t. 655. Gærtn. t. 157. Koelpinia; Pallas. It. v. 3. 755.)—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ Semifloſculoſæ*, Linn. *Cichoraceæ*. Juſſ.

Gen. Ch. *Common Calyx* ovate, ſomewhat cylindrical, angular, of about eight equal, linear, keeled, channelled, acute ſcales, with a few ſmall imbricated ones at the baſe, all permanent. *Cor.* compound, imbricated, uniform; the florets hermaphrodite, about 16, more or leſs, equal, each of one petal, ligulate, abrupt, with five teeth. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen rather oblong; ſtyle thread-ſhaped, as long as the ſtamens; ſtigma cloven, reflexed. *Peric.* none, except the permanent ſcales of the calyx. *Seeds* ſolitary, oblong, angular, contracted at the top, upright or ſpreading, deſtitute of wing or down. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Calyx with ſcales at the baſe, its inner ſcales equal, channelled. Seeds without down, contracted at the top.

1. L. *communis*. Common Nipple-wort.—Linn. Sp. Pl. 1141. Engl. Bot. t. 844. Curt. Lond. faſc. 1. t. 59. Fl. Dan. t. 500.—Calyx of the fruit cloſed, unchanged, ſmooth. Seeds looſe. Stem panicled.—Frequent in waſte or cultivated ground throughout moſt parts of Europe, flowering in ſummer. The *root* is annual. *Stem* erect, two or three feet high, roundiſh, nearly ſmooth, much branched in a panicled manner, leafy in the lower part. *Leaves* ſoft and rather hairy, toothed; the radical ones lyrate, the others ovate, acute, alternate. *Flowers* ſmall, yellow, on long, ſlender, alternate ſtalks. *Seeds* nearly ſtraight and erect, angular and ſtriated, ſurrounded by the dried, ſmooth, permanent, ſcarcely changed calyx, but unconnected with it, and at length falling out, leaving it empty. This plant is ſaid to be called *Papillaris*, in Pruſſia, a name ſynonymous with Nipple-wort; becauſe it is ſaid to cure ulcerated breaſts.

A variety of this, with the margins of its leaves curled and more deeply as well as unequally toothed, is *L. criſpa* of Willdenow, ſaid by him to continue conſtant from ſeed. Linnæus conſidered it a variety, nor do we find reaſon to ſwerve from that opinion.

2. L. *ſtellata*. Starry Nipple-wort.—Linn. Sp. Pl. 1411. Gærtn. v. 2. 354. (L. n. 3; Gerard. Gallopr. 175. Ragadiolus ſtellatus; Willd. n. 1. Ragadiolus altera; Cæſalp. 511. Hieracium ſtellatum; Bauh. Hiſt. v. 2. 1014. H. narbonenſe falcatum; Lob. Ic. 240. H. falcatum Lobelii; Ger. em. 298.)—Seeds awl-ſhaped, ſpreading, ſomewhat incurved, embraced by the muricated calyx-ſcales. Stem widely ſpreading. Radical leaves obovate, ſomewhat runcinate.—Native of the ſouth of Europe. *Root* annual. *Stems* ſeveral, widely ſpreading or decumbent, branched. *Leaves* thin and nearly ſmooth, except a little roughneſs about the edge; the lower ones obovate, rather acute; tapering and nearly entire at the baſe; more or leſs runcinate about the middle, with numerous ſharp teeth, each tipped with a little pale callous point: the upper leaves are linear-lanceolate, undivided and nearly entire. *Flowers* ſmall, yellow, on long ſpreading ſtalks. *Calyx* rough with minute aſcending briſtles or prickles. Perfect *ſeeds* generally eight, ¾ of an inch long, widely ſpreading in the form of a ſtar, awl-ſhaped, ſlender, ſmooth, each embraced by one ſcale of the calyx, which rather exceeds it in length, and is externally rough with little prominent prickles, eſpecially towards the point. About two or three very much incurved, ſmaller, apparently abortive ſeeds are found in the centre, each in like manner inveſted with its rough calyx-ſcale. All the ſeeds, as well as the calyx, are firmly united together to the tumid receptacle, which they entirely cover, till they are looſened by time or accident.

We unite, without the leaſt ſcruple, the *L. ſtellata* and *L. Rhagadiolus* of Linnæus as one ſpecies, on the authority of his own ſpecimens, as well as that of his and our learned friend Gerard. They differ only in having more or leſs toothed radical leaves. Every other part preciſely accords. Whether the two following be diſtinct from this now deſcribed may admit of ſome doubt, but we are perſuaded they are ſo.

3. L. *Rhagadiolus*. Bird's-foot Nipple-wort.—Scop. Carn. ed. 2. v. 2. 119. (Ragadiolus edulis; Gærtn. v. 2. 354. Willd. n. 2. Rh. lampſanæ foliis; Tourn. Cor. 36? Rh. alter; Tourn. Inſt. 480. t. 272. Rh. fig. 1. Lamarck Illuſtr. t. 655. Ragadiolus; Cæſalp. 511.)—Seeds few, awl-ſhaped, widely ſpreading, ſomewhat recurved, embraced by the ſmooth calyx-ſcales. Stem ſpreading. Radical leaves deeply runcinate, with rounded lobes.—Native of the ſouth of Europe. We have garden ſpecimens, named L. *ſtellata*, from Mr. Davall. The radical *leaves* are deeply and regularly pinnatifid in a lyrate manner, with two or three pair of oppoſite lobes, all rounded and blunt like the terminal one, but each tipped nevertheleſs, as in the former, with a little callous or glandular point. The *calyx* is perfectly ſmooth, both in flower and fruit. Perfect *ſeeds* generally but four, ſhorter and thicker than in the laſt, coloured, recurved, or, as Scopoli obſerves, deflexed, well compared by Cæſalpinus to a bird's foot, from which deſcription and Tournefort's figure there can be no doubt of this being the plant both theſe authors meant, though Tournefort appears to have reverſed the two ſpecies of Cæſalpinus; and hence perhaps aroſe the almoſt inextricable confuſion among following authors. Linnæus could not correct this, as he never ſaw but one ſpecies. We believe the two to be truly diſtinct. The reſemblance of the radical leaves of the preſent to *L. communis*, makes us retain the

ſynonym of Tournefort's Corolla, though with a mark of doubt.

4. L. *Koelpinia.* Linear-leaved Nipple-wort.—Linn. Suppl. 348. (Koelpinia linearis; Pallas It. v. 3. 755. t. L, l, f. 2. Rhagadiolus Koelpinia; Willd. n. 3.)—Seeds numerous, awl-ſhaped, ſpreading, incurved, embraced by the muricated calyx-ſcales. Leaves all linear-lanceolate, entire.—Found by Pallas in only one moiſt valley, by mount Bogden, in the deſert of Aſtrachan. We have a wild ſpecimen from Aleppo, given by ſir Joſeph Banks. It flowers in the middle of May, ripening ſeed by the end of the month. The yellow bloſſoms open to the morning ſun, and cloſe at noon. This is a very ſlender plant, with a ſmall annual *root.* The *ſtems* are from ten to eighteen inches long, ſcarcely branched, looſely ſpreading, ſmooth; ſquare and furrowed towards the top. *Leaves* diſtant, all linear lanceolate, acute, entire, pliable, ſmooth, obſcurely three-ribbed. *Flowers* ſolitary, on ſhort ſcattered ſtalks, from the very root to the extremity of each ſtem. *Calyx* clothed with incurved prickles. Ripe *ſeeds* numerous, about twelve or fourteen, ſpreading from their baſe, but ſtrongly incurved, each inveſted with one of the calyx-ſcales, whoſe numerous, incurved, hooked prickles are much more remarkable than in either of the two laſt, ſome of them forming a recurved ſtar at the top of each ſeed. This ſpecies is more akin to *L. ſtellata* perhaps than any other, but the characters given above ſeem ſufficient to keep them diſtinct. Pallas ſuggeſted the propriety of ſeparating the three laſt-deſcribed ſpecies from *Lapſana*, by the name of *Koelpinia;* ſee that article. Whether they ought to form a genus, is, to us at leaſt, doubtful. Schreber has agreed with Pallas in this point, only properly preferring the name of *Rhagadiolus* for the genus, as given by Cæſalpinus and Tournefort, and correctly derived from ῥαγας ῥαγαδος, *a cleft or fiſſure*, whether it alludes to the reputed virtues of theſe plants in healing cracks of the ſkin, or to the cut (or ſtar-like) aſpect of the ſeeds. In habit they ſufficiently accord with the original *Lapſana*, and the difference in the poſition of the ripening ſeeds is their only diſtinction. We ought rather perhaps to admire the ſagacity of Linnæus in perceiving their agreement, than the ingenuity of thoſe who have diſtinguiſhed them. Pallas himſelf, with great modeſty, merely ſubmits his opinion to the deciſion of thoſe who take the lead in botany. In the ſame uncertainty we wiſh now to leave it.—L. *Zacyntha* ſeems to be ſeparated from the reſt with more propriety, as its ſeeds have a feathery crown, and the nature of the toroſe calyx is more like that of *Crepis*. Juſſieu includes it under his genus *Hedypnois;* ſee that article.

Three much more diſſimilar plants are ranged under *Lapſana* by Willdenow. Theſe are *Hyoſeris fœtida* and *minima* of Linnæus, with *L virgata* of Desfontaines, Fl. Atlant. v. 2. t 215.—The firſt is on the authority of Haller and Scopoli, who ſay the ſeeds are without down. We have never ſeen them, but the ſtemleſs habit of the plant, and its whole aſpect, exactly like a *Leontodon*, are ſo foreign to *Lapſana*, that the natural characters of the genus would be overſet by its admiſſion.—*Hyoſeris minima*, Gærtner's *Arnoſeris*, t. 157, is indeed leſs unlike in habit, though ſtemleſs; but the ſeeds have an elevated border, and do not agree with *Lapſana*.

The third, *virgata*, has ſo great a number of florets as to take off an important part of its generic affinity, and its habit is more like an *Hedypnois*. Having ſeen no ſpecimen, we can decide nothing as to this ſpecies. It is neceſſary to know whether the ſeeds have an elevated border, in which caſe it might very well be placed along with *Hyoſeris minima*, wherever that remains; or whether they be truly all without a crown, and contracted at the ſummit, as in the true ſpecies of *Lapſana*. S.

LAPSARII. See Infralapsarii, Sublapsarii, and Supralapsarii.

LAPSE, in *Law*, a ſlip or omiſſion of a patron to preſent a clerk to a benefice within ſix months of its being void: in which caſe, the benefice is ſaid to be in lapſe, or lapſed, and the right of preſentation devolved to the ordinary.

And if the ordinary neglect to preſent during the ſame time, the right of preſentation accrues to the metropolitan, and to the king by neglect of the metropolitan. This right of lapſe was firſt eſtabliſhed in the reign of Henry II., when the biſhops firſt began to exerciſe univerſally the right of inſtitution to churches (Bract. l. 4. tr. 2. c. 3.): and therefore, when there is no right of inſtitution, there is no right of lapſe; ſo that no donative can lapſe to the ordinary, unleſs it hath been augmented by the king's bounty (ſt. 1 Geo. I. ſt. 2. c. 10.); but no right of lapſe can accrue when the original preſentation is in the crown. (St. 17 Edw. II. c. 8. 2 Inſt. 273.) In caſe the benefice becomes void by death, or ceſſion through plurality of benefices, there the patron is bound to take notice of the vacancy at his own peril; but in caſe of a vacancy by reſignation, or canonical deprivation, or if a clerk preſented be refuſed for inſufficiency, theſe being matters of which the biſhop alone is preſumed to be cognizant, here the law requires him to give notice thereof to the patron; otherwiſe he can take no advantage by way of lapſe. (4 Rep. 75. 2 Inſt. 632.) Neither ſhall any lapſe accrue thereby to the metropolitan or the king. If the biſhop refuſe or neglect to examine and admit the patron's clerk, without good reaſon aſſigned or notice given, he ſhall have no title to preſent by lapſe (2 Roll. Abr. 639.); and if the right of preſentation be litigious or conteſted, and an action be brought againſt the biſhop to try the title, no lapſe ſhall occur till the queſtion of right be decided. (Co. Litt. 344.) If the biſhop be both patron and ordinary, he ſhall not have a double time allowed him to collate in (Gibſ. Cod. 769.); and if the biſhop doth not collate his own clerk immediately to the living, and the patron preſents, though after the ſix months are lapſed, yet the preſentation is good, and the biſhop is bound to inſtitute the patron's clerk. (2 Inſt. 273.) If the biſhop ſuffer the preſentation to lapſe to the metropolitan, the patron alſo has the ſame advantage if he preſents before the archbiſhop has filled up the benefice: yet the ordinary cannot after lapſe to the metropolitan, collate his own clerk to the prejudice of the archbiſhop. (2 Roll Abr. 368.) But if the preſentation lapſes to the king, the patron ſhall never recover his right, till the king has ſatisfied his turn by preſentation; for *nullum tempus occurrit regi.* But to prevent the inconvenience of the church's continuing void for ever, unleſs the king ſhall be pleaſed to preſent, the law has lodged a power in the patron's hands of, as it were, compelling the king to preſent. For if, during the delay of the crown to preſent, the patron himſelf preſents, and his clerk is inſtituted, the king indeed, by preſenting another, may turn out the patron's clerk; or, after induction, may remove him by *quare impedit:* but if he does not, and the patron's clerk dies incumbent, or is canonically deprived, the king hath loſt his right, which was only to the next or firſt preſentation. 7 Rep. 28. Cro. Eliz. 44. Blackſt. Com. vol. ii.

LAPSED Legacy. See Legacy.

LAP-SIDED, in *Sea Language*, denotes the ſtate of a ſhip, which is built in ſuch a manner as to have one ſide heavier than the other, and conſequently to retain a conſtant heel or tendency toward the heaver ſide, unleſs when ſhe is brought upright by placing a greater quantity of the cargo or ballaſt on the other ſide.

LAPTANA, in *Geography*, a town of Pruſſia, in the province of Samland; 10 miles N. of Konigſberg.

LAPTCHOUT-HOTUN, a town of Aſia, in the country of Hami; 30 miles W. of Hami-Hotun. N. lat. 43°. E. long. 92° 48′.

LAPUSZNA, a town of European Turkey, in Moldavia, near a river of the ſame name; 50 miles E.S.E. of Jaſſi.

LAPWING, CAPELLA, in *Ornithology*, the black-breaſted tringa, with a hanging creſt, or Tringa vanellus of Linnæus, commonly known in England by the name of lapwing or baſtard plover, and called by ſome, in Latin, vanellus. See TRINGA.

Were the lapwing leſs common, it would be highly eſteemed for its beauty. It is very frequent in our fenny countries, and in the wet places of moſt other parts of Europe.

It lays four eggs, of an olive caſt, ſpotted with black, in a ſlight neſt made with a few bents. The young, as ſoon as hatched, run like chickens, and are preſerved with great anxiety and clamour by their parents from apprehended danger; which are ſaid to flutter along the ground to a conſiderable diſtance from their neſt, to elude purſuers, and to become more clamorous when moſt remote from it. The eggs are much valued for their delicacy, and are ſold by the London poulterers for three ſhillings *per* dozen. In winter, lapwings join in large flocks, and are very wild; their fleſh is very good, their food being inſects and worms. During October and November, they are taken in the fens in nets, in the ſame manner as ruffs are, but are not preſerved for fattening, being killed as ſoon as caught. Ray and Pennant.

LAQUEARIUS, a kind of athleta among the ancients, who in one hand held a *laqueus*, *i. e.* a ſort of ſnare, wherewith to embarraſs and entangle his antagoniſt, and in the other a poignard to ſtab him.

LAQUER. See LACQUER.

LAQUEUS, in *Surgery*, a *nooſe* or *ſnare*; or a kind of ligature, ſo contrived, that when ſtretched, by any weight, or the like, it draws up cloſe.

It is uſed to extend broken or disjointed bones, to keep them in their places, when they are ſet, and to bind the parts cloſe together.

LAQUILO, in *Geography*, a ſmall iſland in the Mediterranean, near the coaſt of Murcia, about 3 miles S.E. of Almaçaran.

LAR, or LAAR, a city of Perſia, and capital of Lariſtan, ſituated on a ſandy ſoil, amidſt barren mountains; but the gardens, of which each houſe has one, abound with dates, an excellent fruit, which particularly proſpers in this part of Perſia. The houſes are low, and in the time of Chardin were about 200. The city alſo contains bazars, moſques, a caſtle on a rock, and a palace, in which the governor reſides. The Jews reſide in a quarter by themſelves, and carry on a ſilk manufacture; and the Dutch have a factory here. In the vicinity are plantations of oranges and tamarinds, as well as dates; and at the foot of a mountain, at a ſmall diſtance from the city, is found the ſubſtance called "Mummy;" 120 miles W. of Ormus. N. lat. 27° 20′. E. long. 54° 10′.

LARA, a town of Spain, in Old Caſtile, on the Arlenza; 13 miles S.S.E. of Burgos.

LARACHA, or LARACHE, a ſea-port town of Africa, in the empire of Morocco, on the river Luccos, near the Atlantic ocean. The environs are interſected by woods and marſhes. A fort, built by the Spaniards, on the land ſide, ſtill remains, and the caſtle on the ſide of the road is defended by batteries, which lie cloſe to the water's edge. The river is of good depth; and ſome commerce was formerly carried on in this place by the Europeans; but in the year 1780, the emperor compelled the merchants to retire. The large veſſels of the emperor uſually winter here; but there are no docks for ſhip-building. The road of this harbour is inſecure in winter, but it is free from danger between the beginning of April and the end of September; 33 miles S. of Tangiers. N. lat. 34° 58′. W. long. 6° 2′. Chenier's Morocco, vol. i.

LARADA, a town of Tripoli; 30 miles S.E. of Meſurada.

LARAGNE, a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Gap; 9 miles S.S.E. of Serres. The place contains 664, and the canton 3673 inhabitants, on a territory of 192½ kiliometres, in 8 communes.

LARANDA, in *Ancient Geography*, a town of Aſia, in Cappadocia, belonging to Antiochiana, according to Ptolemy, who joins this canton to Lycaonia, but by other authors it is united with Piſidia and Iſauria.

LARASSA, a town of Aſia, in Media, not far from Ecbatana. Ptol.

LARBOARD, in *Sea Language*, the left-hand ſide of the ſhip, looking forward from the ſtern.

LARBORUM, in *Ancient Geography*, an epiſcopal town of Aſia, in Caria.

LARCENY, or LARCINY, in *Law*, is a theft of perſonal goods or chattels, in the owner's abſence. See THEFT.

The word comes from the French *larcin*; and that from the Latin *latrocinium*, *theft*.

Larceny is diſtinguiſhed by the law into two ſorts; the one called *ſimple* larceny, or plain theft, unaccompanied with any other atrocious circumſtance; and *mixed* or *compound* larceny, which includes in it the aggravation of taking from one's houſe or perſon.

In reſpect of the things ſtolen, *ſimple* larceny is either *great* or *ſmall*.

LARCENY, *Great*, *Grand*, is when the things ſtolen, though ſeverally, exceed the value of 12*d*.

LARCENY, *Petty*, or *Petit*, is when the goods ſtolen exceed not the value of 12*d*.

Simple larceny is defined the felonious taking, and carrying away, the perſonal goods of another: ſo that in order to conſtitute this crime, there muſt be a *taking*, which implies the conſent of the owner to be wanting; and therefore no delivery of the goods from the owner to the offender, upon truſt, can ground a larceny. By the common law it was no larceny in a ſervant to run away with the goods committed to him to keep, but only a breach of truſt: but by ſtatute 21 Hen. VIII. c. 7. if any ſervant embezzles his maſter's goods to the value of 40*s*. it is made felony, except in an apprentice and ſervants under eighteen years old. But if he had not the poſſeſſion, but only the care and overſight of the goods, as the butler of plate, the ſhepherd of ſheep, and the like; the embezzling of them is felony at common law. (1 Hal. P. C. 506.) By the declaratory act of 39 Geo. III. c. 85. entitled "An act to protect maſters againſt embezzlements by their clerks or ſervants," it is enacted and declared, that if any ſervant or clerk, or any perſon employed for the purpoſe in the capacity of a ſervant or clerk, to any perſon or perſons whomſoever, or to any body corporate or politic, ſhall, by virtue of ſuch employment, receive or take into his poſſeſſion any money, goods, bond, bill, note, banker's draft, or other valuable ſecurity, or effects, for, or in the name, or on the account of his maſter or maſters, or employer or employers, and ſhall fraudulently embezzle, ſecrete, or make away with the ſame, or any part thereof; every ſuch offender ſhall be deemed to have feloniouſly ſtolen the ſame; although ſuch money, goods, &c. was or were not otherwiſe received into the poſſeſſion of ſuch maſter or maſters, &c. than by the actual poſſeſſion of his or their ſervant, clerk, or other perſon ſo employed. And every ſuch offender, his adviſer, procurer, aider, or abettor, being thereby lawfully convicted or attainted, ſhall be liable to be tranſported to ſuch parts &c. for any term not exceeding fourteen years, in the diſcretion of the court before whom he ſhall be convicted or adjudged. Several ſtatutes have alſo, at various times, paſſed to protect public companies from depredations by their officers and ſervants; as 15 Geo. II. c. 13. ſ. 12. with reſpect to thoſe of the bank of England, rendering embezzlement a capital felony; 35 Geo. III. c. 66. ſ. 6. and 37 Geo. III. c. 46. touching certain annuities payable at the bank of England, and containing the ſame proviſions as the 15 Geo. II. c. 13. ſ. 12. The 24 Geo. II. c. 11. ſ. 3. contains the ſame proviſions reſpecting the officers and ſervants of the South Sea houſe. So if a gueſt robs his inn or tavern of a piece of plate, it is larceny (1 Hawk. P. C. 90.); and ſo it is declared to be by 3 & 4 W. & M. c. 9. if a lodger runs away with the goods from his ready furniſhed lodgings. There muſt alſo be a *carrying away;* and a bare removal from the place in which he found the goods, though the thief does not quite make off with them, is ſufficient. But this muſt be *felonious*, i. e. done *animo furandi*, or, as the civil law expreſſes it, *lucri cauſa*. (Inſt. 4. ſ. 1.) The ordinary diſcovery of a felonious intent, is where the party doth it clandeſtinely, or, being charged with the fact, denies it: beſides which, there are other circumſtances that evince a felonious intent, which are left to the conſideration of the court and jury. Moreover, this felonious taking and carrying away muſt be of *the perſonal goods of another*. Of things that adhere to a freehold, as corn, graſs, trees, and the like, or lead upon a houſe, no larceny could be committed by common law; but the ſeverance of them was, and in many things is ſtill, merely a treſpaſs: however, if the thief ſevers them at *one* time, whereby the treſpaſs is completed, and they are converted into perſonal chattels, in the conſtructive poſſeſſion of him on whoſe ſoil they are left or laid, and comes again at another time, when they are ſo turned into perſonality, and takes them away, it is larceny; and alſo if the owner, or any one elſe, has ſevered them. (3 Inſt. 109. 1 Hal. P. C 510.) And by 4 Geo. II. c. 32. to ſteal, or ſever with intent to ſteal any lead or iron fixed to a dwelling-houſe, or out-houſe, or in any court or garden belonging to it, is made felony, liable to tranſportation for ſeven years. And by 21 Geo. III. c. 68. he who ſhall ſteal, rip, cut, break, or remove, with intent to ſteal any copper, braſs, bell-metal, utenſil, or fixture, fixed to any building, or in any garden, orchard, court-yard, fence, or outlet, belonging to any building, or iron-rails, or fencing, &c. and alſo his aiders and abettors, and all who ſhall knowingly buy or receive the ſame, ſhall be guilty of felony, and tranſported for ſeven years, or detained in priſon and kept to hard labour, not exceeding three years, nor leſs than one, and within that time, if the court ſhall think fit, ſhall be once or oftener, but not more than thrice, publicly whipped. Moreover, to ſteal underwood or hedges, and the like, to rob orchards or gardens of fruit growing therein, to ſteal or otherwiſe deſtroy any turnips, or the roots of madder when growing, are, by 43 Eliz. c. 7. 15 Car. II. c. 2. 31 Geo. II. c. 25. 6 Geo. III. c. 48. 9 Geo. III. c. 41. 13 Geo. III. c. 32. puniſhable criminally by whipping, ſmall fines, impriſonment, and ſatisfaction to the party wronged, according to the nature of the offence. Moreover, the ſtealing by night of any trees, roots, ſhrubs, or plants, to the value of 5*s*. is by 6 Geo. III. c. 36. made felony in the principals, aiders, and abettors, and in the purchaſers knowing the ſame to be ſtolen: and by 6 Geo. III. c. 48. and 13 Geo. III. c. 13. the ſtealing of any timber-trees, as oak, beech, cheſnut, walnut, aſh, elm, cedar, fir, aſp, lime, ſycamore, birch, poplar, alder, larch, maple, and hornbeam, and of any root, ſhrub, or plant, by day or night, is liable to pecuniary penalties for the firſt two offences, and for the third is conſtituted a felony, liable to tranſportation for ſeven years. Stealing ore out of mines is no larceny, except the ſtealing ore out of mines of black lead, which is felony without benefit of the clergy by 25 Geo. II. c. 10. Stealing of writings relating to a real eſtate is no felony, but a treſpaſs (1 Hal. P. C. 510. Stra. 1137.): bonds, bills, and notes are goods of which larceny cannot be committed by common law (8 Rep. 33.): but by 2 Geo. II. c. 25. they are put upon the ſame footing with reſpect to larcenies, as the money they were deſigned to ſecure. And by 7 Geo. III. c. 50. if any officer or ſervant of the poſt-office ſhall ſecrete, embezzle, or deſtroy any letter or packet, containing any bank-note, or other valuable paper, ſpecified in the act; or ſhall ſteal the ſame out of any letter or packet, he ſhall be guilty of felony without benefit of clergy. Or if he ſhall deſtroy any letter or packet with which he has received money for the poſtage, or advance the rate of poſtage, and ſecrete the money, he ſhall be guilty of ſingle felony. By 26 Geo. II. c. 19. plundering or ſtealing from any ſhip in diſtreſs, whether wreck or no wreck, is felony, without benefit of clergy. For the laws relating to fiſh and game, ſee *Stealing of* FISH and GAME.

Of all valuable domeſtic animals, as horſes, and of all animals, *domitæ naturæ*, which ſerve for food, as ſwine, ſheep, poultry, and the like, larceny may be committed; and alſo of the fleſh of ſuch as are *feræ naturæ*, when killed. 1 Hal. P. C. 511.

Although no larceny can be committed, unleſs there be ſome property in the thing taken, and an owner; yet, if the owner be unknown, provided there be a property, it is larceny to ſteal it; and an indictment will lie, for the goods of a perſon unknown. (1 Hal P. C. 512.) This is the caſe of ſtealing a ſhroud out of a grave; which is the property of thoſe, whoever they were, that buried the deceaſed, but ſtealing the corpſe itſelf, which has no owner, (though a matter of great indecency,) is no felony, unleſs ſome of the grave clothes be ſtolen with it.

By the Roman law, the penalty of *ſimple* and *ſecret* larceny was the returning it two-fold; and of *manifeſt* larceny four-fold: *manifeſt* larceny was, where the criminal was taken in the fact; *ſimple*, where he was not. The Lacedæmonians never puniſhed larceny provided the perſon was not caught in the fact; but, on the contrary, it was applauded as a mark of dexterity and addreſs. See LACEDÆMONIANS.

The laws of Draco at Athens, which are ſaid to be written in blood, puniſhed it with death; but Solon afterwards changed the penalty into a pecuniary mulct: and ſo the Attic laws in general continued. By the Jewiſh law, theft was only puniſhed with a pecuniary fine, and ſatisfaction to the party injured. (Exod. chap. xxii.) From theſe examples, as well as the reaſon of the thing, many learned and ſcrupulous men have queſtioned the propriety, if not lawfulneſs

fulneſs, of inflicting capital puniſhment for ſimple theft; and propoſed either a pecuniary or a corporal puniſhment. Sir Thomas More in his Utopia, p. 42. and more lately the marquis Beccaria, Eſſ. on Crimes and Puniſhments, chap. xxii. have propoſed that kind of corporal puniſhment, which approaches neareſt to a pecuniary ſatisfaction, *viz.* a temporary impriſonment, with an obligation to labour, firſt for the party robbed, and afterwards for the public, in works of the moſt ſlaviſh kind: nevertheleſs the puniſhment of theft ſtill continues, through the greateſt part of Europe, to be capital. Puffendorf (Law of Nat. l. 8. c. 3.) and ſir Matthew Hale (1 Hal. P. C. 13.) are of opinion, that this muſt be always referred to the prudence of the legiſlature; yet both writers agree, that ſuch puniſhment ſhould be cautiouſly inflicted, and never without the utmoſt neceſſity. It is obſerved, that our ancient Saxon laws nominally puniſhed theft with death, if above the value of 12*d.* but the criminal was permitted to redeem his life by a pecuniary ranſom: as, among their anceſtors the Germans, by a ſtated number of cattle. (Tacit. de Mor. Germ. c. 12.) But in the ninth year of Henry I. this power of redemption was taken away, and perſons guilty of great larceny directed to be hanged, which law continues in force to this day. (1 Hal. P. C. 12. 3 Inſt. 53.) See FELONY. *Petit* larceny by common law is only puniſhable by whipping or impriſonment. (3 Inſt. 218.) Or, by 4 Geo. I. c. 11 the puniſhment may be extended to tranſportation for ſeven years; but the puniſhment of *grand* larceny, or ſtealing above the value of 12*d.* which ſum was the ſtandard in the time of king Athelſtan, eight hundred years ago, is, at common law, regularly death: upon which ſir Henry Spelman obſerved, above a century ſince, when money was at twice its preſent rate, that while every thing elſe was riſen in its nominal value, and become dearer, the life of man had continually grown cheaper. And though the jury may exerciſe a kind of unwarrantable clemency, by bringing in larceny under the value of 12*d.* and the benefit of clergy is allowed for the firſt offence; yet in many caſes of ſimple larceny this is taken away by the ſtatute; as from horſe-ſtealing (1 Edw. VI. c. 12. 2 & 3 Edw. VI. c. 33. 31 Eliz. c. 12.), taking woollen-cloth from off the tenters (ſtat. 22 Car. II. c. 5.), or linen, fuſtians, calicoes, or cotton goods from the place of manufacture (18 Geo. II. c. 27.), ſtealing ſheep or other cattle ſpecified in the acts (14 Geo. II. c. 6. 15 Geo. II. c. 34), thefts on navigable rivers above the value of 40*s.* (24 Geo. II. c. 45.), plundering veſſels in diſtreſs, or that have ſuffered ſhipwreck (12 Ann. ſtat. 2. c. 18. 26 Geo. II. c. 19.), ſtealing letters ſent by the poſt (7 Geo. III. c. 50.), and ſtealing deer, hares, and conies under the circumſtances recited in the Waltham Black act, ſtat. 9 Geo. I. c. 22.

The Circaſſians are ſaid to honour theft at this day; inſomuch that at their public feaſts, their youth are not ſuffered to drink, if they have not performed ſomething remarkable in that way. Solinus tells us, that in Sardinia there was a fountain that had the virtue of diſcovering a perſon that had committed larceny.

Compound or *mixed* larceny is that, which, beſides all the properties of the former, has the aggravation of taking from one's houſe or perſon. With reſpect to larceny from the *houſe*, ſee BURGLARY and HOUSE-*breaking*.

It may be here obſerved, that the benefit of clergy is denied: 1. In all larcenies above the value of 12*d.* from a church, or from a dwelling-houſe, or both, any perſon being therein. 2. In all larcenies to the value of 5*s.* committed by breaking the dwelling houſe, though no perſon be therein. 3. In all larcenies to the value of 40*s.* from a dwelling-houſe, or its out-houſes, without breaking in, and whether any perſon be therein or no. 4. In all larcenies to the value of 5*s.* from any ſhop, warehouſe, coach-houſe, or ſtable, whether the ſame be broke open or not, and whether any perſon be therein or no: whether theſe offences are committed by day or by night.

Larceny from the *perſon* is either by privately ſtealing; or by open and violent aſſault, uſually called *robbery*. The offence of privately ſtealing from a man's perſon above the value of 12*d.* as by privately picking his pocket or the like, without his knowledge, was debarred of clergy, ſo early as by the ſtatute 8 Eliz. c. 14. For the other kind of larceny from the perſon, ſee ROBBERY. See alſo FELONY.

Perſons who buy or receive any ſtolen goods, knowing the ſame to be ſtolen, ſhall be deemed acceſſaries after the fact: 3 W. c. 9; and by 4 Geo. c. 11. they may be tranſported for fourteen years: and by 5 Anne, c. 31. ſuch perſons, and thoſe who conceal any felons or thieves, ſhall be deemed acceſſary to the felony, and being convicted on the teſtimony of one witneſs ſhall ſuffer death as a felon convict: but within clergy. If the principal felon cannot be taken, ſo as to be proſecuted and convicted, yet the buyer and receiver of ſtolen goods may be proſecuted for a miſdemeſnor, and puniſhed by fine and impriſonment, or other ſuch corporal puniſhment as the court ſhall think fit; which ſhall exempt him from being puniſhed as acceſſary, if the principal ſhall be afterwards taken and convicted. Receivers of ſtolen lead, iron, copper, braſs, bell-metal, and ſolder, fixed to or being in any houſes, out-houſes, mills, &c. ſhall, on conviction by due courſe of law, although the principal hath not been convicted, be tranſported for fourteen years. Suſpected places may be ſearched, and ſuſpected perſons may be apprehended, and carried before two juſtices, and if the perſon from whom the goods were received be not produced, or ſome credible witneſs do not depoſe upon oath the ſale or delivery of them, or no ſatisfactory account of them be given, they ſhall be adjudged guilty of a miſdemeſnor. Every perſon, to whom ſuch goods ſhall be offered for ſale, or to be pawned, ſhall apprehend the perſon offering them; and if it ſhall appear, to the ſatisfaction of two juſtices, that ſuch perſon did not apprehend, &c. the perſon who brought or offered the ſame, then he ſhall be adjudged guilty of a miſdemeſnor. And perſons for the two former miſdemeſnors, in having or carrying any of the ſaid goods, ſhall forfeit for the firſt offence 40*s.*, for the ſecond 4*l.*, and for every ſubſequent offence 6*l.*; and for not carrying a ſuſpected perſon before a juſtice, he ſhall forfeit for the firſt offence 20*s.*, for the ſecond 40*s.*, and for every ſubſequent offence 4*l.* (29 Geo. II. c. 30.) By 21 Geo. III. c. 69. every perſon who ſhall buy or receive any pewter pot or other veſſel, or any pewter, knowing the ſame to be ſtolen or unlawfully come by, or ſhall privately buy or receive any ſtolen pewter, he ſhall, though the principal perſon be not convicted, be tranſported not exceeding ſeven years, or detained in priſon and kept to hard labour not more than three years nor leſs than one; and within that time be once or oftener, but not more than thrice, publicly whipped. Perſons offering for pawn or ſale goods ſuſpected to be ſtolen, may be ſeized and conveyed by a conſtable or other peace officer before a juſtice, who may commit them for any time not exceeding ſix days for examination, and afterwards, if the goods were ſtolen or clandeſtinely obtained, to the common gaol or houſe of correction. (30 Geo. II. c. 24.) Perſons advertiſing a reward for helping to ſtolen goods, and alſo the printer and publiſher of ſuch advertiſement, ſhall reſpectively forfeit 50*l.* with coſts (25 Geo. II. c. 36.) And by 4 Geo. c. 11. thoſe who receive ſuch reward, without apprehending the felon and bringing him to trial, ſhall be guilty of felony in the ſame manner as if they had ſtolen the ſame. The charges of proſecution and conviction, in reſpect of any grand or petit larceny, may, by order of court, and at the prayer of the proſecutor, be paid by the county treaſurer, with a reaſonable allowance for his time and trouble. (25 Geo. II. c. 36.) And by 18 Geo. III. c. 19. the ſame charges ſhall be allowed to the proſecutor, whether the perſon tried be convicted or acquitted, provided that in this latter caſe it ſhall appear to the court that there was reaſonable ground of proſecution, and that the proſecutor had *bonâ fide* proſecuted. And by 27 Geo. II. c. 3. 18 Geo. III. c. 19. reaſonable charges may be allowed and paid in the ſame manner, to a poor perſon who is required to give evidence: in Middleſex theſe charges ſhall be paid by the overſeers of the poor where the perſon was apprehended. It is provided by ſtatute, that every perſon who ſhall apprehend any one guilty of houſebreaking or private ſtealing, to the value of 5*s*. and proſecute him to conviction, and all the executors or adminiſtrators of a perſon ſlain in endeavouring to apprehend a houſebreaker or felon, ſhall have a certificate without fee, under the hand of the judge, certifying ſuch conviction, &c. which certificate ſhall be inrolled by the clerk of the peace of the county where it is granted, and may be once aſſigned over and no more. By virtue of this certificate the original proprietor, or aſſignee of the ſame, ſhall be diſcharged from all pariſh and ward offices, within the pariſh or ward where the felony was committed. (10 & 11 W. c. 23.) Every ſuch perſon, and alſo the executors and adminiſtrators of a perſon killed as before, ſhall alſo have another certificate, which, on being tendered to the ſheriff, and demand made, ſhall entitle him to the ſum of 40*l*. without fee, in one month after the tender and demand; on pain of forfeiting double with treble coſts. (5 Anne, c. 31.) See DISCOVERY *of Accomplices*.

The ſheriff, on producing the certificates and the receipts for the ſaid rewards, may deduct the ſame from his accounts; and if he have not money in his hands, he ſhall be repaid out of the treaſury, on certificate from the clerk of the pipe; or he may immediately apply to the commiſſioners of the treaſury, who ſhall pay the ſame without fee. 3 Geo. c. 15.

LARCH-TREE, *Larix*, in *Botany*. Linnæus refers this to the genus of pine. See PINUS *Larix*.

It is the common name of a kind of pine or fir tree, the leaves of which are long and narrow, and are produced out of little knots or tubercles, in the form of a painter's pencil; the cones are produced at remote diſtances from the male flowers on the ſame tree; the flowers are very like ſmall cones at their firſt appearance, but afterwards ſtretched out in length. Theſe trees are propagated by ſeeds, which ſhould be ſown in the beginning of March, upon a bed of light ſoil, expoſed to the morning ſun only; or they may be ſown in pots or boxes of light earth, and placed near a hedge, where they may be expoſed to it. The ſeed ſhould be covered about half an inch thick with fine light earth, and in very dry weather ſhould be gently refreſhed with water. In about ſix weeks, if the ſeeds be good, the plants will come up, at which time they ſhould be carefully guarded againſt rapacious birds, which would otherwiſe pull off the heads of the plants, as they thruſt themſelves out of the ground with their covers on them; and refreſh them with water in dry weather, eſpecially if they are ſown in pots or boxes; alſo keep them clear from weeds, which, if ſuffered to grow among the young plants, will ſoon deſtroy them. In October, if they are in boxes or pots, remove them into a ſituation where they may be defended from ſharp winds, which are ſometimes hurtful to them, while young; but afterwards they will endure the ſevereſt weather of our climate. Theſe trees are very proper for the ſides of barren hills, where few other ſorts will thrive ſo well; nor are they very delicate in regard to ſoil, but will grow much better on poor, ſtrong, ſtony land, than in rich ground; during the ſummer, they appear very beautiful; but in autumn they caſt their leaves, and are not evergreen like the fir.

It has been obſerved in the fifth volume of the Annals of Agriculture, that "larix wood is poſſeſſed of ſo many valuable qualities, that to enumerate the whole would appear an extravagant hyperbole. It is known to reſiſt water, without rotting, almoſt for ever. The piles of larix timber on which the houſes of Venice were built many hundred years ago, when examined, are ſtill found as freſh as when firſt put in. And he has been told, ſtakes of it have been tried in the decoys of Lincolnſhire, which, between wind and water, have already out-worn two or three ſets of oak ſtakes, and do not yet diſcover any ſymptoms of decay. It is alſo known to poſſeſs the valuable quality of neither ſhrinking nor warping, when put into work; nor is it liable to be pierced by worms in our climate, as many of the paintings of Raphael Urban, which are done on this wood, and are ſtill perfectly entire, ſufficiently prove. Experiments have not yet aſcertained whether it will reſiſt the ſea-worm in tropical climates, like the Bermuda cedar; but there is reaſon to think it would, as, in many of its other properties, it reſembles that wood very much. Along with theſe valuable properties, it is known to be one of the quickeſt growing trees in this climate, remarkably hardy, and extremely beautiful when growing. It is, beſides, much more eaſily reared than the oak, and could be ſpread over a great extent of mountains, if ſufficiently bare of herbage, at next to no expence, by the natural ſhedding of its ſeeds, like birch or fir in ſoils that favour them, merely by keeping out cattle from thoſe fields in which ſmall clumps of this kind of wood had been planted ſome years before. In this way very extenſive tracts in the condition juſt deſcribed might be entirely filled with this valuable timber. The uſes to which it might be applied are innumerable. It would be valuable not only for ſhip-plank, but even crooked timbers might be obtained by uſing a little art, when young, to bend it, as the Bermudians do their cedar; for flood-gates in navigable canals and wet-docks it would exceed every thing that can be obtained in this climate. For barrel-ſtaves it would be inimitable, and would enable us to furniſh that article as cheap as any other nation whatever; and in building it would anſwer all the purpoſes to which fir is now applied, being much ſtronger and more durable than that wood. And when it is alſo adverted to, that it is next to incombuſtible, the reader will not think it ſtrange that he in this manner ſo ſtrongly recommends it to the attention of his countrymen, particularly thoſe in the moſt rugged and barren diſtricts; for, in ſuch ſituations, it would be eaſy to ſhew, that, at a very trifling charge, they might, in a ſhort period of years, bring their eſtates to a hundred times the value they bear at preſent, or even can be made to bear by any other kind of improvement. This would be a much more eligible plan of bettering their fortunes than that of trying to ſqueeze, with difficulty, from a poor people, a raiſed rent, for a ſubject that does not admit of proportionable improvement. See PLANTING.

The common cone-bearing larch-tree grows naturally upon the Alps and Apennines, and has been lately much propagated in England. Thoſe trees raiſed from ſeeds thrive beſt in the worſt ſoil and ſituation. There are two varieties of this tree, one of which is a native of America, and the other of Siberia ; neither of which thrive well in this climate. In Switzerland the wood of the common larch-tree is uſed for building and covering the houſes ; and in other countries, where it abounds, it is preferred for every purpoſe to all the kinds of fir. In many places there are ſhips built of this wood, which are ſaid to be durable ; and, therefore, this may be a very proper tree for planting upon ſome of the cold barren hills in many parts of England, which, beſides the profit they would yield to their proprietors, would alſo conduce to national benefit. The Venice turpentine is extracted from the larch-tree. See TURPENTINE.

LARCHE, in *Geography*, a town of France, in the department of Corrèze, and chief place of a canton, in the diſtrict of Brives. The place contains 569, and the canton 6679 inhabitants, on a territory of 135 kiliometres, in nine commumes.

LARCIANO, a town of Etruria ; five miles S. of Piſtoia.

LARDNER, NATHANIEL, in *Biography*, was born at Hawkherſt, in the county of Kent, on the 6th of June, 1684. He probably received his grammatical learning at Deal, which was his father's reſidence, and where he was paſtor of a congregation of Proteſtant Diſſenters ; and from ſchool he was removed to a diſſenting academy in London, under the care of the Rev. Dr. Joſhua Oldfield ; but after ſtaying here a ſhort time, he was ſent, in the year 1699, and when he was only in his ſixteenth year, to proſecute his ſtudies at Utrecht, under profeſſors D'Uries, Grævius, and Burman. In his journey he was accompanied by Mr. Martin Tomkins, and on their arrival they found there Mr. Daniel Neal. After ſpending ſomewhat more than three years at Utrecht, Mr. Lardner removed to Leyden, where he ſtudied about ſix months. In 1703, he returned to England, and from this time to 1709, we have no memorials concerning him. In the laſt mentioned year he preached, for the firſt time, at Stoke Newington, from the words of the Apoſtle Paul, "For I am not aſhamed of the goſpel of Chriſt," &c. "There could not," ſays his biographer, the excellent Dr. Kippis, "have been a more proper text, for a man who was deſtined, in the order of divine providence, to be one of the ableſt advocates for the authenticity and truth of the Chriſtian revelation that ever exiſted." In 1713, Mr. Lardner undertook the tuition of Mr. Brindley Treby, ſon of ſir George Treby, knt. late lord chief juſtice of the common-pleas. Having conducted the ſtudies of the young man, about three years, in lady Treby's houſe, where he was domeſtic chaplain, he accompanied him in an excurſion into France, the Auſtrian Netherlands, and the United Provinces, which employed them about four months. It does not appear how long his connection, in lady Treby's family, as tutor, laſted, but he continued to reſide in the houſe till ſhe died, in 1721. In 1723, Mr. Lardner was engaged with a number of miniſters, in carrying on a courſe of lectures, on a Tueſday evening, at the Old Jewry. The gentlemen who conducted theſe lectures preached a courſe of ſermons on the evidences of natural and revealed religion. The proof of the credibility of the goſpel hiſtory was aſſigned to Mr. Lardner, and he delivered three ſermons on this ſubject, which probably laid the foundation of his great work, as from this period he was diligently engaged in writing the firſt part of the Credibility. In 1727, he publiſhed, in two volumes octavo, the firſt part of "The Credibility of the Goſpel Hiſtory ; or the facts occaſionally mentioned in the New Teſtament, confirmed by paſſages of ancient authors who were contemporary with our Saviour, or his Apoſtles, or lived near their time." This has been eſteemed by perſons of all parties an invaluable performance, that has rendered the moſt eſſential ſervice to the cauſe of Chriſtianity. It has paſſed through ſeveral editions. In the year 1728, Mr. Lardner's life was long deſpaired of, by the attack of a violent fever, from the effects of which he ſlowly recovered. With all his great merit, Mr. Lardner, deſirous of a ſettlement as a diſſenting miniſter, did not receive an invitation for this purpoſe till he was 45 years of age. It was in 1729 he became aſſiſtant to Dr. Harris, miniſter at Crutched or Crouched Friars. About this period he publiſhed "A Vindication of three of our bleſſed Saviour's Miracles ; *viz.* The Raiſing of Jairus's Daughter, The Widow of Nairn's Son, and Lazarus," in anſwer to Mr. Woolſton's attack on the ſcripture account of Chriſt's miracles. In 1733, appeared the firſt volume of the ſecond part of "The Credibility of the Goſpel Hiſtory ;" this volume comes down to the year 178, and is prefaced by an introduction, giving a clear and very luminous hiſtory of the New Teſtament. It was immediately tranſlated into the Low Dutch and Latin languages. The ſecond volume was publiſhed in 1735, and concludes the author's remarks out of Chriſtian writers of the ſecond century. In 1736, he was attacked with another dangerous fever, the effects of which prevented him from preaching for ſeveral months. In 1738, Mr. Lardner publiſhed the third volume of the ſecond part of "The Credibility," ending with the year 233 ; in 1740, the fourth volume, which comes down to the year 248 ; and, in 1743, he publiſhed the fifth volume, which concludes with the year 306. About the ſame period he ſent into the world another performance, entitled "The Circumſtances of the Jewiſh People, an Argument for the Truth of the Chriſtian Religion, in three Diſcourſes." He brought out the remaining volumes of "The Credibility," at intervals between this period and the year 1755, and in the next two years he added to this great and valuable work a ſupplement, in three volumes, compriſing a hiſtory of the apoſtles and evangeliſts, with remarks and obſervations upon every book of the New Teſtament. Our author, on account of his very high merit as a writer, had, in 1745, received a diploma, conferring upon him the degree of doctor of divinity. In the year 1751, he reſigned the office of preacher at Crutched Friars, having, during the preceding year, publiſhed a volume of Sermons, the ſubjects of which are entirely of a practical nature ; and, in 1760, he gave the world a ſecond volume of theſe ſermons. He had alſo publiſhed many other ſmaller pieces which were well received by the public ; ſuch was a ſermon entitled "The Counſels of Prudence, for the Uſe of young People," for which he was thanked by Dr. Secker, at that time biſhop of Oxford. The diſcourſe has been very frequently printed, and has at the preſent moment a large ſale. Lardner had alſo publiſhed "A Diſſertation upon the two Epiſtles aſcribed to Clement of Rome, &c. ;" "An Eſſay on the Moſaic Account of the Creation and Fall of Man ;" "The Caſe of the Demoniacs, mentioned in the New Teſtament ;" "A Letter to Jonas Hanway, Eſq." to ſhew that Mary Magdalen was not the ſinner mentioned in the ſeventh chapter of St. Luke's goſpel, but a woman of diſtinction and excellent character, who for a while laboured under bodily indiſpoſition, which our Lord miraculouſly healed ; and that, therefore, houſes intended for the reception of penitent proſtitutes, ought not to be denominated Magdalen houſes. In 1762, he publiſhed "Remarks on the late Dr. Ward's Diſſertations on ſeveral Paſſages of the ſacred Scriptures ;" to which ſucceeded, in 1764, "Obſervations upon Dr. Macknight's Harmony, ſo far as related to our Saviour's Reſurrection." Amidſt theſe various productions of a ſmaller nature, Dr. Lardner continued the proſecution of his grand object, and in the laſt mentioned year he gave the world the firſt volume of "A large Collection of ancient Jewiſh and Heathen

Teſtimonies to the Truth of the Chriſtian Religion," compriſing the Jewiſh and Heathen authors of the firſt century. The remaining three volumes were publiſhed in intervals between this and the cloſe of the year 1767, and in them the biblical ſtudent is preſented with a noble treaſure of curious and valuable information, and of able and judicious criticiſm, for which the Chriſtian world is deeply indebted to the author. They complete the grand deſign which had occupied a large portion of forty-three years of Dr. Lardner's valuable life; and by them, though far from profitable, he has raiſed a monument to his fame, which can never periſh. Dr. Lardner lived to a very advanced age, and, with the exception of his hearing, retained the uſe of his faculties to the laſt, in a remarkably perfect degree. In the year 1768, he fell into a gradual decline, which carried him off in a few weeks, at Hawkherſt, his native place, at the age of eighty-five. He had, previouſly to his laſt illneſs, parted with the copy-right of his great work for the miſerable ſum of 150*l.* but he hoped if the bookſellers had the whole intereſt of his labours, they would then do their utmoſt to promote the ſale of a work that could not fail to be uſeful in promoting the intereſts of his fellow creatures, by promulgating the great truths of Chriſtianity on a rational foundation. After the death of Dr. Lardner, ſome of his poſthumous pieces made their appearance; of theſe the firſt conſiſt of eight ſermons, and brief memoirs of the author. In 1776, was publiſhed a ſhort letter, which the doctor had written in 1762, "Upon the Perſonality of the Spirit." It was part of his deſign, with regard to "The Credibility of the Goſpel Hiſtory," to give an account of the heretics of the firſt two centuries. In 1780, Mr. Hogg of Exeter publiſhed another of Dr. Lardner's pieces, upon which he had beſtowed much labour, though it was not left in a perfect ſtate; this was "The Hiſtory of the Heretics of the firſt two Centuries after Chriſt, containing an Account of their Time, Opinions, and Teſtimonies to the Books of the New Teſtament; to which are prefixed General Obſervations concerning Heretics." The laſt of Dr. Lardner's pieces was given to the world by the late Rev. Mr. Wiche, then of Maidſtone in Kent, and is entitled "Two Schemes of a Trinity conſidered, and the Divine Unity aſſerted;" it conſiſts of four diſcourſes; the firſt repreſents the commonly received opinion of the Trinity; the ſecond deſcribes the Arian ſcheme; the third treats of the Nazarene doctrine; and the fourth explains the text according to that doctrine. This work may perhaps be regarded as ſupplementary to a piece which he wrote in early life, and which he publiſhed in the year 1759, without his name, entitled "A Letter written in the Year 1730, concerning the Queſtion, Whether the Logos ſupplied the Place of the Human Soul in the Perſon of Jeſus Chriſt;" in this piece his aim was to prove that Jeſus Chriſt was, in the proper and natural meaning of the word, a man, appointed, anointed, beloved, honoured, and exalted by God, above all other beings.

For the many teſtimonies given of Dr. Lardner's character, the reader muſt be referred to Kippis's life, prefixed to a complete edition of his works, publiſhed in 1788, in eleven very large volumes, by the late J. Johnſon. One or two only ſhall be quoted in this place. "The name of Lardner is well known in the literary world. No writer, from the very exiſtence of Chriſtianity, ever conferred ſo eſſential ſervice upon true religion, or contributed more to clear up its evidence and elucidate its antiquities. Accordingly, there is no country, where the Chriſtian religion is profeſſed, in which his name is not held in the greateſt eſteem. Every church would have been proud to boaſt of him as their member, and his voluminous productions have been tranſlated into almoſt all the languages of Europe."

"Dr. Lardner," ſays his moſt excellent biographer, "may be held out, in particular, as a fine example to thoſe of his own profeſſion. As the Diſſenters had the honour of producing Dr. Lardner, he will naturally be the object of emulation to the diſſenting clergy. They will ſo far look up to him as their pattern, as to endeavour to qualify themſelves for appearing, when occaſions call for it, in the great departments of literature, and eſpecially in the cauſe of religious truth and liberty, and in defence of the ſacred writings."

The piety of Dr. Lardner was ſincere and ardent; it was the governing principle of all his actions, and founded on juſt and enlarged views concerning the nature of religion. The love of truth appears manifeſtly in all his works; and no one ever ſeems to have preſerved a greater impartiality in his enquiries, or to have been more free from any undue bias. He followed truth wherever it led him; and for the attainment of it he was admirably qualified, both by the turn of his diſpoſition and his underſtanding. The candour and moderation with which he maintained his own ſentiments, conſtituted a prominent feature of his character. Benevolence, as well as piety, entered deeply into Dr. Lardner's character: he was ready to promote every good work; and to perſons in diſtreſs he was ever willing to contribute, to the higheſt degree which his fortune would admit. His manners were polite, gentle, and obliging; and he was attentive in every reſpect to the laws of decorum.

We may obſerve, that to Dr. Lardner's great works we are unqueſtionably indebted for Dr. Paley's "View of the Evidences of Chriſtianity;" nor is it too much to ſay that if the former had not been publiſhed, the latter, probably, would never have appeared; and juſtice requires us to add, that ſufficient acknowledgments were not made for the aſſiſtance which was derived from the labours of the excellent Lardner. It muſt, however, be admitted, that the deficiencies of the aimable Paley have been ſupplied by his biographer Mr. Meadley; who, in ſpeaking of his "View of the Evidences of Chriſtianity," which appeared in 1794, in three volumes, 12mo. but which have in all ſubſequent editions been printed in two volumes, 8vo. Mr. Meadley ſays, "the direct hiſtorical teſtimony for the authenticity of the Chriſtian revelation, already adduced by the indefatigable Lardner, is admirably ſelected and arranged in this important work: and the general argument drawn up with great clearneſs and felicity. The moſt ſtriking of thoſe collateral proofs of the credibility of the goſpel hiſtory, produced by the ſame writer, are alſo here again preſented, in a novel and impreſſive manner, and eſtabliſhed by auxiliaries of a different kind." Of Dr. Paley's works, and of his motives in the publication, too high encomiums cannot be paid, and it is to be regretted that in his preface he had not acknowledged his obligations to our author. Paley's View is capital as an abridgment of Lardner, Douglas, &c. and his work has been twice, at leaſt, abridged or analyſed: one of theſe abridgments was publiſhed at Cambridge in 1795, and another in London in 1810. Lardner's Works, and Life by Kippis; Meadley's Life of Dr. Paley; and private information.

LARE, in *Geography*, a town of the principality of Georgia, in the province of Carduel; 80 miles S. of Teflis.

Lare *Point*, a cape on the E. coaſt of Madagaſcar. S. lat. 16° 40'.

LAREDO, a ſea-port town of Spain, in the province of Biſcay, with a good harbour, in a gulf of the ſame name; 20 miles E. of Santander. N. lat. 43 25'. W. long. 3 21'.

LAREK, or Laredsji, a ſmall iſland in the Perſian gulf; the ſoil of which is bad and the water brackiſh. The Perſians have prevented the attempts of the Dutch for ſettling a factory in this iſland; 12 miles S.S.E. of Gambron. N. lat. 26° 50′. E. long. 56° 38′.

LARENDEBA, a town of Aſiatic Turkey, in Caramania; 40 miles S.S.E. of Cogni.

LARENSIS, in *Ancient Geography*, an epiſcopal ſee of Africa, in the Proconſular province.

LARENTINALIA, in *Antiquity*, a feaſt held among the Romans on the 23d day of December, but ordered to be obſerved twice a year by Auguſtus; by ſome ſuppoſed to have been in honour of the Lares, but by others, with more probability, in honour of Acca Laurentia; and to have been the ſame with Laurentalia.

LA REOLA, in *Geography*. See *La* Reola.

LARES, among the *Ancients*, derived by Apuleius, De Deo Socratis, p. 689, from *lar*, *familiaris*; a kind of domeſtic genii, or divinities, worſhipped in houſes, and eſteemed the guardians and protectors of families; ſuppoſed to reſide more immediately in the chimney corner.

The Lares were diſtinguiſhed from the Penates, as the former were ſuppoſed to preſide over houſe-keeping, the ſervants in families, and domeſtic affairs; and the latter were the protectors of the maſters of families, their wives and children: accordingly, the Lares were dreſſed in ſhort ſuccinct habits, to ſhew their readineſs to ſerve, and they held a ſort of cornucopia in their hands, as a ſignal of hoſpitality and good houſe-keeping. According to Ovid there were generally two of them, who were ſometimes repreſented with a dog at their feet. Faſt. 5. v. 146.

Plutarch diſtinguiſhes good and evil Lares, as he had before done good and evil Genii.

There were alſo ſome public, others private Lares.

Apuleius tells us the domeſtic Lares were no more than the ſouls of departed perſons, who had lived well, and diſchargrd the duties of their ſtation; whereas, thoſe who had done otherwiſe, were vagabonds, wandering about, and frightening people, called *Larvæ* and *Lemures*; which ſee.

The Lares were alſo called *Penates*, and were worſhipped under the figures of little marmouſets, or images of wax, ſilver, or earthen-ware.

The public Lares were alſo called *Compitales*, from *compitum*, a croſs-way; and *Viales*, from *via*, a way, or public road; as being placed at the meetings of roads, and in the highways, and eſteemed the patrons and protectors of travellers.

Their private Lares took care of particular houſes and families: theſe they alſo called *Præſtites*, from *præſto*?

> “ Quod præſtant oculis omnia tuta ſuis.” Ovid. Faſt.

They gave the name *Urbani*, *i. e.* Lares of cities, to thoſe who had cities under their care; and *Hoſtilii*, to thoſe who were to keep their enemies off. There were alſo Lares of the country, called *Rurales*, as appears by ſeveral antique inſcriptions.

The Lares were alſo genial gods, and were ſuppoſed to take care of children from their birth. It was for this reaſon that when Macrobius tells us the Egyptians had four gods who preſided over the birth of children, *viz.* the Genius, Fortune, Love, and Neceſſity, called *Præſtites*, ſome interpret him as if he had ſaid, the Egyptians had Lares; but they have mentioned that there was a great difference between the Lares of the Romans, and the Præſtites of the Egyptians. However, the learned Mr. Bryant affirms that they were the ſame.

The ancients differ extremely about the origin of the Lares. Varro and Macrobius ſay, that they were the children of Mania: Ovid makes them the iſſue of Mercury, and the naiad Lara, whom Lactantius and Auſonius call *Larunda*; Apuleius aſſures us they were the poſterity of the Lemures; Nigridius, according to Arnobius, made them ſometimes the guardians and protectors of houſes, and ſometimes the ſame with the Curetes of Samothracia, which the Greeks call *Idæi dactyli*. Nor was Varro more conſiſtent in his opinion of theſe gods; ſometimes making them the names of heroes, and ſometimes gods of the air.

T. Tatius, king of the Sabines, was the firſt who built a temple to the Lares. The chimney and fire-place in the houſe were particularly conſecrated to them.

Tertullian tells us the cuſtom of worſhipping the Lares aroſe from this, that they anciently interred their dead in their houſes; whence the credulous people took occaſion to imagine their ſouls continued there alſo, and proceeded to pay them divine honours. To this it may be added, that the cuſtom being afterwards introduced of burying in the highways, they might hence take occaſion to regard them as gods of the highways.

The victim offered to the Lares, in the public ſacrifices, was a hog: in private, they offered them wine, incenſe, a crown of wool, and a little of what was left at the table. They alſo crowned them with flowers, particularly the violet, myrtle, and roſemary. Their ſymbol was a dog, which was uſually repreſented by their ſide, on account of its fidelity, and the ſervice it does to man, in watching his houſe. They were ſometimes alſo repreſented as clothed in a dog's ſkin.

See farther on the Lares, in Arnobius, Lactantius, Auguſtine de Civit. Natalis Comes, Lambin. on Plaut. Aulul. and on Hor. Caſaubon on Sueton. &c.

The term Lares, according to Mr. Bryant, was formed from *laren*, an ancient word by which the ark was repreſented; and he ſuppoſes that the Lares and Manes were the ſame domeſtic deities under different names; and that by theſe terms the Etrurians and Latins denoted the *dii arkitæ*, who were no other than the arkite anceſtors, or the perſons preſerved in the *laren* or ark; the genius of which was Iſis, the reputed parent of the world. He obſerves farther, that they are deſcribed as dæmons and genii, who once lived on earth, and were gifted with immortality. Arnobius, lib. iii. p. 124. ſtyles them *Lares quoſdam genios & functorum animas*; and he ſays, that according to Varro de Ling. Latin. lib. viii. p. 113, they were the children of Mania. Huetius Demonſt. Prop. 4. p. 139. adds, that Mania had alſo the name of Larunda; and ſhe is ſtyled the mother of the dæmons. By ſome ſhe is called Lara, and was ſuppoſed to preſide over families; and children were offered at her altar in order to procure her favour. Macrob. Sat. lib. i. c. 7. p. 154. In lieu of theſe they in aftertimes offered the heads of poppies, and pods of garlick. Anal. of Ancient Mythol. vol. ii. p. 449, &c.

The pantheons. or images repreſenting ſeveral gods at once, were alſo called Lares. Harpocrates was one of theſe.

Lares, or *Laris*, in *Ancient Geography*, a town of Africa Propria, according to Ptolemy, who places it in the territory of Cirtha.

LARG, in *Geography*, a ſmall iſland near the W. coaſt of Sumatra. S. lat. 3° 30′. E. long. 100° 3′.

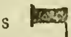
Larg *Fell*, a mountain of Scotland, in the county of Kircudbright; 13 miles W. of New Galloway.

Larg *Kirk*, a town of Scotland, in the county of Sutherland; 18 miles N.W. of Dornock.

LARGA, a ſmall iſland in the Spaniſh Main, near the coaſt of South America. N. lat. 10° 1′. W. long. 76° 6′.

LARGE, a *Sea Term*, applied to the wind, when it croſſes the line of a ſhip's courſe in a favourable direction, particularly on the beam or quarter. Thus, if a ſhip ſteer weſt, then the wind in any point of the compaſs to the eaſtward of the ſouth or north, may be called *large*, unleſs when it is directly eaſt, and then it is ſaid to be right aſt. *Sailing large*, is, therefore, advancing with a large wind, ſo as that the ſheets are ſlackened and flowing, and the bowlines entirely diſuſed. This phraſe is generally oppoſed to ſailing cloſe-hauled.

Large, in the *Manege*. A horſe is ſaid to go large, or wide, when he gains or takes in more ground in going wider from the centre of the volt, and deſcribing a greater circumference. To make a horſe go large, you muſt give him the aid of your inner heel. See Enlarge.

Large, ſynonymous with *maxima*, the longeſt note in the firſt time table, equal to two *longs*, four *breves*, and eight *ſemibreves*. Its form is an oblong ſquare, with a tail on the right ſide, thus . See Character.

Large *River*, in *Geography*, a river of Louiſiana, which runs into the Miſſiſippi, N. lat. 38° 25′. W. long. 95° 7′.

L'ARGENTIERE, a town of France, in the department of the Higher Alps, and chief place of a canton, in the diſtrict of Briançon. The place contains 978, and the canton 5871 inhabitants, on a territory of 462½ kiliometres, in 7 communes.

L'Argentiere, a town of France, and chief place of a diſtrict, and ſeat of a tribunal, in the department of the Ardèche; 18 miles W. of Privas. The place contains 1906, and the canton 9543 inhabitants, on a territory of 177½ kiliometres, in 14 communes. N. lat. 44° 32′. E. long 4° 42′.

LARGHETTO, *Ital.* the diminutive of *largo*.

LARGO, in the *Italian Muſic*, a ſlow movement, one degree quicker than adagio, and two than grave. See Time.

Rouſſeau makes largo ſlow in the firſt degree; but we think erroneouſly. *Adagio* is the ſloweſt time in Corelli, and all the old maſters; grave the ſecond; and largo the third. In adagios and largos, the time is uſually counted by quavers, and in grave by crotchets.

Largo *Gulf*, in *Geography*, a bay on the coaſt of Iſtria, near Pirano.

LARI, a town of Etruria; 10 miles E. of Leghorn.

LARIBUS Colonia, in *Ancient Geography*, *Larbuſs*, a Roman colony in Africa, ſituated on an eminence, five leagues N E. from Sicca.

LARICAXAS, a province of South America, in the government of Buenos Ayres, about 240 miles from E. to W., and 75 from N. to S. Its climate varies in different parts, and its products are the ſame with thoſe of Carabaya, which terminates it northward. It abounds in gold mines, the metal being 23 carats and 3 grains fine. The celebrated mountain of Sunchuli in this province, about half a century ago, yielded gold in great quantity of this ſtandard, but its mine was overflowed, and no labour could recover it.

LARICE, in *Ancient Geography*, the name given by Ptolemy to the province of India, now called Guzerat.

LARIGOT, *Fr.* an acute ſtop in the organs of France, a 3d above the major 17th, and an octave above the 12th in our organs, which would be a 19th above the diapaſon.

LARIK, in *Geography*, a town of Aſiatic Turkey, in the government of Sivas; eight miles N.N.E. of Amaſieh.

LARINO, a town of Naples, in the Moliſe; the ſee of a biſhop, ſuffragan of Benevento; 25 miles N.E. of Moliſe. N. lat. 41° 47′. E. long. 14° 50′.

LARINUM, in *Ancient Geography*, *Larino*, a town of Italy, in Samnium, towards the ſouth; it had the title of municipal.

LARIO, in *Geography*, a department of Italy, occupying the whole of the W. coaſt of the lake of Coſmo, anciently "Larius lacus." Its population amounts to 137,264 perſons, who elect 12 deputies. The capital is Como.

LARIOZO, a town of the iſland of Cuba; 48 miles E. of Spirito Santo.

LARISSA, in *Ancient Geography*, a town of Theſſaly, upon the right bank of the Peneus, 10 miles above Atrax, E. of the mouth of the Apidanos or the Peneus, 44 miles from Demetrias, and 24 from Dium. Acriſius, king of Argos, retired to this town, in order to avoid the death which the oracle had menaced; but taking a part in the games which were celebrated in this place, he was killed by a ſtroke of the diſcus of Perſeus. Lariſſa always maintained a diſtinguiſhed rank among the towns of Theſſaly; but it declined from the time of Lucan. However, it ſtill ſubſiſts under the ſame name in European Turkey, near the celebrated mount Olympus, and is inhabited by Chriſtians, Turks, and Jews; the former having an archbiſhop and ſeveral churches; and the Turks having ſeveral moſques. The number of inhabitants is eſtimated at about 25,000. Its ſituation, on an eminence, is pleaſant. By the Turks it is called *Geniſahar* or *Jengiſchahir*. N. lat. 39° 45′. E. long. 22° 29′.—Alſo, a town of Æolia, in Aſia Minor, ſituated E. of Phocæa and S.E. of Cyme, forming with theſe two towns the vertex of a triangle. Xenophon calls it the Egyptian Lariſſa, becauſe it was one of the towns which Cyrus, the firſt king of Perſia, gave to the Egyptians.—Alſo, a town of Aſia, on the banks of the Tigris. Xenophon ſays, that it had been large, but deſerted, and that it had anciently been under the dominion of the Medes.—Alſo, a town of Triphylia, in the northern part, upon the river Lariſſus, near the frontiers of Arcadia.—Alſo, a town of Crete, according to Strabo.—Alſo, a town ſurnamed *Cremaſté*, according to Strabo; who ſays, that it was called Pelaſgia, though ſituated out of the Pelaſgian territory. Livy places it on the ſea-coaſt, between Echinus and Antron. Euſtathius and Porphyrogenitus ſay, that it had been anciently called Argos.—Alſo, a town of Italy, in Campania; ſaid to be built by the Pelaſgians, but deſerted and ruined in the time of Dionyſius Halicarnaſſus.

LARISTAN, a ſmall province of Perſia, formerly a kingdom conquered by Abbas the Great, in 1612; bounded on the N. and E. by Kerman, on the S. by the Perſian gulf, and on the W. by Farſiſtan or Fars, of which ſome have regarded it as a part. The ſubdiviſion ſeems not to have been known in ancient times, though the long ridge of mountains on the S. of Fars, and generally about 60 Britiſh miles from the Perſian gulf, naturally indicates a maritime province; which, if the ancient Perſians had been addicted to commerce, would have been the ſeat of great wealth by intercourſe with Arabia, Africa, and India. But the Perſians were high-ſpirited horſemen and warriors, totally averſe from maritime enterprize, either of war or trade, from a contempt of the Arabian fiſh-eaters on their coaſt, or more probably, from particular precepts of Zoroaſter, the founder of their faith, which rendered a maritime life incompatible with the practice of their religion. The air of this province is inſalubrious, and varies frequently from extreme heat to extreme cold; water fit for uſe is ſcarce; that which is drank being found, as it is ſaid, to breed worms in the legs and thighs of thoſe who uſe it. Camels are the principal articles of trade. The capital is *Lar*, which ſee.

LARIX, in *Botany*, an ancient Latin name, the Larch. See Pinus. The older botaniſts diſtinguiſhed *Larix* as a genus by its faſciculated leaves, but no difference is diſcoverable in the fructification, at leaſt between it and *Abies*, which all Linnæan botaniſts refer to *Pinus*. Juſſieu keeps the two latter diſtinct, and hints at ſeparating *Larix*.

LARK, in *Ornithology*. See Alauda.

Lark, *Sea*. See Charadrius *Hiaticula*.

Lark's *Point*, in *Geography*, a cape on the coaſt of Canada, on the river St. Laurence, at the mouth of the Saguenay river.

LARKENTING, a town of Thibet; 55 miles E.N.E. of Tchiatam.

LARKSPUR, in *Botany*. See Delphinium.

LARMIER, *Fr.* in *Architecture*, the ſame as *Corona*; which ſee.

LARNE, in *Geography*, a ſea-port and poſt-town of Ireland, in the county of Antrim. It is ſituated on the north-weſtern extremity of Larne Lough, and has a good yarn market once a month. There are great ſalt-works here, and its exports conſiſt of ſalt, lime, limeſtone, and ſome proviſions. It is 97 miles N. by E. from Dublin. N. lat. 54° 51′. W. long. 5° 44′.

Larne *Lough*, a bay on the eaſt coaſt of the county of Antrim, Ireland, called Oldfleet haven by Boate, and Wolderfrith in the enumeration of the havens by Stanihurſt. It is formed by the peninſula called Iſland Magee, and is ſaid by M'Kenzie to be a ſmall but ſafe harbour, where veſſels that draw not above ten feet water may ride on clean good-holding ground. It is about ſix miles long and one wide.

LARNIC, or Larnica, a ſea-port town on the coaſt of the iſland of Cyprus, the ſee of a Greek biſhop, and the reſidence of ſeveral European conſuls. The Turks have a moſque, and the Greeks have three churches. It is now a poor place, though the road-ſtead is good; 30 miles S.W. of Famagoſta.

LARNTUKA, or Laruntuka, a ſea-port town on the S. ſide of Ende, one of the Molucca iſlands, with a good harbour. S. lat. 8° 15′. E. long. 122° 57′.

LAROAH, a town of Hindooſtan, in Guzerat; 10 miles E. of Baroach.

LAROCHE, a town of France, in the department of the Sambre and Meuſe, and chief place of a canton, in the diſtrict of Marche. The place contains 1006, and the canton 6167 inhabitants, on a territory of 250 kiliometres, in 20 communes.

LAROS, a town of Turkiſh Armenia, on the coaſt of the Black ſea; 18 miles S.W. of Gonich.

LAROTAVA, a town of the iſland of Teneriffe.

LAROW, a town of Hindooſtan, in Bahar; 10 miles S. of Gayah.

LARRAGA, a town of Spain, in Navarre; 11 miles E. of Eſtella.

LARRASOANNO, a town of Spain, in Navarre; 12 miles N.E. of Pamplona.

LARREA, in *Botany*, named by Cavanilles, in honour of Don John Anthony Hernandez de Larrea, dean of Saragoſſa, a liberal encourager of chemiſtry, botany, and agriculture. The author had, in his fourth volume of *Icones*, p. 63, ſuppreſſed this name, given by his countryman Ortega to another genus, and had changed it to *Hoffmanſeggia*, being then, as it ſeems, not ſo ſenſible of the dean of Saragoſſa's botanical merits as he afterwards became.—Cavan. Ic. v. 6. 39.—Claſs and order, *Decandria Monogynia*. Nat. Ord. *Gruinales*, Linn. *Rutaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of five ovate, concave, rather unequal, deciduous leaves. *Cor.* Petals five, equal, ovate, with claws. *Stam.* Filaments ten, rather ſhorter than the corolla, awl-ſhaped, equal, each furniſhed at its baſe, on the inſide, with a cloven ſcale, applied cloſe to the germen; anthers heart-ſhaped, erect, ſimple. *Piſt.* Germen ſuperior, globoſe, with five deep furrows; ſtyle awl-ſhaped, with five angles, nearly equal to the ſtamens; ſtigma ſimple. *Peric.* Drupas five, dry, cohering by their acute inner margin, externally convex, of one cell. *Nuts* ſolitary, ovate-oblong.

Obſ. There are the rudiments of ſeveral ſeeds in the young fruit, though only one of them comes to perfection in each nut. The genus comes near *Zygophyllum* and *Fagonia*.

Eſſ. Ch. Calyx of five leaves. Petals five. Nectary of five cloven leaves, covering the germen. Drupas five, ſingle-ſeeded.

1. L. *nitida*. Shining-leaved Larrea.—Cavan. Ic. t. 559. Leaves pinnate. Fruit ſmooth.—Gathered at Buenos Ayres by Louis Née, flowering in April. It has been raiſed with good ſucceſs in the garden of Madrid, and we have ſpecimens from Cavanilles himſelf. The *ſtem* is ſhrubby, nine feet high in its native country, hard, knotty, very, much branched, the branches round, rather zig-zag, repeatedly ſubdivided, ſpreading, two-ranked, leafy, rough, viſcid. *Leaves* oppoſite, ſeſſile, twice as long as broad, about half an inch in length, ſhining, glutinous, ſmoothiſh, minutely dotted, each compoſed of about ſeven or eight pair of crowded, two-ranked, oblique, ſeſſile, oblong, obtuſe, entire leaflets, of which the two uppermoſt are unequal and very ſmall, looking as if there were an odd one at the end. *Stipulas* oppoſite, triangular, acute, reddiſh. *Flowers* axillary, ſolitary, alternate, deep yellow, on roughiſh ſtalks, ſhorter than the leaves. The *germen* is hairy, though the fruit is naked, or only clothed with fine ſhort down. Its outer coat is coriaceous and rugged. *Nuts* without valves or ſutures.—The whole plant exudes a copious glutinous reſin, of a ſtrong ſcent, ſtill very powerful in the dried ſpecimens, and intolerably ſo on their being moiſtened with proof ſpirit, which extracts from them abundance of a yellow fetid ſolution.

2. L. *divaricata*. Spreading-lobed Larrea.—Cavan. Ic. t. 560. f. 1.—Leaves ſimple, with two deep ſpreading lobes. Fruit hairy. Found with the former, flowering at the ſame ſeaſon. The *ſtem* is ſhrubby, ſix feet high, with much of the habit of the foregoing; but the *leaves* are ſimple, very deeply cloven into two ſpreading acute lobes. The *flowers* are yellow, larger than thoſe of *L. nitida*, with obtuſe petals; and the fruit is beſet externally with long prominent hairs.

3. L. *cuneifolia*. Wedge-leaved Larrea.—Cavan. Ic. t. 560. f. 2.—Leaves wedge-ſhaped, cloven at the end, with an intermediate briſtle.—This appears to differ in foliage only from the laſt, along with which it was found.

Theſe plants promiſe to be not unworthy of attention for their dyeing qualities. Cavanilles ſays, ten leaves of the *divaricata*, boiled in a quart of water, with the little branch on which they grew, tinged the whole liquid of a deep ſaffron colour.

LARREY, Isaac de, in *Biography*, born of a noble French family in 1638, was brought up to the profeſſion of the law. He acted ſome time as an advocate in his native

tive province, but having been educated in the reformed religion, he was obliged to quit his country at the repeal of the edict of Nantes. He went from France to Holland, and obtained the office of hiſtoriographer to the States-general. An invitation from the elector of Brandenburg induced him to remove to Berlin, where he died, in 1719, at the age of eighty-one. His principal works are "Hiſtoire d'Angleterre," 4 vols.: "Hiſtoire de Louis XIV." 3 vols. quarto; "Hiſtoire d'Auguſte;" "Hiſtoire des Sept Sages," 2 vols. 1713. Of theſe his Hiſtory of England is moſt eſteemed, and was in high reputation on the continent till that of Rapin was publiſhed. Larrey was a man of great integrity, zealous for his religion, and warm both in praiſe and cenſure, Moreri.

LARRISOUN, in *Geography*, a town of Perſia, in the province of Mazanderan; 65 miles S.W. of Fehrabad.

LARROQUE, MATTHEW DE, in *Biography*, an eminent French Proteſtant divine in the 17th century, was born at Leirac, a ſmall city of Guienne, near Agen, in the year 1619. He was educated with a view to the church, and applied himſelf, in early life, with great diligence to the ſtudy of the belles-lettres, philoſophy, and theology. Having made great progreſs in all the various branches of uſeful knowledge, he was admitted a miniſter with great applauſe in the province of Guienne. He was afterwards appointed, by the ducheſs de la Tremouille, miniſter of the church of Vitrè, in Brittany. Here he officiated nearly thirty years, during which time he applied himſelf moſt earneſtly to the ſtudy of the fathers, and Chriſtian antiquities. He was next invited to become both miniſter and profeſſor of divinity at Saumur: he readily accepted the former office, but declined the latter, not thinking it to be conſiſtent with the courſe of ſtudy in church-hiſtory, to which he had a prevalent inclination. Before he could take poſſeſſion of his office, he received a prohibition from the intendant of the province, forbidding him to enter upon its duties. He therefore continued at Vitrè, and employed his time very uſefully in compoſing works of merit. In a ſhort time he received three invitations at once, from three of the moſt conſiderable churches in the kingdom, *viz.* thoſe of Montauban, Bourdeaux, and Rouen. He made choice of the latter, at which place he died in 1684, at the age of ſixty-five. His works are numerous, and they acquired for the author a high reputation for real learning, as a theologian. He was a pious and faithful paſtor in the church; and in the world an honeſt man. Moreri.

LARRY-BUNDER, in *Geography*, a ſea-port of Hindooſtan, in the province of Sindy, on a branch of the Indus, called the Pitti, about 20 miles from the ſea. It has a good road for ſhipping, and the river is navigable for ſmall veſſels. The town contains about 100 houſes, and is defended by a fort; 48 miles W.S.W. of Tatta. N. lat. 24° 45'. E. long. 66° 42'.

LARRY-BUNDER is alſo the name of a branch of the *Indus*; which ſee.

LARS, a town of Ruſſia, in the government of Caucaſus; 56 miles S.E. of Ekaterinograd.

LARSMO, a ſmall iſland on the E. ſide of the gulf of Bothnia. N. lat. 63° 46'. E. long. 22° 39'.

LARVA, in *Natural Hiſtory*, a name given by Linnæus to inſects in that ſtate, called by other writers *eruca* or *caterpillar*. See ENTOMOLOGY and INSECTS.

LARVÆ, in *Antiquity*, derived from the Etruſcan word *lar* or *lars*, ſignifying *prince* or *lord*, denoted the ghoſts of the deceaſed, conſidered as wicked and miſchievous. Hence is formed the term *larvatus*, i. e. *larva indutus*, or *demoniac.* The ingenious Mr. Farmer urges the etymology and uſe of this term to prove, that the heathen demons were deified human ghoſts. The term *lar* was applied not only to their *domeſtic*, but alſo to their *celeſtial* gods, the dii majorum gentium, who were all natives of this lower world; and anſwers to the word δαιμων. Quos Græci δαιμονας, noſtri, opinor, lares. Cicer. in Timæo. 3. (See LARES.) The larvæ were conſidered as miſchievous ſpirits: and this author ſays, that the larvati were demoniacs; but the larvæ, with which they were poſſeſſed, were human ghoſts; ſuch alſo as demons were. Eſſ. on the Demoniacs, p. 27, &c.

The larvæ were alſo called *lemures*.

LARUCACHI, in *Geography*, a town of Peru, in the dioceſe of La Paz; 110 miles N. of Chucuito.

LARVIGEN, or LAURWIG, a ſea-port town of Norway, in the dioceſe of Chriſtiania, and capital of a county, deriving from it its name, ſituated at the conflux of two rivers near the ſea. Its trade is conſiderable, and its iron-works are the moſt valuable in Norway; 56 miles S.S.W. of Chriſtiania. N. lat. 59° 3'. E. long. 10° 15'.

LARUNS, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Oleron; 18 miles S. of Pau. The place contains 1607, and the canton 3855 inhabitants, on a territory of 445 kiliometres, in 8 communes.

LARUS, in *Ornithology*, a genus of the order Anſeres. In this tribe the bill is ſtraight, acute at the edges, hooked at the tip, and deſtitute of teeth; the lower mandible gibbous below the point; noſtrils linear, broader on the fore part, and placed in the middle of the bill. Theſe are the gulls of Engliſh writers, a race of birds very widely diffuſed throughout the globe, ſome of the ſpecies inhabiting Aſia, Africa, and Europe, others Europe, Aſia, and America, but the far greater number of ſpecies are natives only of the northern regions of America and Europe, as Hudſon's bay, Iceland, Greenland, and the north of the European continent, beyond which, towards the ſouthward, their number materially diminiſhes. Many of the ſpecies found in northern latitudes inhabit the Britiſh iſles, reſiding on our ſhores the whole year; others are extremely rare with us, or at leaſt can be conſidered only as accidental viſitors driven from more northern countries in ſevere winters. The haunts of the gull tribe are the borders of the ſea, and marſhes immediately in its vicinity, or in the depth of winter they ſometimes retire inland, but only into ſuch parts as are abundantly ſupplied with water, their food conſiſting principally of fiſh and worms. The gulls have a light body, the wings long; tongue rather cloven; legs ſhort, naked above the knees, and the hind toe very ſmall. They are very voracious, and when terrified are ſaid to caſt up the indigeſted food they have lately ſwallowed. The ſpecies of this genus are not very clearly diſcriminated, owing to the variations that prevail in the colours of the plumage in different ſtates of growth, till the birds have attained their third year. This genus is divided into two ſections, in the firſt of which the noſtrils are without a cere, and in the other are covered by one.

Species.

* *Noſtrils without a Cere.*

ICTHYÆTUS. Snowy; head entirely, and neck to the middle, deep black; eyelids white. Pallas. *Larus albus*, &c. Oedm. *Die groſſe Lachmoeve*, Gmel. *Great black-headed gull.*

A native of the borders of the Caſpian ſea. The ſize that of the bernacle gooſe, or larger. The bill is ſcarlet, with yellow baſe, the tip yellow with a brown ſpot; the inſide of the mouth red; tail white, even at the end; and reddiſh brown. This ſpecies lays its eggs on the bare ſands; the eggs are of an elongated oval form, marked with brown ſpots intermingled with others paler. When in flight it utters a hoarſe cry like that of a raven.

Rissa. Whitiſh; back hoary; quill-feathers white; poſterior toe unarmed. *Larus riſſa*, Linn. Gmel, &c. *Larus tridactylus*, Lath. *Kittiwake* Penn. Donov. Br. Birds, &c.

Length fourteen inches; the bill yellowiſh; mouth ſaffron within; head, neck, belly, and tail ſnowy; wings hoary, the outer edge of the firſt and tips of the four or five feathers next ſucceeding white; legs duſky; poſterior toe reſembling a wart. It varies in ſometimes having behind the ear a duſky ſpot.

This kind of gull inhabits the cliffs on the north coaſts of Wales and Scotland, from whence it extends as far as Greenland, Spitzbergen, and Iceland, the arctic coaſt of Aſia, and Kamtſchatka The Icelanders call it Ritſa. Fabricius, in his Faun. Groen. deſcribes this as the adult ſtate of the Tarrock, an affirmation contradicted by ſome authors and admitted by others, while again ſome few are of opinion they may be the two ſexes of the ſame ſpecies.

Tridactylus. Whitiſh, back hoary; tips of the tail-feathers, except the outer one, black; feet three-toed. Linn.

Larus tridactylus β, Lath. *Kuutge-gef*, Klein. *Tarrock*, Will. Donov. Br. Birds, &c.

Frequents the ſame rocky coaſts of the ſea as the former. The eggs, two in number, are greeniſh-aſh, ſpotted with brown; they are noiſy, ſwim well, and remain on the wing for a conſiderable time. The fleſh and eggs are eſteemed by the natives of Greenland, and their ſkins uſed as garments. Length fourteen inches; bill and legs duſky; head, neck, and body beneath white; wings varied black and white; tail black at the tip.

In the Bankſian collection is a ſuppoſed variety of this ſpecies exceeding the common tarrock in ſize, being five inches longer; in this the wings are marked by an oblique black band, and the chin white; the outer tail-feathers entirely white. This inhabits Kamtſchatka.

Minutus. Snowy; head, and beginning of the neck black; back and wings ruſſet; bill brown-red; legs ſcarlet. Pallas. Gmel. *La plus petite des mouettes*, Vieill. *Little gull*, Lath.

Size of a thruſh; irides blueiſh; tail equal and white; inhabits near rivers in Siberia and Ruſſia.

Eburneus. Entirely white; bill and legs lead colour. Gmel. Phipps, &c. *Larus niveus*, Act. Holm. *Larus candidus*, Fabr. Fn. Gr. *La mouette blanche*, Buff. *Rathſher*, or *Ratzher*, Ray. *Ivory gull*, Arct. Zool.

The length of the ſpecies is ſixteen inches, the breadth thirty-ſeven; the bill paler at the tip; wings much longer than the tail; legs lead colour, the claws black. This bird inhabits the Frozen ſea between Aſia and America. From its ſtately gait when walking on the ice, and the ſtrength of its voice, it is ſaid to have obtained the name of *Ratzher*, or Senator. The fleſh of the morſe conſtitutes its favourite food; beſides which it ſubſiſts on worms and fiſhes. During the ſummer, it viſits the little iſles and lakes in the interior, where it forms a neſt compoſed of dried herbage, and lays four eggs of a white colour. The young are ſpotted with black principally on the back and wings, and the beak is of the ſame colour.

Canus. White; back hoary; primary quill-feathers black at the ends, the fourth and fifth with a black ſpot at the tip, the outer one black without. Lath.—*Larus Canus*, White, back hoary. Linn. Fn. Suec. *Larus cinereus minor*. *Common ſea-mew or mall*, Ray. *White web-footed gull*, Albin. *Common gull*, Arct. Zool. Donov. Brit. Birds, &c.

Common on the coaſt of Britain, and in various parts of Europe and America. The length ſeventeen inches; bill yellow; legs greeniſh-white, or ſometimes reddiſh. It forms a neſt chiefly of ſea-weeds; the eggs are large, deep olive, and marked with dark irregular blotches. (Vide Brit. Birds.) This kind of gull extends as far north as Iceland and the Ruſſian lakes, and occurs alſo on the borders of the Caſpian ſea, the various ſhores of the Mediterranean, and thoſe of Greece. Its breeding places are the hollows in rocks and cliffs near the ſea.

Hybernus. Cinereous; beneath ſnowy; head white, varied with fuſcous ſpots; neck above fuſcous; wings varied; tail-feathers white, with a black band.—*Larus Hybernus*, Gmel. *Larus canus β*, Lath. *Gavia hyberna*, Briſſ. *Larus maculatus*, Brunn. *Mouette d'hyver*, Buff. *Guaca-guacu*, Ray. *Winter mew, coddy moddy*, Wil. Donov. Brit. Birds. *Winter gull*, Lath. Synop.

Feeds on reptiles and ſmall fiſhes. This kind is very common in England, and is obſerved to inhabit further inland than any other of the gull tribe. In Ind. Orn. of Latham it is deſcribed as the young of the foregoing ſpecies. Length ſeventeen inches.

Rudibundus. White; head blackiſh; bill and legs red. Œd. Nov. Act. Stockh. *Larus rudibundus*, Linn. *Larus albus erythrocephalus*, Klein. *Brown-headed gull*, Albin. Donov. Brit. Birds, &c.

Length fourteen to fifteen inches; the eye-lids the ſame colour as the bill and legs; firſt ten quill-feathers white, with the edge and tip black. Inhabits Europe and America, and makes a laughing kind of noiſe. The eggs, three in number, are greeniſh-brown, ſpotted with tawny. Gmelin admits two varieties of this ſpecies: one of a white colour, with hoary back, and the head and bill blackiſh, as deſcribed by Nozena; the other is white, with blue legs, the bill at the baſe blue, at the tip yellow. Latham in Ind. Orn. conſiders as varieties of rudibundus the Linnæan larus cinerarius, and alſo larus erythropus of Gmel., both which are placed as diſtinct ſpecies in the preceding publication. Gen. Syn.

Marinus. White; back black. Linn. It. Wgoth. *Larus dorſo nigro, pedibus rubris*, Œd. *Goeland noir*, Buff. *Great black and white gull*, Ray. *Black-backed gull*, Arct. Zool. Donov. Brit. Birds, &c.

Native of the maritime parts of Europe and America, the Cape of Good Hope, New Holland, &c. The length twenty-nine inches; the bill yellow, with a red ſpot near the tip, and in the middle black; quill-feathers black, with the tips white, and the legs fleſh-colour. Feeds on fiſh and young birds.

Nævius. White; back cinereous; tail-feathers at the tip black. Gmel. *Wagellus cornubienſium*, Ray. *Wagel gull*, Will., &c. Donov. Brit. Birds, &c.

This ſpecies inhabits the ſhores of European ſeas. Its length is about two feet; the bill black; legs dirty fleſh-colour. This is by ſome eſteemed the female of the foregoing (*marinus*), and by others as either a variety rather than a diſtinct bird, or as the younger bird. The bird deſcribed by Brunnich under the name of larus argentatus, the ſilvery gull of Latham, is likewiſe conſidered as a variety of L. marinus.

Fuscus. White; back brown. Linn. Fn. Suec. *Larus*

rus griſeus, Briſſ. *Larus cinereus maximus*, Marſd. *Goèland à manteau gris-brun*, Buff. *Herring gull*, Will. Donov. Brit. Birds, &c.

Inhabits Europe, America, and Aſia. The length twenty-three inches; bill and legs in the adult bird yellow; eyes ſtraw colour. The birds feed on the herring, the ſhoals of which it purſues, and thus directs the fiſhermen to the capture of that fiſh. The eggs, three in number, are whitiſh, ſpotted with black.

Glaucus. White; back and wings hoary; quill-feathers tipped with white; bill yellow, at the angle ſaffron. Œd. *Larus albus*, Olaff. *Goeland cendré*, Buff. *Burgermeiſter*, Martens. *Glaucous gull*, Arct. Zool.

Inhabits Sweden; is larger than the herring gull, very voracious, and feeds on ſmaller birds, fiſh, and carrion.

Atricilla. Whitiſh; head blackiſh; bill red; legs black. Œd. *Gavia rudibunda*, Briſſ. *Larus albus*, Scop. *Larus minor*, *&c.* Klein. *Baltner's great aſh-coloured ſea-mew*, Will.

Length eighteen inches. Flies in flocks, with a continual clamour; builds in pine trees, and inhabits America and Europe.

Atricilloides. Reddiſh-white; head, orbits, and neck black; back and wings cinereous; legs ſcarlet. Falck. Gmel. *Siberian gull.*

Smaller than the former. This inhabits the ſalt marſhes of Siberia.

** *Noſtrils covered with a Cere.*

Parasiticus. Two middle tail-feathers very long. Linn. *Sterna*, *&c.* It. Wgoth. *Catarracta paraſitica*, Brünn. *Stercorarius, et ſtercorarius longicaudatus*, Briſſ. *Avis Norwegica kyuffa*, Ol. *Labbe à longue queue*, Buff. *Arctic bird*, Edwards. *Arctic gull*, Donov. Brit. Birds, &c.

Length twenty-one inches; the bill and legs duſky; body above duſky, beneath, with the temples, and front white; breaſt with a duſky band; female brown beneath. Very rare in Britain. The ſpecies is found in the north of Europe, and alſo in Aſia and America. It is of a rapacious diſpoſition, and will purſue the leſſer gulls in the air till they mute, when, inſtantaneouſly darting down, it dexterouſly catches the excrement before it reaches the water, and devours it. The eggs are cinereous, ſpotted with black.

Crepidatus. Duſky-white and brown, varied; two middle tail-feathers longer; anterior half of the feet black. Donov. Br. Birds. *Larus crepidatus*, Gmel. Hawkeſw. *Catarracta cepphus*, Brünn. *Stercorarius ſtriatus*, Briſſ. *Black-toed gull*, Arct. Zool. &c.

This, like the former, is very ſcarce in Britain; its length is ſixteen inches; the bill black, with the tip orange; breaſt and belly whitiſh, with numerous darkiſh lines. The two middle tail-feathers longer than the reſt; and the anterior half of the feet black; the poſterior, with the legs, paler and yellowiſh, or, as it ſometimes appears, blueiſh.

The deſcription of the black-toed gull in Dr. Latham's Synopſis, is an extract from Pennant's Britiſh Zoology, beſides which Dr. Latham mentions another bird of the ſame kind in the late Leverian muſeum, which had the lighter half of the feet, with the legs, yellow inſtead of blue. In the deſcription of this latter bird Dr. Latham obſerves, however, that "the two middle tail feathers are not particularly longer than the others;" and again in Ind. Orn., this author heſitates apparently from this circumſtance, in addition to the yellow colour of the legs, whether it ſhould be admitted as a variety of larus crepidatus, or be eſteemed a diſtinct ſpecies. It becomes therefore deſirable to add that the deſcription afforded us by Dr. Latham is not, in this reſpect, entirely free from error; that able ornithologiſt was, in ſome manner, deceived, perhaps from the ſituation of the bird itſelf, which might preclude the poſſibility of an attentive inſpection. Be this as it may, the Leverian ſpecimen recorded by Dr. Latham, and alſo another from the ſame collection, are both in the muſeum of the writer of this article; in one of theſe (which we conceive to be the male) the two middle tail feathers are nearly as conſpicuouſly longer than the reſt, as in the Arctic gull projecting beyond them ſcarcely leſs than two inches; and in the other, which we apprehend muſt be the female, they are advanced above an inch beyond the reſt; in other particulars they accord pretty generally with Dr. Latham's deſcription, and, as that writer obſerves, the lighter parts of the feet, with the legs, are yellow. We have beſides this another example of this bird, a ſpecimen recorded as being ſhot near Oxford, in which the legs are black and yellow, as in the former, from whence we may conclude thoſe to be the true colours, except perhaps in certain varieties.

Cataractes. Greyiſh; quill and tail-feathers white at the baſe; tail ſub-equal. Gmel. *Catharacta ſkua*, Brünn. *Larus fuſcus*, Briſſ. *Catarractes*, Geſn. *Skua hoyeri*, Cluſ. *Goèland-brun*, Buff. *Corniſh gannet*, Ray. *Brown gull*, Albin. *Skua gull*, Donov. Brit. Birds, &c.

Length two feet; the bill duſky, and much hooked; upper mandible covered half way down with a black cere; body brown; beneath ruſty-cinereous; legs blackiſh, rough, and warty; claws hooked and black; poſterior toe ſhort, and armed with a ſharp hooked claw. This voracious bird inhabits Europe, Aſia, and America, and is remarkable for its voracity and ferocious diſpoſition, eſpecially in the breeding ſeaſon. It feeds on fiſh, and all the ſmaller kinds of water-birds, and is the terror of the leſſer birds of its own tribe, which it haunts on the wing, till they mute or vomit up what they have eaten, and then devours it.

Keeask. Brown; wing-coverts variegated with white; tail black, ſpotted and tipped with white. Lath. Ind. Orn. *Eſquimaux gull*, Arct. Zool. &c.

Inhabits America, as far as Hudſon's bay; the length is twenty-two inches; the bill and legs black; toes and membrane half black, half white. It arrives at America in April, conſtructs a ſlight neſt of graſs, and lays two pale ferruginous eggs ſpotted with black.

LARYNGEAL, in *Anatomy*, an epithet applied to parts belonging to the larynx. The laryngeal arteries are the veſſels more commonly deſcribed under the name of thyroid arteries. The laryngeal nerves, ſuperior and inferior, are branches of the par vagum. See Nerve.

LARYNGOTOMY, (from λαρυγξ, *the upper part of the windpipe*, and τεμνω, *to cut*,) an operation in *Surgery*, which conſiſts in making an artificial opening into the larynx with a knife, a meaſure ſometimes neceſſary in certain caſes of diſeaſe to prevent ſuffocation, as well as to enable the practitioner to inflate the lungs in inſtances of ſuſpended animation. The inciſion is now generally made in the windpipe itſelf, and the operation called tracheotomy. See Tracheotomy.

LARYNX, in *Anatomy*, a hollow organ, placed between the root of the tongue and the trachea, giving paſſage to the air into and out of the lungs in reſpiration, and producing the voice.

The organs of locomotion, whether thoſe of the limbs or of the trunk, are the principal means by which man re-acts on thoſe external objects which have acted on him through the medium of the ſenſes. They are particularly deſtined, in the natural ſtate, to provide for the wants of digeſtion, of which they collect the materials. They alſo furniſh the animal with the means of offence and defence, of which digeſtion is in general the immediate object. But ſocial man has vaſtly extended the domain of this function. Submitted, through the cerebral nerves, to the direction of intellect, it is the inſtrument by which moſt of the conceptions of the latter are executed: and if the vaſt field of activity opened to our view in the arts ſhews the extenſive agency of this power, it proves no leſs clearly how greatly the ſphere of action of the locomotive organs has been increaſed. Man in ſociety not only derives from his voluntary muſcles, by acquiring extreme preciſion in their motions, much greater advantages than thoſe to which the limited operation of inſtinct confines animals, but he has alſo given to them another direction—they ſerve him as a ſilent language, and a mode of intellectual communication. The head, the arms, the eyes indicate to us what the voice does not diſcloſe; but geſtures are in general only ſupplementary to the latter function.

Speech is the chief means of our intellectual communications: and here we have occaſion to obſerve how vaſtly the functions of the larynx are extended by man in ſociety. This extenſion is ſtill greater than that which the locomotive agents offer to our view in the arts where induſtry has been puſhed the fartheſt. Originally nature beſtowed on man merely a voice, the chief object of which was to eſtabliſh thoſe relations which bring together the ſexes. Hence the cloſe connection between the voice and the generative organs: it has, like them, a true period of puberty, whether in animals in whom it does not exiſt at all until that epocha, or in thoſe, where, exiſting antecedently, it undergoes at this time a remarkable change. Remove theſe organs, and a new and peculiar modification of the voice ſoon ſhews itſelf. Each ſex has a voice diſtinguiſhed by particular characters: energy and force belong to that of the male; flexibility, delicacy, and grace to that of the female. Moſt animals employ their voice chiefly at the rutting ſeaſon; many are dumb at all other times. We cannot therefore avoid the concluſion, that, in the natural ſtate, the communications of the two ſexes relating to generation are the particular object of the production of ſound. Man in ſociety has deſtroyed this original deſtination, and at the ſame time created another, of which the extent is bounded only by the limits of his intelligence. The mere voice, which ſufficiently enables the individuals of both ſexes to expreſs the mutual wants connected with the generative functions, is inadequate to the conveyance of thoſe which have ariſen out of the ſtate of ſociety. It has therefore been modified; ſpeech is the reſult of that modification; and thenceforth the larynx has performed a part in ſociety not leſs important than that of the locomotive organs. Theſe two modes of communication, which man enjoys, are almoſt equally employed, and produce, each in its way, nearly equal effects. If one be the organic inſtrument of all the arts, and of all the affections which the mind experiences in the ſocial ſtate through the eyes, the other is the agent of all that belongs to the domain of intelligence, of all that the mind perceives through the ears. Compare the vaſt ſtock of ideas, which are tranſmitted from man to man, with the material objects employed in their reciprocal commerce, and you will find the amount of each nearly the ſame. Yet, although the ſum of the locomotive agents forms more than half of the entire volume of the body, the vocal inſtrument takes up a little room in a ſmall part of the ſame body. The great diſproportion between the organs of the voice and the important effects which they produce in ſociety, is very ſtriking.

The voice, from its deſtination, would naturally fall under the immediate empire of the brain. Hence the ſtructure of the larynx has much analogy to that of the locomotive apparatus. It is compoſed of cartilaginous pieces, moved in various directions by voluntary muſcles, on the motions of which the habits of ſociety have conferred a preciſion foreign to the natural ſtate, as it has on thoſe of the fingers in certain arts, and on thoſe of the lower limbs in others. Thus the voice is to ſpeech, in relation to the muſcles of the larynx, what the rude movements of the fingers of the ſavage are to the preciſe and delicate motions of the man who has employed himſelf on a mechanical art, in relation to the muſcles of the upper extremity. The principle is the ſame, the reſults only are different. It is a general law in the organs of voluntary motion, that they acquire perfection by exerciſe, that they are in ſhort ſuſceptible of education.

This dependance of the functions of the larynx on the brain is not only marked in the ſtate of health, but alſo in diſeaſes. Paralyſis, convulſions, and ſpaſms of the muſcles of this cavity have the ſame characters as in the locomotive organs, and have no analogy to the affections of involuntary parts. Hence Bichat has followed the indications of nature, in ſeparating the vocal organs from the lungs in his phyſiological and anatomical arrangement: their proximity has generally led to their being conſidered together, in treatiſes of anatomy and phyſiology.

The following arrangement will be adopted, in conſidering the vocal organs: 1ſt, General conſiderations on the larynx; 2dly, Particular deſcription of the component parts; 3dly, The aſſemblage of theſe parts in the general conformation of the cavity; 4thly, Mechaniſm of the larynx; 5thly, Its developement in various ages; 6thly, The organs of ſpeech; 7thly, The phyſiology of the voice and ſpeech.

General Conſiderations. - The larynx is a cavity compoſed of moveable pieces, of a form not eaſily defined, and occupying the anterior and ſuperior region of the neck. It is ſituated on the median line, and conſequently regular and ſymmetrical in its form, like all the organs of the animal life. It terminates the trachea above, and forms a ſtriking contraſt with the lower extremity of that organ, which, formed by the bronchi, and concerned merely with the functions of the organic life, is made up of two lateral portions not reſembling each other. The lateral portions of the larynx are, on the contrary, exactly ſimilar. This ſymmetry of the larynx is neceſſary to the harmony of its functions: a diſcordant voice would inevitably reſult from different organizations of the two ſides, or from inequality in the powers of the muſcles of the right and left ſides. The organ is placed below the os hyoides, to which it is fixed: it is ſuperficial in front, and reſts behind on the vertebral column, from which the pharynx alone ſeparates it.

Deſtined, on the one hand, to allow a continual paſſage to the air in reſpiration, which is to a certain point involuntary; and concerned, on the other, in producing the voice entirely under the influence of the will, the larynx offers to our view a ſtructure accommodated to theſe two very different phenomena. Several cartilages united together form its cavity, and their elaſticity prevents it from being ever cloſed: hence a free paſſage is ſecured for the air. To theſe moveable cartilages are attached muſcles, of which the voluntary contraction may increaſe or diminiſh the dimenſions of the cavity; circumſtances which are eſſential to the production of the voice. One of theſe cartilages, very different in its ſtructure from the others, can cloſe the cavity momentarily, by being depreſſed on its aperture. Laſtly, a mucous membrane, continuous with that which lines the mouth, lines all theſe parts, and is prolonged into the lungs, following all the ramifications of the bronchi.

The ſize of the larynx does not follow the proportions of the general ſtature: it may be as large in a little perſon as in one of conſiderable height; and this correſponds to what we know of the voice, the force or weakneſs of which do not depend on the ſize of the individual. It would be an intereſting reſearch to compare the different kinds of voice with the organization of the larynx. We cannot doubt that the tenor, counter-tenor, &c. are produced by ſome peculiarities in the laryngeal ſtructure; but the impoſſibility of knowing, in the caſe of ſubjects employed for diſſection, what kind of voice the individuals poſſeſſed, prevents us from aſcertaining any thing concerning this point. The difference in the voices of man and woman cannot but have been always obſerved; and their larynxes exhibit, on a merely ſuperficial inſpection, a great diſproportion in ſize. The organ is large and broad in man: it appears contracted in woman, ſo as to be about one-third leſs: often it is not more than half as large as that of the male. This does not depend on ſtature: a large woman and a ſhort man have this diſtinguiſhing character, as well as two individuals of equal ſize, or as a tall man and ſhort woman. The ſame circumſtance runs through all parts of the larynx: it is obſerved alſo in the neighbouring organs, as the trachea, the os hyoides, and their dependencies; it takes place alſo conſtantly.

The general form of the organ is nearly the ſame, or at leaſt the differences are much leſs remarkable than thoſe which affect the ſize. However, the ſexes are diſtinguiſhed in ſeveral points. The two plates of the thyroid cartilage are much more oblique and proportionally leſs ſeparated in man than in woman: hence they form in the former, where they are united in front, a much more conſiderable prominence under the integuments, and a much more acute angle. This projection is named pomum Adami: in women the angle is very obtuſe. The excavation which terminates it above is ſuperficial and rounded in the female; much deeper and terminated by an acute angle in the male. The cricoid cartilage ſhews no difference in the two ſexes in front. The male and female larynxes are diſtinguiſhed almoſt ſolely by their ſize behind; yet, as the two ſides of the thyroid are more widely ſeparated in women, there is in them a greater relative breadth in the triangular ſpaces which ſeparate this cartilage from the proper cavity of the larynx. The organ is ſurmounted in man by a much broader and thicker os hyoides than in woman. The epiglottis is alſo broader, more prominent above, and thicker: its general form is the ſame in both ſexes. The glottis is alſo of the ſame form in both, and diſtinguiſhed merely by its dimenſions. As the arytenoid cartilages are longer, and conſequently more elevated in man, the ventricles of the larynx are more deeply ſeated, and more diſtant from the external opening. The only difference obſerved below is the greater circumference of the cricoid in man. The trachea correſponds in ſize to the larynx, and is conſequently ſmaller in women than in men. From the preceding obſervations it appears that the form of the larynx, although differing ſlightly in the two ſexes, as well as the texture, which is the ſame in both, cannot be the eſſential cauſe of the differences in the key or pipe of the voice, which appear much rather to depend on the ſtriking diſproportion in ſize. It will be ſeen afterwards, that the particular character of the voice in the infant depends on the ſame cauſe.

Deſcription of the Parts of the Larynx.—We may diſtinguiſh, in this organ, the cartilages which eſſentially compoſe its cavity, and give it ſolidity; 2. The ligaments which tie theſe together; 3. The muſcles moving the cartilages, and thereby conſtituting the active inſtruments of the voice; 4. The glandular bodies ſituated in the neighbourhood of the cavity; 5. The membranous lining. The firſt four diviſions muſt be examined in detail; the common membrane will be deſcribed with the larynx taken altogether.

Cartilages of the Larynx.—Theſe are five in number. The firſt, named the thyroid, is broad and tolerably thick; it covers the organ in front, but is no farther concerned in forming the cavity than by the attachment it affords to certain ligaments and muſcles. The ſecond or cricoid cartilage, which poſſeſſes, as its name implies, an annular figure, forms the ſolid part of the cavity. Two arytenoid cartilages, ſituated behind, and much ſmaller than the others, give to the glottis that mobility which makes it the ſeat of the voice. Laſtly, the epiglottis, a true fibro-cartilage, has the office of cloſing the larynx occaſionally.

The thyroid or ſcutiform cartilage occupies the front and lateral part of the larynx, meaſuring more from ſide to ſide than from above downwards, and being broader above than below. It conſiſts of two lateral portions obliquely united in front, where they form a more or leſs prominent acute angle, correſponding to the median line, and producing a conſpicuous prominence in the neck of the male, already mentioned by the name of pomum Adami. This angular prominence is bifurcated above, ſimple and rounded below. Each of the lateral diviſions offers in front a nearly plane ſurface, ſlightly concave, covered principally by the thyrohyoideus muſcle. An oblique line bounds this ſurface externally, and affords attachment to the thyro-hyoideus, ſterno-hyoideus, and the inferior conſtrictor of the pharynx. Behind it is a ſmall ſurface covered by the two latter muſcles. This cartilage preſents behind a concavity in the median line, correſponding to the front prominence: the ligaments of the glottis and the thyro-arytenoidei muſcles are attached to this. Two plane ſurfaces, ſloping backwards, correſpond above to theſe muſcles, from which a fatty cellular ſubſtance ſeparates them, and below to the lateral crico-arytenoid muſcles, and to ſome fibres of the crico-thyroidei.

Four edges terminate the ſurfaces of the thyroid cartilage. The ſuperior is the largeſt, affords attachment throughout to the thyro-hyoideal membrane, has in its middle the notch ſurmounting the angle of union of the two pieces, then proceeds outwards on each ſide nearly horizontally, preſenting a ſlight prominence correſponding to the external oblique line, and terminates beyond this by an appendix which will be mentioned. The inferior edge is ſhorter, concave in the middle, and has on the ſides two convex prominences correſponding to the lower ends of the external oblique lines, and then two depreſſions. It affords attachment to the crico-thyroid membrane and to the crico-thyroidei muſcles. The poſterior margins, two in number, are directed obliquely, and reſt againſt the ſpine: rather concave above and convex below, they afford attachment to ſome fibres of the ſtylo and palato-pharyngei. A rounded proceſs, of different lengths in different ſubjects, directed obliquely backwards, ſurmounts each of theſe margins, and is connected by a ligament to the extremity of the os hyoides: theſe are the ſuperior cornua of the thyroid cartilage. A ſimilar rounded proceſs, ſhorter than the former, directed rather forwards, terminates each of the perpendicular margins below: theſe are the inferior cornua, and are articulated by their extremities to the ſides of the cricoid cartilage.

A round opening is ſometimes ſeen on each ſide of the cartilage, towards its upper part, tranſmitting an artery and nerve to the cavity of the larynx.

The cricoid or annular cartilage occupies the lower and back part of the larynx, of which it more particularly compoſes the cavity by its ring-like figure. Its general figure is completely circular. It is narrow in front, where it is placed immediately under the lower margin of the thyroid; grows broader at the ſides, and ſwells behind into a conſiderable ſize, where it riſes into the middle of the interval left between the two poſterior borders of the thyroid. The external ſurface muſt be every where convex, from the circular figure of the part: in its middle and front portion it is covered only by the integuments; on the ſides by the crico-thyroidei muſcles; and further back by the thyroid cartilage, whoſe inferior cornua are articulated to two ſmall rounded ſurfaces. The broad poſterior ſurface is nearly quadrilateral, and preſents, in the middle, a perpendicular riſing, covered merely by the membrane of the pharynx; on the ſides, two ſtrongly marked depreſſions, in which the poſterior crico-arytenoidei muſcles are placed. The internal ſurface of the cartilage, every where concave, is lined by the laryngeal membrane. The ſuperior circumference preſents in front a broad and ſuperficial excavation, to which the crico-thyroideal membrane is attached, and on the ſides of this the inſertion of the lateral crico-arytenoid muſcles. Behind, the edge of the cartilage riſes conſiderably, and preſents two ſmooth ſurfaces for articulation with the arytenoid cartilages: theſe two ſurfaces are oblique, narrow, and convex; between them the arytenoid muſcle is in contact with the cricoid cartilage. The inferior circumference is placed horizontally, and forms nearly a circular outline; the margin is a little convex in front, then ſlightly concave; rather convex again where the thyroid is articulated to it, and ſlightly hollowed at the middle of the poſterior portion. It is joined to the firſt ring of the trachea by a membrane ſimilar to that which joins together the other rings, and affords attachment behind to the poſterior tracheal membrane.

The arytenoid cartilages, two in number, a right and a left, are much ſmaller than the preceding, placed at the back of the larynx, on the upper edge of the broad poſterior portion of the cricoid. When viewed in the dead ſubject, before the membranes and muſcles have been removed, they form a ſingle prominence, concave above, ſo as to reſemble ſlightly the mouth of an ewer, from which their name is derived. They are moveably articulated to the cricoid cartilage, and cauſe, by their motions, the enlargement or diminution of the glottis, by which the voice is produced. The form of the arytenoid cartilage is triangular and pyramidal; but the apex is bent backwards, or towards the pharynx. It poſſeſſes a poſterior concave ſurface, filled by the arytenoid muſcle; an anterior convex one, with excavations filled by the arytenoid gland; an internal flat and perpendicular one, turned towards the oppoſite cartilage, and covered by the membranous lining. Theſe ſurfaces are united by three angular edges; an internal, an external, and anterior: in the latter there are ſometimes inequalities. The baſis offers behind a concave oval articular ſurface, covered by a ſynovial membrane, directed downwards and outwards, and reſting on the convexity of the cricoid, to which it is articulated. In front of this there is a conſiderable triangular eminence, forming the ſide of the glottis behind, ſometimes conſiſting of a ſmall diſtinct cartilage, and always affording attachment to the aryteno-thyroid ligament. The apex, brought to a ſharp point, is inclined backwards and inwards. It is commonly ſurmounted by a ſmall bit of cartilage, connected to it, involved in the membrane, and turned towards the pharynx. Soemmerring calls theſe cornicula laryngis. Another ſmall rounded portion is ſeen on each ſide in the membrane, which paſſes from the epiglottis to the arytenoid cartilage. The ſame author calls theſe cartilagines laryngis cuneiformes.

All theſe cartilages have a common ſtructure. Their denſe and ſolid tiſſue, and greyiſh colour, which is not ſplendid like that of the articular cartilages, approximate them to the bony ſyſtem. In the progreſs of years, they come ſtill nearer to it: they are conſtantly found oſſified in old ſubjects, particularly the thyroid and cricoid. Even before this time we very frequently find in them reddiſh points, the nuclei of an incipient and often extenſive oſſification. An areolar ſubſtance, analogous to the ſpongy texture of bones, forms at the ſame time, and contains a little medullary texture, from which an oil may often be expreſſed.

Fibro-cartilage of the Epiglottis.—This has not the ſame uſes as the parts juſt deſcribed. Situated at the upper part of the larynx, between it and the root of the tongue, it varies in its direction. It is perpendicular in the ordinary ſtate, ſo as to leave the glottis free for the purpoſes of reſpiration: it becomes nearly horizontal at the moment of deglutition, ſo as to cover the glottis, and prevent the entrance of the food into its cavity. (See Deglutition.) Its form has been compared to that of a myrtle leaf; it is flattened in its figure, and has its extremity ſlightly recurved. We divide it into a lingual and a laryngeal ſurface, and a circumference. The lingual ſurface is concave from above downwards, but convex tranſverſely: it is directed anteriorly, or towards the mouth, in the perpendicular poſition of the organ; ſuperiorly, or towards the pharynx, in the horizontal ſtate. It is covered by the mucous membrane of the mouth, continued to it from the tongue, and forming three folds between theſe two organs. The middle, which is the moſt ſtrongly marked, is prolonged on the lingual ſurface: this is ſometimes called frænum epiglottidis. The lateral duplicatures are looſer and leſs conſpicuous, and end on the circumference of the epiglottis. The frænum, being ſtretched when the epiglottis is depreſſed, muſt aſſiſt a little in elevating it, when the tongue is carried forwards: but if we cut the frænum, the epiglottis ſtill recovers its perpendicular poſition, ſo that this fold can affect it but very ſlightly. The two other duplicatures have no connection whatever with the motions of the part. In the inferior part of its anterior ſurface the epiglottis is ſeparated from the thyrohyoideal membrane by the peculiar tiſſue conſtituting the epiglottic gland. The laryngeal ſurface is convex from above downwards, and concave tranſverſely: it is covered by a continuation of the laryngeal membrane, and its aſpects, in the different poſitions of the organ, may be underſtood, from what is ſaid concerning thoſe of the lingual ſurface. The circumference of the epiglottis is free above, and here the membranes covering its two ſurfaces are continuous. From each ſide a fold of the mucous membrane is continued to the arytenoid cartilage. The lower part, ſometimes called the baſis of the epiglottis, where the two ſides are united into an acute angle, is connected to the hollow ſurface of the thyroid.

The fibro-cartilage, compoſing the epiglottis, is thicker below than above, on the median line than on the ſides: it belongs to the membranous fibro-cartilages. (See Fibro-cartilage.) Its two ſurfaces, particularly the laryngeal, preſent a great number of ſmall holes, like the prickings of a pin, lodging glandular bodies: theſe are cloſed by the mucous membrane, and may be ſeen by removing that part. Several of them communicate from one ſurface to the other.

Articulations of the Larynx.—Its cartilages are united to each other, or to the ſurrounding parts, by fibrous and membranous

-branous connections: we ſhall conſider at preſent only thoſe of the firſt kind, the others belong to the general deſcription of the organ.

The thyroid is connected to the cricoid cartilage in front and on the ſides. In the former ſituation, a membrane, called the crico-thyroid, proceeds from the upper edge of the cricoid cartilage, and is attached to the middle of the lower border of the thyroid; it is loſt inſenſibly on each ſide on the mucous membrane of the larynx. It is deepeſt in front, and grows narrow and leſs diſtinct towards the ſides; it has a fibrous appearance in the former, which it loſes in the latter of theſe ſituations. Covered on the ſides by the crico-thyroidei muſcles, it is ſubcutaneous in front, and correſponds to the laryngeal membrane behind. It allows a conſiderable motion between the two cartilages. On the ſides there are two ſmall articulations, formed between the inferior cornua of the thyroid, and the lateral articular faces of the cricoid: they are lined by looſe ſynovial membranes, and lubricated by a tolerably copious ſynovial ſecretion. The ſurfaces, which admit readily of a gliding motion on each other, are held together by very diſtinct ligamentous fibres. An anterior faſciculus is continued obliquely downwards and forwards from the front of the thyroid cornua to the ſide of the cricoid cartilage. A poſterior goes from the back of the ſame proceſs, and aſcends to be fixed to the back of the cricoid under the arytenoid cartilage. There are ſome irregular faſciculi, beſides the two firſt deſcribed.

The oppoſed ſurfaces of the arytenoid and cricoid cartilages are covered by very looſe ſynovial membranes, lubricated by a copious ſecretion, and ſtrengthened by ligamentous fibres at ſome parts. The moſt remarkable of theſe fibres are on the inſide and behind; externally they are little apparent, and ſeem often hardly to exiſt at all.

Each of the arytenoid cartilages is connected to the thyroid by a fibrous faſciculus, particularly important on account of its concern in the production of the voice. They are called the aryteno-thyroid ligaments, ligamenta glottidis, or chordæ vocales. The ligament compoſed of parallel fibres, and about half an inch in length, ariſes from the anterior prominence of the baſis of the arytenoid cartilage, paſſes horizontally forwards and inwards, and is fixed to the concavity of the angle formed by the junction of the two ſides of the thyroid, uniting at this point with that of the oppoſite ſide. It is covered externally by the thyro-arytenoid muſcle, and correſponds every where elſe to the mucous membrane. The ſlit-like aperture left between the right and left ligaments is the glottis, or rima glottidis.

The two arytenoid cartilages are connected together merely by the membrane of the larynx, and by the arytenoid muſcle. It is ſaid that a tranſverſe fibrous faſciculus is ſometimes placed in front of the latter, to prevent the two cartilages from being ſeparated too widely.

The acute and elongated angle, which terminates the epiglottis below, gives origin to a narrow fibrous faſciculus, about half an inch in length, which is covered in front by the epiglottic gland, and is fixed to the angle of the thyroid, juſt above the attachment of the ligamenta-glottidis.

The arytenoid cartilages are not connected to the epiglottis by any fibrous union; two conſiderable membranous folds, forming the principal part of the upper aperture of the larynx, proceed from the former to the ſides of the latter; they ſeem to be the ligamenta thyroidea ſuperiora of Soemmerring.

Muſcles of the Larynx.—The organ is moved by two kinds of muſcles, of which one is common to it with other parts, the other belongs particularly to it. The firſt are the muſcles of the os hyoides, and move the whole organ together; theſe, as well as the os hyoides, are deſcribed in the article DEGLUTITION. The others are concerned in moving on each other the parts of the larynx.

The *crico-thyroideus* is a thin quadrilateral muſcle, ſituated in front of the larynx, and often divided into two parts by a fatty line. It is attached to the front and ſides of the cricoid, and proceeds upwards and outwards to the inferior edge of the thyroid, to which, as well as to a little of the poſterior ſurface, the internal fibres are fixed. The external are longer, and reach to the front of the inferior thyroid cornua. An interval appears between the right and left muſcles, in which the crico-thyroid membrane is viſible. It correſponds in front to the ſterno thyroideus, and to the inferior conſtrictor of the pharynx; behind to the crico-thyroid membrane, and to the crico-arytenoideus lateralis.

The *crico-arytenoideus poſticus* is a ſtrong muſcle, flattened on its ſurface, triangular, and placed at the back of the larynx. Its origin fills the lateral excavation of the poſterior ſurface of the cricoid. The ſuperior fibres are the ſhorteſt, and proceed nearly tranſverſely; the following are longer, and gradually more and more oblique from below upwards and outwards; they are attached to the poſterior and outer part of the baſis of the arytenoid, between the inſertions of the arytenoideus, and of the crico-arytenoideus lateralis. In front it correſponds to the cricoid cartilage, and behind to the membrane of the pharynx.

The *crico-arytenoideus lateralis* is a thin and flattened muſcle, rather elongated and quadrilateral, proceeding from the ſide of the cricoid to the ſide of the arytenoid cartilage. It ariſes from the ſuperior margin of the former, paſſes obliquely backwards and upwards, and is fixed externally to the baſis of the arytenoid. It is connected in front with the thyro-arytenoideus, ſeparated on the outſide from the thyroid cartilage by cellular ſubſtance, and lined on the inſide by the laryngeal membrane.

The *thyro-arytenoideus* is a thin and flattened muſcle of irregular figure, ſituated within the concavity of the thyroid cartilage. It ariſes near the angle of that cartilage, from the lower part of its poſterior ſurface, proceeds backwards and outwards, becoming rather narrower, and is inſerted in the front of the arytenoid cartilage, below the preceding, to which it is cloſely connected. It correſponds externally to the thyroid cartilage, and internally to the laryngeal membrane.

The *arytenoideus* is the maſs of muſcular fibres filling the poſterior concavities of the arytenoid cartilages, and occupying the interval between them. The fibres ariſe from the concave ſurface of one cartilage, go acroſs, and are inſerted into the correſponding part of the oppoſite cartilage. They are partly oblique and partly tranſverſe; the former conſiſt of a few ſuperficial fibres croſſing reſpectively from the baſis of one to the apex of the other cartilage, and conſequently decuſſating like the two parts of the letter X. The great maſs of the fibres has however a tranſverſe direction. From the different courſes of theſe two deſcriptions of fibres, two arytenoidei muſcles have been diſtinguiſhed; *viz.* an obliquus and a tranſverſus. Theſe fibres are placed between the membranes of the larynx and pharynx: in front they are alſo partly in contact with the arytenoid cartilages.

Under the names of *thyreo-epiglotticus, major* and *minor*, ſome anatomiſts have deſcribed a few ſlender fibres proceeding from the poſterior ſurface of the thyroid cartilage to the ſide of the epiglottis. Others do not admit the exiſtence of theſe muſcles, which are allowed by all not to be found generally. Haller regards theſe fibres, when they exiſt, as a part of the thyro-arytenoideus. The motions of the epiglottis, in the human ſubject, are all entirely of a mechanical nature, and not performed by muſcular action.

Glands of the Larynx.—There are three bodies of this deſcription in the neighbourhood of the organ; *viz.* the epiglottic, the arytenoid, and the thyroid.

Glands of the Epiglottis.—In front of, and below the epiglottis, a triangular ſpace is left, bounded behind by this cartilage, in front by the thyro-hyoideal membrane, below by the thyro-epiglottic ligament, and on the ſides by the lateral folds of mucous membrane which line the two ſpaces left between the ſides of the thyroid and the cricoid cartilage. This ſpace is filled by a body, manifeſtly cellular and adipous for the moſt part, but covering below ſmall granular glands, ſometimes united together, ſometimes inſulated, and ſending prolongations into the holes with which the epiglottis is pierced. The latter open on the laryngeal ſurface of the organ by very diſtinct apertures. The glandular bodies are ſometimes ſo much covered and concealed by the ſurrounding fat, that they can hardly be diſtinguiſhed. In all caſes we may remove by diſſection theſe bodies from the openings in the epiglottis, which then appear as empty ſpaces. We may diſtinguiſh as many as thirty of theſe. The ſuperior excavations of the epiglottis contain ſmall diſtinct grains: the epiglottic gland and its cellular tiſſue belong only to the inferior half of the organ. The openings in the epiglottis are of different ſizes; they are very regularly formed, with rounded edges, and penetrate always ſtraight through, never obliquely.

Arytenoid Glands.—In the fold of mucous membrane, proceeding on each ſide from the epiglottis to the arytenoid cartilage, a ſmall body is found, evidently of a glandular nature, preſenting ſmall diſtinct grains, very analogous to thoſe which compoſe the lacrymal gland, and generally of a greyiſh hue. It may be compared in form to a carpenter's ſquare. The perpendicular branch, which is rounded, and may be felt by the finger, when we ſeize the fold that contains it, lies againſt the front of the arytenoid cartilage, and is looſe above. The horizontal branch runs along the ſuperior fold of the ventricle of the larynx, and is leſs prominent than the other. The ſituation, at which the two branches form their angular union, is in front of the baſe of the arytenoid. The glandular grains of this ſmall body, probably, have excretory ducts terminating on the edge of the ſuperior aperture of the larynx: but theſe apertures are not viſible like thoſe of the ducts of the laſt-mentioned glands.

Theſe epiglottic and arytenoid glands furniſh a mucous ſecretion, and are of the ſame nature as the others which belong to the laryngeal membrane. The paſſage of the food in deglutition, and of the air in reſpiration, requires that theſe organs ſhould be defended by a mucous fluid.

The *thyroid gland* is one of thoſe organs, of which the uſe is entirely unknown to us, although its conſtant exiſtence, through all periods of life, and the great number of veſſels which it receives, do not allow us to doubt that it performs ſome important office. Its ſituation immediately below and in front of the larynx, leads us to connect its hiſtory with that of this cavity, although we are ignorant whether it has any concern in the ſame functions. This organ, as well as the ſpleen, capſulæ renales, &c. ſuggeſts a very important reflection; *viz.* that our notions concerning the general relations of the functions of the animal economy muſt ſtill be neceſſarily very imperfect, and that we ſhould deceive ourſelves if we ſuppoſe that we can embrace the plan of nature in one general view, and repreſent it accurately in our phyſiological claſſifications. Can we doubt that the unknown functions of theſe viſcera are connected to the general plan, and make an eſſential part of it? How then can we be certain that a knowledge of them would not either partly overturn, or conſiderably modify our preſent notions on thoſe ſubjects. Why is the theory of fœtal exiſtence ſtill ſo obſcure? Becauſe the functions of ſeveral organs, at that time perfectly developed, and in a very active ſtate, eſcape our obſervation, and we cannot arrive at general reſults when the particular facts are unknown.

The bulk of this gland, which is always very conſiderable, varies much in different individuals: perhaps no organ preſents more ſtriking variations. No particular condition of the body, no modification of any particular function, no differences in ſtature, in the ſtate of the larynx, trachea, lungs, &c. have been obſerved to accompany theſe varieties. Its form is tolerably conſtant; but in this reſpect there are alſo varieties. It is compoſed of two diſtinct portions, nearly pyramidal in their figure, occupying the ſides of the larynx, and of the upper extremity of the trachea, ſo that the baſe is placed downwards and forwards, and the apex ſtretches upwards and backwards. Variations are obſerved in the extent and direction of theſe two lateral portions. They are united in front by a ſmall flattened tranſverſe band, which may be large and thick, ſmall and narrow, or made up of diſtinct tubercles; indeed, we ſcarcely find it the ſame in two individuals ſucceſſively. In a few inſtances this part does not exiſt, ſo that there are two diſtinct thyroid glands, one on each ſide. It does not extend above the trachea, ſo that the whole larynx is uncovered in front, nearly ſubcutaneous, and embraced by the curve formed by the two lateral portions of the gland united by the intermediate band.

In front the thyroid gland is covered by the ſterno-thyroidei, ſterno-hyoidei, omo-hyoidei, and latiſſimi colli. It reſts behind and towards the outſide on the vertebral column, to which a looſe cellular ſubſtance connects it, and where, according to its bulk, it conceals or leaves expoſed the nerves and blood-veſſels of the neck. Internally, or towards the middle line, it covers the ſides of the firſt rings of the trachea, part of the cricoid and thyroid cartilages, the crico-thyroidei, thyro-hyoidei, and inferior conſtrictor of the pharynx. Exactly in the middle and front it conceals the two firſt rings only of the trachea. A looſe tiſſue ſeparates it from all theſe parts.

It is ſurrounded by no membrane: the exterior cellular tiſſue is rather more denſe and compact than the reſt, as in the pancreas and ſalivary glands; but it forms no proper membrane. It never contains any fat.

With this external covering ſome muſcular fibres are blended; not noticed by Albinus, nor by moſt other anatomiſts, but forming the levator gland. thyr. of Haller, the muſculus gland. thyr. of Soemmerring. It does not exiſt conſtantly; is generally a ſingle muſcle, ſituated in the middle of the larynx, ſometimes is placed towards the right or left, and ſometimes, but very rarely, is double. It ariſes by a narrow tendinous ſlip from the baſis of the os hyoides; deſcends in a ſtraight courſe, growing broader, and has its fibres expanded on the front of the gland, and blended with the covering of the organ. It muſt apparently have the effect of ſuſpending and ſupporting the gland. Muſcular fibres have ſometimes been ſeen, extending over the ſurface of the gland from the crico-thyroideus. Beſides the effect, which theſe and the fibres juſt deſcribed may produce on the gland, it will be expoſed to powerful compreſſion againſt the larynx and trachea by the ſterno-hyoidei and ſterno-thyroidei, which embrace it very cloſely.

The proper tiſſue of the thyroid gland varies conſiderably in colour and denſity : it is often red, and even dull brown, like the ſpleen, ſometimes yellowiſh or greyiſh. It may be flabby or compact ; but its denſity varies leſs than its colour. The ſubſtance of the organ, like that of other glands, is diſpoſed in diſtinct lobules, which are collected into more or leſs voluminous lobes. This conglomeration is never ſo perceptible as in the ſalivary glands, the pancreas, &c. ; excepting, however, certain caſes of increaſed volume without organic change, where the ſurface of the organ is tuberculated and irregular from the unequal prominence of the lobes. In the natural ſtate of the part, we may diſtinguiſh the lobes by diſſection, as the great vaſcular trunks run in their intervals : the latter, which are hardly perceptible at firſt view in conſequence of the lobes being preſſed againſt each other, become apparent by the uſe of the knife. A fine cellular tiſſue, never containing any fat, and ſmall in quantity when compared to what is found between the lobes of other glands, is ſeen in theſe intervals.

The lobes of the thyroid gland are mixed in ſome ſubjects with rounded veſicles, containing ſometimes a yellowiſh, ſometimes a tranſparent and colourleſs fluid. In moſt ſubjects theſe cyſts do not exiſt, and in many we cannot obſerve the ſlighteſt traces of them. Yet ſlices of the gland recently cut give us a peculiar feeling of viſcoſity, not obſerved in other glandular bodies, and proceeding from the fluid juſt mentioned. If an acid be poured on the cut ſurface, a ſlight whiteneſs is produced, as in moſt other organs.

Although provided with a great number of blood-veſſels, the thyroid gland contains in its capillary ſyſtem leſs blood than the liver, the kidney, &c. It only diſcolours the water of maceration once or twice, which ariſes evidently from the ſmall number of its capillaries. It is not by the large veſſels, in which the blood is influenced by the heart's action, but by the capillaries, that we may judge of the quantity of blood habitually contained in an organ. As putrefaction generally proceeds more quickly, in proportion as the quantity of blood remaining in the organs after death is greater, the thyroid gland undergoes this change leſs readily than moſt others. Slices of it dried are greyiſh and friable. When boiled, they curl a little before ebullition, and then become conſiderably harder and corrugated as almoſt all the animal ſolids do. But, inſtead of growing ſoft again, like the muſcles, tendons, &c. they are rendered ſtill harder, like the glands, by a continuance of the boiling. Acids and alkalies have no peculiar operation on the tiſſue of the thyroid gland.

Nothing like an excretory duct has hitherto been diſcovered in this body : no communication has been pointed out between it and the trachea or larynx. The emphyſema, of which it is ſometimes the ſeat, proves nothing in this queſtion ; for the air is contained in the cellular tiſſue which unites the glandular lobes, and is introduced in conſequence of its general diffuſion in the cellular tiſſue of the neck. By inſerting a blow-pipe into the ſubſtance of the organ, and inflating forcibly, it may generally be diſtended ſo as to form an artificial emphyſema. The air, in this caſe, is not contained in the veſicles, but in the cellular interſtices : it follows the courſe of the vaſcular trunks.

Some ſexual differences may be noticed in the thyroid gland. It is generally larger in the female, and its lateral diviſions are more prominent in front ; which diminiſhes the apparent prominence of the thyroid cartilage. In man, on the contrary, the two lateral portions are thinner and proportionally flatter ; and lie more cloſe on the ſides of the larynx, below the external oblique line of the thyroid cartilage. But there are ſo many varieties in other points, that this ſexual difference is often little obſervable.

The differences from age are few. The gland is proportionally larger in the fœtus and child than in the adult. Its front prominence is more ſtriking at the firſt period : and its colour is deeper and browniſh. Its proportional exceſs of volume cannot, however, be compared to that of the thymus, capſulæ renales, &c. : indeed, it is not ſufficiently remarkable to authoriſe us in concluding that the uſe of the part is particularly relative to fœtal exiſtence, although ſeveral authors ſeem to have believed this.

The thyroid gland has four large arteries, two on each ſide, one of which is derived from the external carotid, the other from the ſubclavian trunk. No part in the body has ſo conſiderable an arterial ſupply as this organ ; that of the brain is very much leſs in proportion. The inferior thyroid artery in the child is as large as the remaining trunk of the ſubclavian after its origin. Theſe veſſels are connected in the gland by large and numerous inoſculations. The veins correſpond in number and magnitude to the arteries, and terminate in the jugular and ſubclavians. The abſorbing veſſels are alſo conſiderable, and join the jugular glands. The thyroid arteries are accompanied by nervous filaments from the great ſympathetic ; but it cannot be eaſily decided whether the proper ſubſtance of the gland receives any nervous ſupply.

As we have ſtated already that the uſe of this organ is unknown, we ſhall not fatigue the reader with mentioning and refuting the aſſigned offices. Although they are very numerous, they are not grounded on any facts worthy of attention. Soemmerring, in his 6th vol. De corporis humani fabrica, § 56, gives a long liſt of "opiniones de glandulæ thyreoideæ uſu ;" and there is a ſimilar catalogue in Haller's Elementa, lib. ix. ſect. 1. § 22

Of the Larynx in general.

General Conformation.—The larynx is a cartilaginous cavity moved by various muſcles. It is broad above, narrower below, and poſſeſſes an external figure, which does not correſpond to that of the internal hollow. In fact, the latter, being eſſentially formed by the cricoid and arytenoid cartilages, and the membranous coverings belonging to them, poſſeſſes nearly an uniform diameter throughout ; and it is moſt contracted towards the upper part. This ariſes from what we have ſaid of the thyroid cartilage, which rather protects than forms the larynx, although it is eſſential to its ſtructure and action, from the attachment which it affords to muſcles and ligaments. We may conſider, in our view of this organ, the external and internal ſurfaces, the ſuperior and inferior extremities.

The external ſurface, conſidered in front, preſents, on the median line, the prominence formed by the union of the two portions of the thyroid, which exhibits, above, a conſiderable depreſſion, particularly in man ; then the membranous interval, which ſeparates the two crico-thyroidei, and below it the convexity of the cricoid : on the ſides we ſee the two flat ſurfaces of the thyroid cartilage, covered by the hyo-thyroidei, the external oblique line, the triangular ſurface covered by the inferior conſtrictor, and terminated by the inferior cornu, lower down the crico-thyroideus, which, at this point, almoſt entirely covers the cricoid cartilage. Behind, the external ſurface of the larynx, more depreſſed in the middle than towards the ſides, preſents, on the median line, the middle prominence of the cricoid : on the ſides of this, the hollows lodging the crico-arytenoidei poſtici, then a triangular ſpace, broad above and narrow below, filled with a more or leſs adipous cellular ſubſtance ; laſtly, two rounded edges, bounding the ſpaces juſt mentioned, more prominent than any other parts in this aſpect, and reſting on the vertebral column, ſo as to allow a free motion to all the eſſential parts of the organ, particularly to the arytenoid cartilages.

The internal ſurface of the larynx, lined throughout by the mucous membrane, may be divided into two parts, one ſolid, the other moveable. The firſt is inferior, in point of ſituation, and formed entirely by the cricoid ring. The proportions of this part are conſtantly the ſame; and it contains nothing worthy of notice. The moveable portion is above, formed behind by the arytenoid cartilages, in front by the thyroid and epiglottis, on the ſides by the folds of mucous membrane, continued between the epiglottis and the arytenoid cartilages. In the ordinary ſtate this is triangular, broad in front, and narrow behind; but the motions of the epiglottis and arytenoid cartilages change its figure conſiderably. This part forms the opening by which the larynx communicates with the pharynx: the aperture is placed juſt behind and below the root of the tongue, and is often called the glottis, although it has no ſhare in the formation of the voice. Of its relation to the pharynx, in reſpect to deglutition, ſee a further account in that article. The part, at which theſe two diviſions of the larynx are united, is remarkable for the two membranous folds, called ligamenta glottidis, or chordæ vocales. Theſe ariſe from the baſes of the arytenoid cartilages, and paſs obliquely, forwards and inwards, to meet together at the concavity of the thyroid, where they are fixed juſt under the epiglottis. They leave between them a triangular ſpace, of which the baſis is behind, and the apex forwards: this is the true glottis, and is placed about half or three quarters of an inch lower down than the opening deſcribed above: as the meaſurement of the opening from behind forwards conſiderably exceeds the tranſverſe diameter, it has a ſlit-like appearance, from which the name of rima glottidis has been applied to it. The folds, which form the ſides of the upper opening, differ eſſentially in their compoſition from thoſe of the inferior aperture. The former are merely membranous: the latter contain the fibrous faſciculi, deſcribed already under the name of the thyro-arytenoid ligaments. The interval left on each ſide between the ſuperior and inferior folds conſtitutes the ventricles of the larynx, or ſacculi laryngis. Their form muſt correſpond to the direction of the folds, which have been juſt deſcribed; their depth is inconſiderable. Sometimes the mucous ſecretion of the internal lining accumulates here for a ſhort time: ſometimes foreign bodies become engaged in them, and produce ſuffocation by ſtopping the rima glottidis, or cauſe great diſtreſs until they are removed. The ventricles, as well as the ſuperior laryngeal folds, correſpond on the outſide to the thyro-arytenoidei muſcles: the inferior folds ſeparate theſe muſcles from the crico-thyroidei, which complete towards the outſide the ſpace ſeparating theſe folds from the circumference of the cricoid.

The inferior extremity of the larynx, formed by the inferior circumference of the cricoid cartilage, is exactly circular. It is united to the firſt ring of the trachea by a fibrous membrane, ſimilar to thoſe which unite to each other the remaining rings of this tube. Behind, the poſterior tracheal membrane is attached to it.

The ſuperior extremity, much larger than the inferior, is formed in front and at the ſides by the upper edge of the thyroid cartilage. This edge is connected to the os hyoides, which is immediately above it, by the looſe and ſoft thyro-hyoideal membrane: this is thicker in front than towards the ſides, has very little fibrous appearance, but ſeems rather of a cellular nature. It is covered by the hyo-thyroidei and ſterno-hyoidei; it correſponds behind to the epiglottis, from which the epiglottic gland ſeparates it, and to the laryngeal membrane. It is ſhorter in the middle than at the ſides; conſequently the cornua of the os hyoides can be elevated to a greater diſtance from the thyroid cartilage than the baſis of the ſame bone, and the baſis of the tongue, which is ſupported by the os hyoides, can be drawn up higher at the ſides than along the middle line; which diſpoſition of parts is favourable to the formation of the channel, along which the food is conveyed towards the œſophagus. The two extremities of the os hyoides are connected to the ſuperior cornua of the thyroid cartilage by long, denſe, and round ligaments, generally containing granular bodies of a cartilaginous or bony nature. Theſe are named ligamenta hyo-thyroidea lateralia, to diſtinguiſh them from the former, which is called lig. hyo-thyroid. medium. The length of theſe lateral ligaments, in addition to that of the thyroid cornua, meaſures the diſtance between the os hyoides and the thyroid cartilage behind, which is about double the front interval.

Behind the edge of the thyroid cartilage, and in front of the epiglottis, there is a triangular ſpace filled by the epiglottic gland, and its adipous cellular ſubſtance. This ſpace is bounded above by the fold of mucous membrane continued from the baſis of the tongue to the epiglottis, and, moreover, by a kind of fibrous membrane, which lies immediately under the former, and over the gland. The membrane in queſtion is ſtronger in the middle than at the ſides: it ariſes from the concavity of the os hyoides, and is attached to the middle of the epiglottis. Behind this ſpace we ſee the epiglottis, and behind it the ſuperior opening of the larynx, already mentioned. As the breadth of the epiglottis, which forms the front of this opening, is always the ſame, while the arytenoid cartilages, which compoſe the back part, admit of conſiderable motion, the figure of the aperture can undergo little change in front, while it may vary much more conſiderably behind. The poſition of the opening is rather oblique, from before backwards and downwards.

Membrane of the Larynx.—The interior of the cavity is lined by a mucous membrane, forming part of the general ſyſtem common to the reſpiratory and digeſtive organs. It proceeds backwards from the baſis of the tongue over the front of the epiglottis, forming, as it paſſes, the three folds already deſcribed: it is reflected over the looſe edge of this fibro-cartilage, covers its poſterior ſurface, and then enters the larynx. On each ſide it is continued directly backwards to the arytenoid cartilages, being looſe and unconnected at its edge, and correſponding only to the thyro-arytenoidei muſcles. At the poſterior edge of the opening of the larynx, it is continuous with the membrane of the pharynx. When it has arrived in the cavity of the larynx, and towards the baſis of the arytenoid cartilage, it forms on each ſide a horizontal fold, directed obliquely forwards to the concavity of the thyroid, to which it is fixed, joining that of the oppoſite ſide. Below this point it lines the cavity of the ventricle, then forms another fold, which bounds this cavity below, and embraces the thyro-arytenoid ligament: it afterwards lines the lower portion of the larynx, and is continued into the trachea. In the whole of its extent the mucous membrane is of a pale roſe-colour, and diſtinguiſhed by that character from the lining of the mouth, of which it is a prolongation, and which is much redder. Its denſity is conſiderable, particularly on the cartilages, where it is united with the perichondrium: in other parts it is more thin and looſe in its texture. On the laryngeal ſurface of the epiglottis, it is perforated by ſeveral holes, which are the terminations of excretory ducts. Mucous glands are apparent in ſeveral points of its ſurface. The capillary ſyſtem of this membrane is not very conſiderable, and hence ariſes its paleneſs. It poſſeſſes very acute ſenſibility from the ſuperior opening to the glottis; but is much leſs ſenſible below. For an account of the relation, which this property bears to the functions of the part, ſee DEGLUTITION. The ſenſibility is not excited by the contact of air, as that is habitual; but it is quickly rouſed by vapours diſſeminated in the atmoſphere, particularly when they are at all acrid.

Mechaniſm of the Larynx.—The motions of this part are of two kinds, general and particular. The former, in which the whole larynx is moved, take place in deglutition, and in the pronunciation of different ſounds. For an account of the former, and of the powers which act at that time, ſee DEGLUTITION.

The larynx is moved in the ſame way, and by the ſame muſcles, in the pronunciation of different ſounds. When an acute ſound is uttered, it aſcends very ſenſibly: and this aſcent, which is gradual, according to the tone, may be felt by placing the finger on the thyroid cartilage, while we go through the gamut. In the formation of grave ſounds, there is, on the contrary, a very ſenſible depreſſion. Theſe motions can be very clearly ſeen in the throat of a ſinger: the rapid and conſiderable changes which take place in that mode of exerting the voice, render the motions very perceptible. The aſcent of the larynx is neceſſarily accompanied by an elongation, and its deſcent by a ſhortening of the trachea; in the former caſe its diameter is diminiſhed, and in the latter increaſed. Some have ſuppoſed that theſe changes in the trachea are concerned in producing the alterations of tone; but if they produce any effect on the ſounds, it is very ſlight, and they ſeem rather to be merely conſequent on the movements of the larynx.

What connection is there between the ſounds uttered and the general motions of the larynx? We know very little on this ſubject. We may obſerve that they have no relation to the force or weakneſs of the ſound; ſo long as the voice remains at the ſame tone, the larynx does not move, however the ſound may be changed in ſtrength or weakneſs.

The thyroid and cricoid cartilages admit of reciprocal motion; the former can be brought downwards and forwards upon the latter; in this caſe the chordæ vocales are relaxed. The crico-thyroideus muſcle has this effect.

But the motions of the arytenoid cartilages are the moſt important, on account of their connection with the chordæ vocales. They may be brought towards each other, until, indeed, they come into actual contact; this is attended with a proportionate approximation of the chordæ vocales. When the cartilages touch each other, the rima glottidis is completely cloſed; this is done by the arytenoid muſcle. This ſhutting of the aperture is ſometimes produced ſpaſmodically, as when the parts are irritated by acrid vapours, or by foreign bodies coming into contact with them. Reſpiration muſt experience a temporary obſtruction under ſuch circumſtances. When theſe cartilages are moved away from each other, the chordæ vocales are ſeparated, and the rima glottidis proportionally enlarged; this is the action of the crico-arytenoideus poſticus. The arytenoid cartilages admit alſo of being moved forwards and backwards; the chordæ vocales are rendered tenſe in the former ſtate, and are relaxed in the latter. The thyro-arytenoidei and crico-arytenoidei laterales carry them forwards; and the crico-arytenoidei poſtici backwards.

Developement of the Larynx.—The differences of this organ, according to the age of the individual, are not leſs conſpicuous than the ſexual diſtinctions in the adult. They refer to two principal periods; *viz.* the years which precede, and thoſe which follow puberty; for the great changes in the ſtructure of the larynx, which in this reſpect follows the developement of the ſexual organs, take place about this epocha. In the fœtus and child there are no differences in the larynxes of the two ſexes: until the period of puberty, the ſame ſize, the ſame rounded form, and the ſame want of prominence are obſerved both in the male and female. At this time the organ is much ſmaller in proportion in both ſexes, but more particularly in the male, than it will be in the ſequel. This will appear in a more ſtriking point of view, if we compare the larynx to the os hyoides, which ſurmounts it. That organ, already much advanced, in conſequence of its connection with the tongue, which is developed early in life, projects before the larynx; while in the adult, and eſpecially in the male ſubject, the larynx projects before it. The thyroid cartilage can hardly be ſaid to have a prominent angle in the child. It is rounded at this part in either ſex. Nothing particular is to be obſerved of the cricoid cartilage; and all the parts at the back of the larynx preſent the ſame diſpoſitions as in the ſequel, excepting the difference in ſize.

The nature of the voice is influenced by this diminutive ſize of the larynx, and by the ſameneſs of its conformation in the two ſexes. At this period of life we remark that its pipe or key is ſlender, and that its character is the ſame in both ſexes. If there be any difference, it is not ſuch as that which in the ſequel diſtinguiſhes the voice of man from that of woman.

As the growth proceeds, the larynx approaches to the ſtate in which we find it in the adult. Yet it does not follow the ſame courſe of developement as moſt other organs. In children of ſix months it is often as large as in thoſe of two years. Sometimes in a ſubject of three years it will be ſmaller than in one of a year, although the ſtature of the two may be ſuitable to their reſpective ages.

A change almoſt ſudden, or at leaſt much leſs gradual than any which had occurred before, in the functions of the larynx, is remarked at the epocha of puberty: this indicates an alteration in the organization of the cavity, and a more rapid developement of its ſtructure. The change is much more remarkable in man than in woman, becauſe the larynx remains much ſmaller in the latter than in the former, even after puberty. At this time the larynx is enlarged in all its dimenſions by a ſpeedy growth analogous to what is obſerved in the generative organs. But while this change is going on, for ſeveral months, the voice has a peculiar pipe, which is neither that of infancy nor of adult age.

After puberty the larynx undergoes no well marked change: its form becomes more fixed, and the prominence of its thyroid cartilage more conſiderable in man.

In the old perſon, as the cartilages are conſtantly receiving freſh depoſitions of earthy matter, they at laſt nearly equal bone in hardneſs. This change affects the thyroid firſt: then the cricoid, and laſtly the arytenoids. The epiglottis is hardly ever affected, probably on account of its peculiar organization, which reſembles that of the cartilages of the noſe, ears, &c. This exemption is very favourable to its functions, which require pliancy. The voice always becomes weak and broken in the aged: the weakneſs of the muſcles and the ſtiffneſs of the joints account for this, as analogous changes explain ſimilar phenomena in the organs of locomotion.

The remarkable change in the pipe of the voice produced by the removal of the teſticles has been mentioned in the article GENERATION. It has not been aſcertained whether there is any change in the organization of the larynx in theſe caſes.

The parts hitherto deſcribed are the inſtruments by which the voice is produced: the action of other organs is required,

quired, in order to modify this, ſo as to form it into articulated ſounds or ſpeech. Of theſe the tongue and the os hyoides are the moſt important: the latter bone is the baſis of the tongue, the fixed point from which its muſcles proceed, as alſo the point of attachment of the chief muſcles of the larynx. The deſcription of theſe organs, and of the muſcular powers employed in moving them, will be found in the article DEGLUTITION. A knowledge of the parts about the throat, which anatomiſts generally term the fauces, is alſo eſſential in conſidering the ſubject of the voice. The larynx opens into a large membranous cavity, deſcending from the baſis of the ſkull in front of the ſix upper cervical vertebræ, and named the pharynx. A large opening in the front of this, and between the tongue and ſoft palate, leads into the mouth: this aperture may be either free or cloſed. Another paſſage goes above the palate into the noſe; but this is not ſo changeable in its dimenſions as the former. Thus the air, expelled from the larynx, muſt proceed either through the mouth or the noſe, or both. The mouth is the large ſpace bounded by the lips and cheeks, the tongue and palate. Into it the tongue projects below, with free power of motion in every direction, and in the ordinary ſtate nearly fills the cavity. The two rows of teeth form a kind of diviſion into an outer and an inner cavity. For the more particular deſcription of all theſe parts, ſee DEGLUTITION.

It was formerly held that the palate and uvula had a conſiderable influence on the voice: but this ſeems doubtful. The ſoftneſs of the part, which is drawn down againſt another ſoft part, the tongue, renders it unfit for producing any modification in the ſound. Animals, for the moſt part, have no uvula, and we know that the organ may be variouſly diſeaſed without affecting the ſpeech: "Wherefore, ſays Haller, (Elem. Phyſiol. lib. ix. ſect. 2. § 17.) if affections of the uvula have produced any conſiderable alterations in the voice, I ſhould be rather inclined to aſcribe them to ſome undue paſſage of the ſound from the velum palati being at the ſame time injured. Thus, when the noſe is diſeaſed, a peculiar modification of the voice takes place, not becauſe the noſtrils are moved in the vocal functions, but becauſe they tranſmit or reflect the ſonorous tremors of the air. Thus, too, when the voice is injured by deſtruction of the bony palate, an artificial plate, which reſtores the power of reflection, without adding any motion, remedies the deficiency. I have the ſame opinion concerning ſpeech. The guttural letters may be leſs perfectly formed, when the organs about the throat are diſeaſed, becauſe the alliſions of parts cannot take place in the natural way: but the uvula is concerned in the pronunciation of no letter, and we might quote numerous authors who have ſeen it entirely cut away, or deſtroyed by diſeaſe, or originally deficient without the ſpeech being impaired."

The paſſage from the pharynx, above the velum palati, leads into a large and irregularly formed bony cavity, lined with a ſoft membrane, and increaſed by many excavations in the neighbouring bones. This is the cavity of the noſe, divided by a nearly perpendicular partition into two halves, the right and left noſtrils. This cavity is deſcribed under the articles CRANIUM and NOSE. The air emitted from the larynx, ruſhes into theſe bony hollows, when they are not filled with mucus, ſtrikes their ſides, and throws the whole of the ſurfaces into vibrations, from which important modifications of the voice enſue.

Phyſiology of the Voice and Speech.—The voice, like all other ſounds, is a vibration communicated to the air; and it offers to our obſervation, like them, three diſtinct kinds of qualities, independent of each other. 1. The tone, or the various degrees of acuteneſs and graveneſs, which depend on the velocity of the vibrations. 2. The intenſity, or the degrees of force, which depend on the extent of the vibrations. 3. The character or key, which ariſes from circumſtances hitherto undetermined, and relating to the ſtructure, the ſubſtance, or the figure of the ſonorous body. The human voice is ſuſceptible of a fourth order of modifications; *viz.* that which we repreſent by the letters of the alphabet, and which is itſelf divided into two other orders; the one relative to the principal ſounds, which we repreſent by the vowels; and the other to their articulations, which conſtitute the conſonants. We do not exactly know on what the two latter modifications depend: and although we perceive to a certain point the circumſtances under which they are executed, we are not yet able to imitate them by artificial inſtruments.

The ſound is produced by the paſſage of air through the rima glottidis, or the ſlit-like opening left between the two chordæ vocales. Almoſt invariably it is the paſſage of the air from the lungs, in exſpiration, that produces the ſound: but there are ſome rare exceptions to this. In hiccough, and under ſome circumſtances in coughing, ſound is produced during inſpiration. Many conceive, moreover, that the phenomena of ventriloquiſm are to be explained by the exertion of the vocal organs, when air is admitted into the cheſt.

That the larynx is the primary organ, in which the original ſound is produced, is proved by the circumſtance, that diſeaſes and accidents affecting it deſtroy or modify the voice. If an opening be made in the trachea, below the larynx, ſo that no air ſhall paſs through the latter, no voice is produced. When, on the contrary, an opening is made immediately above the glottis, the voice is not affected. Bichat made an inciſion between the os hyoides and the thyroid cartilage, and through the membrane, which connects the tongue to the epiglottis: through this tranſverſe opening he drew out the epiglottis with a hook, ſo that the ſound, inſtead of paſſing through the mouth and noſe, came directly by the external wound. The voice was as ſtrong as before, and very little changed in character. He drew the glottis between the ſides of the wound, ſo that the ſound could not paſs at all into the mouth and noſe: the reſult was ſtill the ſame. In theſe experiments the epiglottis may be completely confined, or even cut away, without affecting the phænomena, ſo that it can have no concern in the formation of the voice. When the arytenoid cartilages were cut through, or the thyroid divided longitudinally, as in the operation of bronchotomy, the voice was deſtroyed.

The two elaſtic ligamentary and membranous bodies, which form the chordæ vocales, are analogous, in the human inſtrument of the voice, to the various proviſions for producing vibration in the different wind inſtruments. No ſound is produced by blowing into a tube through a ſimple opening; the only effect is a motion of the air, incapable of producing ſound, unleſs it meets with a body ſuſceptible of being thrown into vibration. It is, moreover, aſcertained that the ſides of the inſtrument are not the vibrating parts: for the ſubſtance of which they are compoſed, or the manner in which they are held, produces no change in the tone or key. On examining the parts, to which the mouth is applied, in the various wind inſtruments, it appears, that vibrations are produced in the air contained in the tube, as they are in the external air; that is, the intervention of an elaſtic body is neceſſary, which the blowing of the player agitates, and the vibrations of which are communicated to the air in the tube; or at leaſt ſome angular body, againſt which the air may break as it paſſes with violence, and thereby be thrown into vibration. In the flute with a mouth-piece, in organ-pipes of various kinds, in the hautboy, baſſoon, &c. in trumpets, horns, &c. there are different proviſions of this kind, to which the chordæ vocales are perfectly analogous. The tube then produces no ſound itſelf, it only modifies, directs, or augments that which it produced at its embouchure by the ſonorous body againſt which the air breaks. The trachea of an animal is a continuous tube without any contraction, or any piece ſuſceptible of vibration, except at its upper extremity, or the glottis. As the ſound is only formed at the end of the trachea, that tube cannot ſerve to modify it; it can only be compared to the pipe of the bellows of an organ, or to any canal which may convey air to the embouchure of the inſtrument; and the only part of the vocal organ in the mammalia, which can be compared to the tube of one of our wind inſtruments, is that placed in front of the glottis, *viz.* the mouth and naſal cavity. If we conſider, not only the want of reſemblance between theſe two cavities and all the inſtruments which we are acquainted with, but alſo the almoſt infinite number of means by which we can change their length, diameter, figure, and vents,—means which it is almoſt impoſſible to determine with ſufficient exactneſs to deduce from them phyſical conſequences, we ſhall not be ſurpriſed at the difficulties which the theory of the human vocal organ preſents.

But the mere paſſage of the air through the glottis is not ſufficient for the purpoſes of this function. The voice connects us with the individuals of our own ſpecies, enables us to communicate our thoughts to them, and muſt, conſequently, be under the regulation of the will. Hence it is produced by voluntary motion, and does not take place except under the influence of volition. We are conſtantly breathing during ſleep, without the production of any ſound: and we may exſpire, as ſtrongly as we pleaſe, in the waking ſtate without the voice being formed, until we exert a particular act of volition. Again, although the whole ſtructure of the larynx is entire, the ligature or ſection of the recurrent nerves, or of the nerves of the eighth pair, deſtroys the voice. An injury of one nerve deſtroys half the vocal powers, but the voice is completely loſt by operating on both. Galen performed this experiment repeatedly on pigs: Veſalius, and other more modern phyſiologiſts, have aſcertained that the effects are correctly ſtated by Galen. In ſhort, all the changes and conditions of the vocal organs, of whatever deſcription, neceſſary to the production and modification of ſound, are produced by the muſcles of the part, under the influence of the will. The exact nature of the muſcular motions, required for producing the voice, is not known. Bichat obſerved, in the experiments already alluded to, that the rima glottidis was contracted whenever a ſound was uttered; and that this contraction was the more ſenſible, in proportion as the ſound was ſtronger. He ſtates that it never was dilated during the formation of ſound. He obſerved, moreover, that inſpiration and exſpiration were conſtantly attended reſpectively by dilatation and contraction of the glottis.

The air expelled from the lungs through the opening, prepared for its paſſage by the action of its proper muſcles, throws the ſides of this aperture, the chordæ vocales, into a ſtate of vibration: the ſame effect is produced in the larynx, whoſe cartilaginous ſtructure renders it particularly ſuſceptible of ſuch vibrations, and in all the ſurrounding organs. The ſound produced by the tremulous motions of all theſe parts is the voice. Hence we underſtand why hoarſeneſs and ſmallneſs of the voice accompany catarrhs, in which the unuſual coverings of mucus render the parts leſs ſuſceptible of vibration; why thoſe animals which have the greateſt quantity of cartilage and the leaſt membrane in their vocal organs, have the ſtrongeſt and moſt ſonorous voices, and *vice verſâ*? We ſee alſo that all animals provided with a pulmonary organ will have a voice; ſince nothing more is required, for the production of this ſound, than the accumulation of air in ſome receptacle, its expulſion in a maſs, with a certain force, and its meeting on its paſſage with elaſtic and vibratory organs. Fiſhes, which have gills, and inſects, in whom the diſtribution of air is by means of tracheæ, produce no ſound.

It ſeems impoſſible to explain how the paſſage of air through the human glottis ſhould produce vocal ſounds diſtinguiſhing man from all other animals, and how each animal ſhould have his peculiar and characteriſtic voice, where the differences of ſtructure, in a part of ſuch ſimple formation, muſt be very ſlight. Yet it ſeems true that the glottis alone produces the ſpecific character of the voice in each animal. Numerous and reſpectable authors affirm, that the inflation of air through the glottis is ſufficient, even in the dead animal, to produce its particular voice: this has been aſſerted of the human ſubject, the cow, pig, cat, rabbit, hare, gooſe, and frog. It is directly adverſe to what we have already ſtated concerning the neceſſity of ſome muſcular action to the production of the voice, and is ſo contrary to thoſe principles, by which theſe functions are ſubjected to the will, that we cannot help doubting the whole aſſertion. After reciting what others have ſtated, Haller adds, "with me theſe experiments have not been ſo ſucceſsful: I have ſometimes obtained a ſound, that might be recogniſed as the voice of the animal, but could never imitate the character of the voice in the pig or dog, and much leſs in man." Elem. Phyſiol. lib. ix. ſect. 3. § 4.

As the ſound, formed in the larynx, or the voice, proceeds through the mouth and the multiplied hollows of the noſtrils, it undergoes various modifications, according to the nature of theſe parts, which produce in it changes affecting its key or pipe.

Ventriloquiſm is, perhaps, one of the moſt ſingular phenomena connected with the vocal functions; and certainly one, of which the nature is very little underſtood. This name, as well as the Greek term of engaſtri-muthiſm, proceeds on the ſuppoſition that the ſound comes from the abdomen: but we cannot doubt, in general, that the vocal organs alone are concerned, however unable we may be to explain the exact nature of the proceſs. Ammann, the Swiſs, whoſe philoſophical labours on the ſubject of language, and particularly in the inſtruction of the deaf and dumb, entitle him to much confidence, ſays, that he ſaw an old woman who could ſpeak during inſpiration, and others have explained ventriloquiſm in the ſame way. We believe that the point has not been ſufficiently aſcertained by actual obſervation: and others, in their attempts at explanation, even ſuppoſe that it is produced, like ordinary ſpeech, during exſpiration. Some conceive that the tongue is fixed, and that ſome motions of the pharynx and velum palati do the buſineſs. Richerand obſerved, that a man who could give a dialogue between two ſpeakers, with different voices, as if placed at ſome diſtance from each other, did not inſpire while he was doing this, but that he expelled air in much ſmaller quantity than uſual. The ſame author obſerves, that a Mr. Fitz-James, who poſſeſſes the power of ventriloquiſm in wonderful perfection, does it by means of an extremely gradual exſpiration, in which the air is brought out in a very ſlender ſtream. He precedes this by a very deep inſpiration: hence a full ſtate of the ſtomach renders the exertion of his talent difficult, which all individuals, who have had the art in queſtion, ſeem to experience. By accelerating or retarding the exit of this air, Mr. Fitz-James can imitate different voices, make his auditors believe that the interlocutors in a dialogue, which he carries on alone, are placed at different diſtances, and produce the moſt complete illuſion on theſe points. See Richerand, Elemens de Phyſiologie, § 2, p. 339.

In hawking the air is violently forced, by a kind of interrupted action, through the trachea, larynx, and fauces, ſo as to detach the ſecretions of the parts, or any thing elſe which lies on the ſurface. The peculiar noiſe is produced by the air thus violently daſhed againſt the parts.

Snoring is produced by a kind of tremulous oſcillation of the velum palati, generally in inſpiration, but ſometimes alſo in exſpiration. Wailing, or the plaintive ſound produced in weeping, is the conſequence of tremors of the ſoft palate, gradually diminiſhed in force as the air is exſpired.

In humming the mouth is cloſed, and the exſpired air enters the naſal cavities with tremulous motions of the muſcles of the fauces.

When the tongue is drawn upwards and preſſed againſt the palate, and then ſuddenly depreſſed, ſo as to allow the air to paſs quickly, the noiſe called chuckling takes place. By drawing the lips between the teeth, and then quickly ſeparating them, we can imitate the trot of the horſe; and by exerciſe we can even produce a ſound like the clapping of hands.

When we wiſh to aſcertain the odorous properties of any body, we ſniff at it; that is, the inſpired and exſpired air is conveyed through the noſe with a tremor of the alæ naſi cauſing a particular noiſe.

Hiſſing is produced by expelling the air between the teeth, when brought cloſe together.

In whiſtling, the tongue is rendered concave on its ſuperior ſurface, and applied to the bony palate, and upper teeth, ſo as to have a paſſage for the air between it and thoſe parts; the lips are at the ſame time contracted into a round aperture; and the point of the tongue is in contact with the front lower teeth. The vibrations of the parts through which the ſound paſſes produce the peculiar effect, and the motions of the tongue and lips increaſe or diminiſh the dimenſions of the openings through which it paſſes. The production of a loud ſound requires a large quantity of air, a ſtrong and accelerated exſpiration, and a conſiderable tremor of the chordæ vocales. The lungs muſt therefore be large and admit eaſily of diſtention; the trachea and larynx muſt alſo be ample, and the reflexion of the ſound in all the paſſages unimpeded. A diſtended ſtate of the ſtomach is unfavourable to the production of ſuch ſounds, as it impedes the deſcent of the diaphragm. The impervious ſtate of the lungs in the conſumptive muſt be equally unfavourable; and we accordingly find that the voice becomes weaker, as the diſeaſe advances.

In forming high or acute ſounds, a contracted ſtate of the glottis, with tenſion of its ligaments, are required; the air paſſes rapidly through the narrow opening, and numerous oſcillations of its ſides are produced. The whole larynx is carried upwards and forwards; and, in uttering the moſt acute ſounds, the head is thrown backwards, that the larynx may be elevated through a wider range. This elevation equals nearly half an inch for one octave. That the changes above-mentioned take place, is proved, by placing the finger on the larynx, which gives us immediate demonſtration of its aſcent, when we utter acute ſounds; by the comparatively acute voice of children and women, in whom the larynx is ſmall, and the glottis conſequently narrow; by comparative anatomy, which ſhews us that the glottis is ſmall and narrow in ſinging birds, large and relaxed in animals which utter deep ſounds; by the blowing of wind inſtruments, in which the opening for the paſſage of the air is always contracted in order to produce the high notes; and alſo by this general fact, that the ſounds are always more acute in proportion as theſe inſtruments are of ſmaller ſize.

If we talk too impetuouſly, the quick paſſage of the air throws the chordæ vocales into too rapid oſcillations, and the voice ſuddenly becomes exceedingly ſhrill. Theſe changes have nothing to do with the loudneſs of the ſound; a weak as well as a ſtrong ſound may be either acute or grave in its tone.

In the production of deep or baſe tones, an oppoſite ſtate of parts is required; the larynx is carried downwards, and the head itſelf brought towards the cheſt. This deſcent, like the aſcent, is about half an inch for an octave. In the male ſex, where the larynx is larger, and the glottis conſequently more ample than in the female, the voice is habitually deeper toned. Eunuchs and women may be taught to ſing ſoprano, but not baſs. When very low tones are formed, in which the chordæ vocales are greatly relaxed, the production of ſound ceaſes altogether.

A human voice that has been much exerciſed, can paſs through about two octaves and a half in either direction from the middle; conſequently it has a range in the neck of nearly three inches.

The queſtion has been much agitated among phyſiologiſts, whether the changes of tone in the voice depend on alterations in the diameter of the opening, or in the ſtate of tenſion of the ligaments forming its ſides. By the advocates of the former opinion, the organ of the human voice is compared to wind inſtruments, in which the enlargement of the aperture renders the ſound grave, and its diminution acute; and by thoſe of the latter to ſtringed inſtruments. We admit, in the preceding account, the efficacy of both kinds of changes, but we conſider the alterations in diameter as the moſt efficient. The change of the voice from acute to grave, at the time of puberty, when the larynx undergoes a remarkable developement, as well as its acuteneſs in females, whoſe glottis is leſs by one-third than that of man, ſhew that the ſize of the aperture has a great influence. Obſerving, on the other hand, that the chordæ vocales admit of conſiderable tenſion and relaxation, we muſt allow that theſe variations will render them ſuſceptible of executing, in a given time, vibrations more or leſs extenſive and rapid. And although they are neither dry, ſtretched, nor iſolated, which are neceſſary conditions to the production of ſound in thoſe ſtringed inſtruments to which the larynx has been compared, yet they are analogous to vibrating bodies placed at the top of wind inſtruments, as the reed in hautboys, the mouth piece in flutes, &c. and equally contribute to the formation and varied inflexion of vocal ſounds. Haller, in his Elementa Phyſiologiæ, lib. ix., has given a long and very inſtructive account of the whole controverſy. We ſhall be ſurprized at ſeeing how very ſmall a change can alter the tone, when we reflect that the breadth of the rima glottidis does not exceed a line at its broadeſt part, and that there is an almoſt innumerable variety of tones diſtinctly perceptible.

Singing is the expreſſion of love and joy, common to birds with the human ſubject. The pronunciation of words or letters is not eſſential to its nature. It includes the greateſt variety of acute and grave ſounds, and the moſt rapid tranſition from the one to the other. In general the tone of ſinging is more acute than that of talking. The great difference between theſe two modes of vocal exertion is in the tranſitions of ſinging; in order to execute theſe, the larynx, inſtead of reſting, is ſuſtained in a kind of equilibrium between the elevating and depreſſing powers. A perſon will ſoon perceive this by placing his finger on the larynx while he ſings, or by obſerving the throat of another. As ſinging requires the exertion of many muſcles, it ſoon fatigues. It alſo exerciſes the muſcles of reſpiration; as a large quantity of air is frequently required. The rapid paſſage of the air in ſinging dries the parts quickly.

Speech is the formation of the voice, produced, as we have already deſcribed, by means of the organs about the throat, noſe, and mouth, into articulated ſounds, by which men communicate their thoughts to each other. All animals have a voice, but man alone ſpeaks in the ſenſe now alluded to. Some, indeed, which have a broad tongue, have been taught to pronounce a few words; but they expreſs no thoughts by theſe ſounds. We believe that no ſufficient reaſon can be drawn from organization, why man invariably ſhould poſſeſs, and animals invariably want the power of ſpeech.

The tones are not ſo quickly changed as in ſinging, conſequently the larynx is much leſs moved. Recitative is a kind of mixture of ſinging and ſpeaking, partaking equally of the characters of each.

If we conſider a letter to be a ſound, that cannot be reſolved into more ſimple elements, ſpeech is the formation of the voice into the ſounds expreſſed by letters, and the compoſition of words from theſe.

Letters are divided into vowels and conſonants. The former (vocales) are produced ſimply by the voice paſſing through the mouth opened to a greater or leſs degree, without the tongue being applied to the lips or to any other part. Theſe ſounds are produced in laughing, and ſomething like them may be obſerved in the voices of animals.

In the formation of the vowels, the paſſage through the noſe is cloſed; the voice proceeds ſtraight through the tongue and lips, and the mouth is open. The larger the ſpace left for the voice along the tongue and through the lips, or the lower the tongue is placed in the mouth, and the wider the lips are apart, the more deeply do the vowels ſound. Theſe ſounds are the moſt clear and diſtinct, becauſe the canal, through which they proceed, is free and unconfined in every direction.

The conſonants are ſounds pronounced with the vowels, and modifying or limiting them. They muſt therefore have vowels either before or after them. The ſound of the vowel in theſe caſes is altered by the tongue being applied to ſome part in the cavity of the mouth, ſtriking againſt the teeth or lips, &c.

The conſonants are diſtinguiſhed into different claſſes according to different principles of arrangement. Soemmerring gives the four following claſſifications.

I. 1. Naſales; *m, n, ng.* 2. Orales; *l, r.* 3. Sibilantes; *f, g, h, ch, ſ.* 4. Exploſivæ; *b, d, k, p, q, t.* 5. Compoſitæ; *x, z,*

II. 1. Naſales; *m, n, ng.* 2. Liquidæ; *l, r.* 3. Mutæ; *f, h, ch, ſ, z, ſch. th, v, w.* 4. Exploſivæ; *b, p, d, t, k, g.*

III. 1. Mutæ; *k, p, t.* 2. Exploſivæ et vocales; *g, r.* 3. Exploſivæ; *f, h, ſ, ſch.* 4. Vocales; *b, d, g, l, m, n.*

IV. 1. Gutturales; *g, ch, h, th.* 2. Palatinæ; *d, l, n, r, ſt.* 3. Labiales; *b, f, m, p, w.* De corp. hum. fabrica, t. 6. p. 110.

To point out the motions by which all theſe ſounds are produced, would lead us into too wide a field. We refer the reader to the work of Soemmerring already quoted, and to Haller's Elementa Phyſiologiæ, lib. ix.

The remarkable change which occurs in the voice, at the time of puberty, muſt be referred to the ſudden developement which the organ undergoes at that time, as we have already ſtated. The various affections of the mind are accompanied by the utterance of particular ſounds; and this is ſtrongly ſeen alſo in animals. In them, the wants connected with the generative functions, afford the moſt frequent cauſe for the exertion of the vocal organs. But we may obſerve further, both in birds and quadrupeds, that certain modifications of the voice expreſs fear and anger, affection for the offſpring, joy and pain, that others are uſed in calling the aſſembly together, and, in the caſe of gregarious animals, in imparting to each other ſomething which we do not underſtand. Similar vocal expreſſions of what is paſſing internally are obſerved alſo in the dumb, who have not learned to ſpeak; and even animals diſtinguiſh in man the ſounds denoting anger, approbation, &c. In the ſounds which we utter, on many of theſe occaſions, in civilized ſociety, there may be ſomething ariſing from imitation or habit, or referrible in ſome way to a conventional origin; but much of it is ſo completely inartificial, that we ſeem to obey merely a ſpecies of inſtinct, and to expreſs the ſimple voice of nature. Various malformations and diſeaſes of the organs concerned in ſpeech impair or entirely deſtroy the power of pronunciation. From the important ſhare which the tongue has, in producing articulated ſounds, we ſhould expect that extenſive injuries of it would be very injurious in this way. But experience ſhews us that it may be very extenſively injured without greatly impairing the powers of ſpeech. Indeed ſeveral letters may be pronounced without its aid. Mr. Louis has collected ſeveral caſes in his "Memoire phyſiologique et pathologique, ſur la Langue;" in proof of this point, he ſtates, that after very ſerious injuries the power of ſpeech was at firſt greatly impaired; but that it gradualy returned. Memoires de l'Acad. de Chirurgie, t. v.

Stammering may be cauſed by too large and thick a tongue, by great length of the frænum; by any cauſes that impair the motions of this organ, whether they be referrible to organization, or to the ſtate of the nervous ſyſtem, as in drunkenneſs, apoplexy, &c.

Too great confinement of the organ, by its frænum, ſometimes prevents children from learning to ſpeak.

Want of the front teeth, as well as undue ſize of the tongue, produces liſping.

The confinement of the tongue in the aged, conſequent on the diminution of the cavity of the mouth from the loſs of the teeth, very much impedes the powers of pronunciation.

When we aſſign certain organical defects, as the cauſes of defective pronunciation, we do not mean to aſſert that this is conſtantly true. A perſon who ſtammers, for example, will often be able to ſpeak clearly, if he will ſpeak ſlowly.

The obſtruction of the paſſage of the ſound through the noſe, either by cloſing the front openings of the noſtrils, or by the elevation of the velum palati behind, produces a peculiar modification of the voice, which is ſtrangely enough termed, in common language, ſpeaking through the noſe. Diſeaſes of the palate, or its velum, ulcerations, and preternatural openings in them, have alſo very conſiderable effect on the voice; the ſame may be obſerved of diſeaſe affecting the bones of the noſe.

Dumbneſs may be accidental, or may ſubſiſt from birth. In the former caſe, it ariſes from organic injury, which either affects the mechaniſm of the parts, or which intercepts the communication between the vocal muſcles and the brain. In dumbneſs from birth, deafneſs ſeems to be always the cauſe; ſo that the abſence of ſpeech ſhould here rather be called ſilence. This, at leaſt, is conſtantly the caſe, according to the obſervation of Sicard on the numerous pupils committed to his care. Here there is an abſolute ignorance of ſounds, and of their repreſentative value in letters of the alphabet. The vocal organs exhibit no marks of deficiency;

they are fit, in ſhort, to fulfil the uſes for which nature has deſtined them, but they remain in a ſtate of inaction, becauſe the deaf infant is not conſcious that he has the means of communicating his thoughts. See the article DUMBNESS.

Bichat, Anatomie Deſcriptive, t. ii. Soemmerring, De Corporis humani fabrica, t. vi. Haller, Elementa Phyſiologiæ, lib. ix.

LASAIA, in *Geography*, a town of Naples, in Principato Citra; 21 miles S.S.W. of Cangiano.

LASANON, a word uſed by different authors in very different ſenſes; ſome applying it to the trivet commonly uſed in kitchens; others to a cloſe-ſtool; and others, among whom are Hippocrates, and the ancient phyſicians, for a ſort of chair, contrived for a woman in labour to ſit in, as being ſo made, that the weight of the child, when born, ſhall help to draw away the fecundines.

LASCARIS, CONSTANTINE, in *Biography*, a learned deſcendant of the imperial family of that name, was born at Conſtantinople. He quitted his native city when it was taken by the Turks in 1454, and went to Italy, where he was moſt amicably received by duke Francis Sforza of Milan, who placed his own daughter, a child of ten years of age, under the care of Laſcaris for inſtruction in the Greek language. For her uſe he compoſed his Greek grammar. From Milan he went to Rome, and from thence, at the invitation of king Ferdinand, he repaired to Naples, where he opened a public ſchool for Greek and rhetoric. Having ſpent ſome years in this employment, he was deſirous of repoſe, and embarked with the intention of ſettling at a town of Greece; but having touched at Meſſina, he was urged by ſuch advantageous offers to make it his reſidence, that he complied, and paſſed there the remainder of his days. Here he received the honour of citizenſhip, which he merited by his virtues as well as his learning, and by the influx of ſcholars which his reputation drew thither, among whom was the celebrated Bembo. He lived to a very advanced age, but the time of his death has not been exactly aſcertained. He bequeathed his library to the city of Meſſina. His Greek grammar was printed at Milan in 1476, and was the firſt book that iſſued from the Italian preſs. A better edition of it was given in 1494, by Aldus Manutius: Eraſmus conſidered it as the beſt Greek grammar then extant, excepting that of Theodore Gaza. Laſcaris was author likewiſe of two tracts on the Sicilian and Calabrian Greek writers.

LASCARIS, JOAN ANDREW, a learned Greek of the ſame family with the preceding, came over to Italy, on the ruin of his country. He ſtudied at Padua, obtained a high reputation for his knowledge in the learned languages, and received the patronage of Lorenzo de Medici, who ſent him into Greece with recommendatory letters to ſultan Bajazet, in order to collect ancient manuſcripts. After the expulſion of the Medici family from Florence, in 1494, he was carried to France by Charles VIII., after which he was patronized by Louis XII., who ſent him, in 1503, as his ambaſſador to Venice, in which office he remained till 1508. He joined the purſuit of literature with his public employment, and held a correſpondence with many learned men. After the termination of his embaſſy, he remained ſome years at Venice, as an inſtructor in the Greek language. On the election of pope Leo X. to the popedom in 1513, he ſet out for Rome, being perſuaded that he ſhould meet with a favourable reception from that patron of learning. At the inſtigation of Laſcaris, Leo founded a college for noble Grecian youths at Rome, at the head of which he placed the author of the plan. In 1518, he quitted Rome for France, whither he was invited by Francis I.; here he was employed by the monarch in forming the royal library. He was alſo ſent as his ambaſſador to Venice, with a view of procuring Greek youths for the purpoſe of founding a college at Paris ſimilar to that of Rome. After the accompliſhment of other important miſſions, he died at Rome in 1535, at an advanced age. As an author he compoſed epigrams in Greek and Latin; he tranſlated into the Latin language, a work extracted from Polybius, on the military conſtitutions of the Romans; and he printed at Florence a magnificent edition of the Greek Anthologia. By his contemporaries he was greatly praiſed, on account of the eminent ſervices which he performed for the extenſion of literature.

LASCHE, in *Geography*, a town of Bohemia, in the circle of Chrudim; eight miles E. of Chrudim.

LASCHI, in *Biography*, an admirable ſinger and actor in the firſt burletta band of ſingers which arrived in England during the autumn of 1748, when ſerious operas were diſcontinued by the abdication of lord Middleſex, who was as unſucceſsful in his opera regency, as James II., in endeavouring to eſtabliſh the Roman Catholic religion in this country.

The new troop conſiſted of Pertici, as *buffo caricato*, Laſchi, *tenor*, and Guadagni, *counter tenor*, (then very young,) as ſerious men. Fraſi, and, afterwards, Mellini, for ſerious women; and the comic female parts by the wives of Pertici and Laſchi, the two beſt comic actors we ever ſaw on any ſtage, formed a very good troop, and in the comic operas of "La Comedia in Comedia," "Orazio," "Don Colaſcione," "Gli tre Ciciſbei Ridicoli," &c. compoſed by Latilla, Mitale Reſta, and Ciampi, who came over as maeſtro to the company, pleaſed the public and filled the theatre very ſucceſsfully during the whole winter. Laſchi was certainly the beſt firſt buffo, except Lovatini, that has ever appeared on our ſtage: and the acting of him and Pertici was undoubtedly the moſt amuſing and ingenious that can poſſibly be imagined.

LASCIGO, in *Geography*, a town of Naples, in Principato Citra; 18 miles W. of Policaſtro.

LASCO, JOHN A, in *Biography*, a zealous promoter of the Reformation, was born in Poland, of a noble family, about the cloſe of the fourteenth century. He received the early part of his education in his own country, and then travelled into foreign parts for improvement. In Switzerland he became acquainted with the celebrated Zuingle, by whoſe influence he determined upon ſtudying divinity, and having by the example of his friend imbibed the ſpirit of the reformation, he returned home with the deſign of propagating the principles which he regarded as having their foundation in important truth. At firſt he was promoted to a high ſtation in the Catholic church, and at length was nominated biſhop of Veſprim, in Hungary. His honours, probably, did not ſit eaſy upon him, and he determined to make an open avowal of his ſentiments; by this decided courſe he drew upon himſelf the vengeance of the Catholic biſhops, who did not heſitate to pronounce him an heretic. He appealed to the king, but the ſovereign was either unable or unwilling to extend the ſhield of his authority in protecting his biſhop, and he was obliged to quit Hungary in the year 1540. In 1542, he was choſen miniſter of a church at Embden, and in the following year he went to Oldenburgh, to eſtabliſh the doctrines and diſcipline of the reformation in that diſtrict. In 1544, he was invited into Pruſſia, by duke Albert, for the ſame purpoſe, but as he was not altogether a Lutheran, he was obliged to relinquiſh this miſſion and to return to Frieſland. Here he reſided about ten years, when the publication of the Interim by the emperor Charles V. compelled him to ſeek another aſylum, which he found in England, on the invitation of Edward VI., which was conveyed to him by archbiſhop Cranmer. Here he became miniſter to a German Proteſtant church, which aſſembled for divine worſhip at Auſtin-Fryars. Of theſe Proteſtants, almoſt four hundred were admitted to the honour of citizenſhip; they were not tolerated, but guaranteed by royal patent, in the conſcientious diſcharge of their duties to God, while numbers of his majeſty's natural born ſubjects were grievouſly perſecuted on account of their inability to join in all the ceremonies enjoined by the eſtabliſhed religion. The preamble to the patent referred to, is a curious document conſidering the times; it admits that the German church made profeſſion of pure and uncorrupted religion, and was inſtructed in truly Chriſtian and apoſtolical opinions and rites, and it was permitted them to enjoy and exerciſe their own rites, ceremonies, and diſcipline, though they were different from thoſe uſed in this kingdom. Laſco avowed the ſame opinions as thoſe held by Hooper, Latimer, and other illuſtrious divines of that day: he was, however, permitted to live in peace during the reign of the youthful monarch; but upon the acceſſion of the infamous Mary, he and his congregation were ordered to leave the kingdom. They embarked with their families and property, and at the commencement of a very ſevere winter arrived off the coaſt of Denmark, but were not permitted to land on account of their known tenets. For the ſame reaſon they were refuſed an aſylum at Lubec, Hamburg, and ſome of the cities of Saxony; at length, after they had been driven from place to place, they were hoſpitably received at Embden in March 1554. In the following year Laſco went to Frankfort upon the Maine, and obtained leave from the ſenate to build a church for foreign Proteſtants. In 1556, he wrote a letter to Sigiſmund, king of Poland, in vindication of himſelf and his doctrines, from certain miſrepreſentations which had been circulated by his enemies. In 1557, he publiſhed an apology for the church of the reformed Proteſtants at Frankfort, on the ſubject of the variation in their creed from that of the confeſſion of Augſburg with reſpect to the Euchariſt. He was anſwered by Weſtphalus, who, feeling that he had the weakeſt ſide of the argument, exhorted the ſenate to interpoſe its power, and to withdraw its protection from the diſciples of Zuingle, whom he denominated rank heretics, and the Devil's martyrs. Laſco, after a thouſand viciſſitudes, returned to his native country; but ſcarcely had he arrived, when the biſhops and other eccleſiaſtics ſet about every method to ruin him. A ſynod was convoked to meet at Warſaw; the reſult of their deliberations was, that Laſco was a heretic; he was accuſed before the king, and a petition was drawn up praying that he might be baniſhed. The ſovereign nobly rejected their demand, and he was permitted to live free from perſecution, though he was daily aſſailed by the dark calumnies of his enemies. He died in 1560, leaving behind him many works which teſtify that he was a man of great talents and profound learning. He was the friend of Eraſmus, who acknowledged the obligations he was under to him; and Peter Martyr calls him his moſt learned patron. He was highly eſteemed, and frequently conſulted by Sigiſmund, king of Poland; and he is commended by contemporary hiſtorians as a man poſſeſſing many virtues, and the moſt unaffected piety. Gen. Biog.

LASCORIA, in *Ancient Geography*, a town of Aſia, in Galatia, belonging to the Trocmi. Ptolemy.

LASDIPELEN, in *Geography*, a town of Pruſſian Lithuania; nine miles N. of Pilkallen.

LASER Cyrenaicum, in the *Materia Medica*, a name ſuppoſed to be given by the ancient Greeks to the gum we at this time call aſſa fœtida. The word aſſa, or, as it was originally written, aſa, was evidently formed on the laſer of the Greeks; but there was alſo an aſa mentioned by the old authors very different from this, being a fragrant and ſweet-ſcented gum. This ſweet gum was evidently the laſer and aſa, or aſſa, of the ancient Greeks: and the ſilphium was the plant which produced it. This plant grew in Cyrene, and furniſhed it a long time; but in the days of Pliny it was in a manner loſt. The people of Cyrene found it more profitable to feed their cattle upon the ſilphium, than to gather its gum.

Pliny continues to tell us, that by the feeding cattle on this plant, it was ſo perfectly deſtroyed, in a courſe of years, that there had been, of a long time, only one plant of it ſeen, and that reckoned ſo great a curioſity, that it was ſent as a preſent to the emperor Nero.

When Cyrene no longer afforded the ſilphium, it was ſought for in other places. The original aſa, or laſer, had the ſmell of myrrh, but more mild and agreeable; and the aſa of ſucceeding times had that of leeks or garlic, and thence was diſtinguiſhed by the name *ſcorado laſerum*.

LASERPITIUM, in *Botany*, Laſerwort; an ancient name of uncertain derivation, ſynonymous with the σιλφιον of the Greeks. *Lac ſerpitium*, alluding to its milky juice, or *lactipitium*, becauſe that milky juice has a pitchy ſmell, both ſuggeſted by etymologiſts, afford little ſatisfaction. The word is evidently compounded of *Laſer*, the name of the gum which it produces, and from which *Aſa* is by ſome thought to have been corrupted. Hence *Aſa-fœtida* has been ſuppoſed the true *Laſer*, or gum of the σιλφιον, which is known to be of a fetid nature. Ambroſinus aſſerts *Laſer* to be a corruption of *Lactir*, from *lac*, milk. Whatever the σιλφιον of the Greeks, or the *Laſerpitium* of the Latins may have been, the *Silphium* of modern botaniſts is a genus of the ſyngeneſious claſs, and the *Laſerpitium* is one of the umbelliferous tribe, of which we are now to ſpeak. It ſo far accords with the ancient plant, that ſeveral of its ſpecies diſcharge, when wounded, an acrid and ſtrongly ſcented reſinous gum.—Linn. Gen. 136. Schreb. 186. Willd. Sp. Pl. v. 1. 1414. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 138. Sm. Prodr. Fl. Græc. Sibth. v. 1. 191. Juſſ. 222. Tourn. t. 172. Lamarck Illuſtr. t. 199. Gærtn. t. 85. (Siler; Gærtn. t. 22.)—Claſs and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*, Linn. *Umbelliferæ*, Juſſ.

Gen. Ch. *General umbel* very large, of from twenty to forty rays; *partial* of many rays, flat. *General involucrum* of many leaves, ſmall; *partial* of many leaves, ſmall. *Perianth* of five teeth, ſcarcely diſcernible. *Cor. Univerſal* uniform; all the flowers fertile; *partial* of five ſpreading, nearly equal, petals, their points bent in ſo as to form the ſhape of a heart. *Stam.* Filaments five, briſtle-ſhaped, the length of the corolla; anthers ſimple. *Piſt.* Germen inferior, roundiſh; ſtyles two, rather thick, pointed, diſtant; ſtigmas obtuſe, ſpreading. *Peric.* Fruit oblong, with eight longitudinal membranous angles, ſeparable into two parts. *Seeds* two, very large; oblong, ſemicylindrical, flat on the inner ſide, furniſhed each with four dorſal and marginal membranes on the other.

Eſſ. Ch. Involucrum both general and partial. Fruit oblong, with membranous angles. Petals uniform, inflexed, emarginate, ſpreading.

The ſpecies of *Laſerpitium* are in general of a larger proportion, with more ample foliage, than moſt other umbelliferous plants. To this nevertheleſs there are ſome exceptions,

tions, for we perceive a prodigious difference between the gigantic *L. aquilegifolium*, Jacq. Auſtr. t. 147, and the little *L. ſimplex*, Jacq. Miſc. v. 2. t. 2. The 14th edition of Syſt. Veg. has fourteen ſpecies, comprehending Forſter's genus *Aciphylla*; Willdenow has twenty-three. In each of theſe liſts, however, there are ſome ambiguous or doubtful plants, which, from variations incident to this tribe, relative to the occaſional abſence or preſence of an involucrum, are ſuppoſed to be deſcribed twice over in the Linnæan ſyſtem. Such is the caſe with *L. Chironium*, ſuſpected to be the ſame as *Paſtinaca Opopanax*, we believe juſtly. Willdenow doubts whether *L. Archangelica* of Jacquin, Ic. t. 58, be diſtinct from this plant of Linnæus, but we are quite clear on this point, and are almoſt as perfectly ſatisfied that *L. Chironium* is *Paſtinaca Opopanax*, which laſt name Linnæus, in his note on the ſubject, has accidentally written *Coſtina*, apparently from having Bauhin's ſynonym in his head; yet Reichard, Willdenow, and Laicharding copy him without reflection or remark.

Indubitable ſpecies of *Laſerpitium*, which will ſerve to give a competent idea of the genus, are the following. None are natives of Britain.

L. *latifolium*. Broad-leaved Laſerwort. Linn. Sp. Pl. 356. Jacq. Auſtr. t. 146. (Libanotis Theophraſti major; Ger. em. 1010.)—Leaflets obliquely heart-ſhaped, undivided, with ſharp-pointed teeth.—Native of mountainous dry woods in various parts of Europe, flowering in July, ripening ſeed late in autumn. Jacquin obſerves that it varies greatly in ſize and roughneſs, being only a foot or two high on the Alps, while in leſs elevated ſituations it riſes to four or five feet, with ample and handſome foliage. He aſſerts alſo that wild plants of a very rough habit, on being brought into the garden, became ſmooth the next ſeaſon. Hence he determines the *L. aſperum* of Crantz, Diſſ. faſc. 3. 50. t. 1. f. 2, and *glabrum* of the ſame author, 54, to be one and the ſame ſpecies. This f. 2. of Crantz very correctly expreſſes a leaflet of our plant, ſuch as is preſerved in the Linnæan herbarium, and exhibited by Jacquin as above. The radical *leaves* are twice or thrice compound, with large, heart-ſhaped, ſtalked, undivided leaflets, unequal at the baſe, veiny, from one to two or three inches long; ſmooth and dark green above; paler, and more or leſs rough with rigid briſtles, beneath; the margin beſet with ſtrong broad ſharp ſerratures, the baſe entire. The *ſtem* is ſmooth and round, bearing a few ſmaller more entire leaves, whoſe common ſtalk is greatly dilated and inflated at the baſe. The *umbels* are broad. *Flowers* ſmall, white. Wings of the *ſeeds*, according to Jacquin's plate, even, and ſcarcely at all undulated, rounded not angular at their ſummit, agreeing very well with the firſt figure of the ſeed annexed to Moriſon's Sect. 9. t. 19. f. 1, ſo that, if he be right, his whole fig. 1. muſt belong to our plant, though it is not a very good one. We cannot help thinking too that the *Laſerpitium* of Rivinus, Pentap. Irr. t. 21, is the ſame ſpecies. Profeſſor Willdenow, however, ſeems to have been led by Crantz and Lamarck to eſtabliſh another ſpecies, by the name of *L. Libanotis*, for which he quotes this plate of Rivinus, as well as another figure of Moriſon, Sect. 9. t. 19. f. 6. This he ſuppoſes to be the *glabrum* of Crantz, who cites as a certain though rude figure *Libanotis alpina latifolia, ſemine criſpo*, Bocc. Muſ. 24. t. 3. The plant of Boccone, according to all appearance, we have from Italy, and can aver its being totally different from *L. latifolium* and all the ſynonyms of Willdenow's *L. Libanotis*, being, as far as we can tell, not yet defined by any ſyſtematic author. The wings of its ſeeds, though called *criſped*, are nearly even, and terminate in a lateral angle at the top, like Moriſon's t. 19. f. 6, which may poſſibly be a bad delineation of Boccone's plant. Willdenow does not mark his *L. Libanotis* as one that he had ſeen, and he might well be led into confuſion by the writers on whom he has depended. Among theſe the moſt blameable is Crantz, who roundly aſſerts his *aſperum*, (our *latifolium*,) to be *L. Chironium* of Linnæus, which we can poſitively contradict, and which nobody but Lamarck has believed. The latter ſeizes with alacrity the opportunity of cenſuring Linnæus on the ſubject of his ſynonymy, though in this inſtance unjuſtly, while he himſelf deſcribes under the name of *L. Libanotis*, with extremely confuſed ſynonyms, what appears clearly by his account to be *L. trilobum* of Linnæus, of which we ſhall now ſpeak.

L. *trilobum*. Three-lobed Broad Laſerwort. Linn. Sp. Pl. 357. (L. Libanotis; Lamarck Dict. v. 3. 423, by the very excellent deſcription. Liguſticum Rauwolfii, foliis aquilegiæ; Bauh. Hiſt. v. 3. p. 2. 148. Pluk. Phyt. t. 223. f. 7. Siler foliis aquilegiæ; Rivin. Pentap. Irr. t. 64.)—Leaflets broad-ovate, three-lobed, cut and ſharply ſerrated.—Native of Italy, and we believe alſo of Switzerland; though Profeſſor Lachenal, from whom we have a ſpecimen of the true plant, aſſerts the n. 793. of Haller, taken for this, to be only a variety of *latifolium*, which according to him has occaſionally two or three lobes in its lower leaflets. A Swiſs ſpecimen from Schleicher ſeems to be the real *trilobum*, but it wants the lower leaves, and therefore cannot be abſolutely determined. The *leaflets* of *L. trilobum* differ from the foregoing, in being by no means heart-ſhaped at the baſe, but either ovate or tapering, and more or leſs deeply three-lobed, ſometimes to the very baſe; as well as cut and ſharply ſerrated. The *umbel* is very large and ſpreading, with long purple rays. *Flowers* ſmall, white. Wings of the *ſeeds* even, and very narrow. Lachenal ſeems, when he wrote his remarks above alluded to, in Act. Helvet. v. 8. 145, not to have diſtinguiſhed this from the following, though they are widely different.

L. *aquilegifolium*. Great Columbine-leaved Laſerwort. Jacq. Auſtr. v. 2.—Leaflets ſeſſile, rounded, bluntly lobed and cut. Wings of the ſeed very narrow.—Native of Auſtria, Switzerland, and the Bithynian Olympus, firſt well determined by Jacquin. It is five or ſix feet high, with ample *leaves*, much reſembling thoſe of a Columbine in their rounded obtuſe form and ſegments. The *umbels* are very large and ſpreading. *Flowers* white. Wings of the *ſeed* even, and very narrow. Crantz makes it a *Siler*, and miſquotes under it ſynonyms which belong to the laſt, and which he therefore juſtly ſays "could never be gueſſed to belong to the preſent." Why then, as they certainly do not, are they quoted?

L. *Siler*. Mountain Entire Laſerwort. Linn. Sp. Pl. 357. Jacq. Auſtr. v. 2. 27. t. 145. Sm. Prodr. Fl. Græc. Sib. v. 1. 191. (Siler montanum officinarum; Ger. em. 1048.)—Leaflets elliptic-lanceolate, entire, ſtalked.—Found on the mountains of Auſtria, Switzerland, France, Greece, and other parts of the ſouth of Europe. It is of more humble growth than any of the former, and diſtinguiſhed by the form of its *leaflets*. The *ſeeds* are ſhaped and winged much as in the laſt. They are aromatic and very bitter. Haller complains of its being neglected as a medicinal plant, though ſtrong in aromatic virtues

L. *prutenicum*. Pruſſian Laſerwort. Linn. Sp. Pl. 357. Jacq. Auſtr. t. 153. Ehrh. Herb. 93. (L. minus; Rivin. Pentap. Irr. t. 23.)—Leaflets pinnatifid; their ſegments lanceolate, acute, decurrent, entire. Stem hiſpid.—Found in Pruſſia, Auſtria, Switzerland, &c. The *ſtem* is about two feet high, erect, hairy, as well as the leaf-ſtalks.

Leaves light green, ſmooth, bipinnate; their leaflets pinnatifid, with elliptic-lanceolate, decurrent, pointed ſegments. *Umbels* rather large, white, with white-edged involucral leaves. *Seeds* ſmall, their wings broadiſh and wavy.

L. *hirſutum*. Hairy Fine-leaved Laſerwort. Lamarck Dict. v. 3. 425, with a wrong reference to Linnæus. (L. Halleri; Villarſ. Dauph. v. 2. 625. L. n. 795; Hall. Hiſt. v. 1. 353. t. 19.)—Leaves hairy, many times decompounded, with lanceolate decurrent ſegments, often three-cleft. Involucral leaves with membranous fringed edges.—Native of the alpine parts of Switzerland, Savoy, and France. We gathered it on Mount Cenis, flowering in Auguſt. The broad, extremely compound, finely cut and hairy *leaves*, at once diſtinguiſh this ſpecies. The *umbels* are large, denſe, and white. Wings of the *ſeeds* rather broad, pale, and ſlightly criſped.

Laserpitium, in *Gardening, &c.* The plants of this genus grow naturally in the ſouth of France, in Italy, and Germany, and are preſerved in botanic gardens for the ſake of variety; they have no great beauty. It has been generally ſuppoſed, that the ſilphium of the ancients was procured from one ſpecies of this genus, but from which of them (if any) we are at preſent ignorant. All the ſpecies, if wounded, drop a very acrid juice, which turns to a reſinous gummy ſubſtance, very acrimonious. This was externally applied by the ancients to take away black and blue ſpots that came by bruiſes and blows, as alſo to take away excreſcences: it was alſo by ſome of the ancients preſcribed in internal medicines, but others have cautioned people not to make uſe of it this way, from the effects which they mention to have ſeen produced from the violence of its acrimony.

All theſe plants are extremely hardy, ſo will thrive in moſt ſoils and ſituations. They are propagated by ſeeds, which, ſown in autumn, will afford plants in the ſpring, that may be tranſplanted in the following autumn. Miller.

LASERRA, in *Geography*, a town of Corſica; 10 miles N.E. of Sarcena.

LASERWORT, in *Botany*, &c. See Laserpitium.

LASGRUFVA, in *Geography*, a town of Sweden, in Helſingland; 58 miles E. of Hudwickſwal.

LASH, or *to laſh*, is to make faſt the booms, anchors, &c. by ſeveral turns of rope, to prevent their moving by the motion of the ſhip.

Laſhing, which alſo denotes a piece of rope uſed to faſten or ſecure any moveable body in a ſhip, or about her maſts, ſails, and rigging, is chiefly uſed for binding up to the ſhip's ſide, muſkets, butts of water or beer, or pieces of timber to make ſpare top-maſts.

LASHERS are properly thoſe ropes only which bind faſt the tackles, and the breeches of the ordnance, when they are haled or made faſt, within board.

LASHOM Jamnas, in *Geography*, a town of Egypt, on the coaſt of the Mediterranean; 12 miles N.W. of Damietta.

LASIA, in *Ancient Geography*, an iſland ſituated on the coaſt of Lycias. Pliny.—Alſo, an iſland on the coaſt of the Peloponneſus, over-againſt Troëzené.—Alſo, one of the names of the iſle of Andros.

Lasia, in *Botany*, from λασιος, *hairy* or *briſtly*, becauſe the plant is beſet with numerous little briſtles or prickles. Loureir. Cochinch. 81.—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Piperitæ*, Linn. *Aroideæ*, Juſſ.

Gen. Ch. *Cal.* Spatha awl-ſhaped, twiſted, coloured, very long. Spadix ſhorter than the ſpatha, entirely covered with florets. *Cor.* Petals four, fleſhy, obtuſe, concave, cloſely embracing the organs of impregnation. *Stam.* Filaments four, ſhort, flat, hidden by the petals; anthers two to each filament, rounded, concave, protruding beyond the corolla. *Piſt.* Germen ſuperior, roundiſh; ſtyle none; ſtigma rather abrupt. *Peric.* Berry ſmall, roundiſh, unequal. *Seed* ſolitary, roundiſh.

Eſſ. Ch. Spadix covered with florets. Petals four, fleſhy, inferior. Anthers two to each filament. Berry with one ſeed.

1. L. *aculeata*. Cu chaóc gai, of the Cochin-chineſe. Native of the moiſt plains of Cochinchina. A ſtemleſs plant, ſix feet high, with large, pinnatifid, *leaves*, on long, round, upright ſtalks. *Flower-ſtalk* radical, quite ſimple and naked, about as tall as the leaves. The *leaves*, and all the *ſtalks* are covered with numerous little ſhort curved prickles. Loureiro juſtly indicates the affinity of this plant to *Pothos*, and no leſs juſtly prefers placing it in the fourth claſs, rather than in *Gynandria*. The prickly pubeſcence, if we may ſo term it, is very curious in this family. It is to be preſumed the anthers are each of one cell only, or rather that each filament bears one anther, of two ſeparated lobes and cells.

LASIO, in *Ancient Geography*, a town of the Peloponneſus, or Triphylia.—Alſo, a mountain in the iſland of Crete, on which was the tomb of Jupiter.

LASIOPETALUM, in *Botany*, from λασιος, *hairy*, and πεταλον, *a petal*, alluding to the hairineſs of the flower.—Sm. Tr. of Linn. Soc. v. 4 216. Venten. Malmaiſ. 59. Billard. Nov. Holl. v. 1. 63. Ait. Hort. Kew. ed. 2. v. 2. 36.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Rhamni*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, wheel-ſhaped, hairy, in five deep, equal, ovate, folded, at length expanded ſegments, permanent, often coloured. *Cor.* Petals five, minute, roundiſh, inſerted into the baſe of the calyx between its ſegments. *Stam.* Filaments five, very ſhort, oppoſite to the petals; anthers terminal, ovate, two-lobed behind, opening by two pores at the top. *Piſt.* Germen ſuperior, globoſe, with three furrows, very hairy; ſtyle ſhort, ſtraight, ſmooth; ſtigma ſimple, acute. *Peric.* Capſule inveſted with the calyx, nearly globoſe, with three angles, downy, of three cells and three valves, partitions from the centre of each valve. *Seeds* few, roundiſh, inſerted into the inner edge of the partitions.

Eſſ. Ch. Calyx wheel-ſhaped, in five deep folded ſegments. Petals five, minute, oppoſite to the ſtamens. Anthers opening by two terminal pores. Capſule ſuperior, of three cells, and three valves, with the partitions from their centre.

Obſ. The late excellent M. Ventenat, erroneouſly quoted as the author of this genus in the new edition of Hort. Kew. has juſtly corrected its original deſcriber, who miſtook for a corolla what is truly the calyx. This correction is the more important, as it leads to a knowledge of the true natural order to which the genus belongs, as given above. M. La Billardiere has obſerved a ſpecies with five intermediate abortive ſtamens, and no petals.

1. L. *ferrugineum*. Ruſty Woolly-bloſſom. Andr. Repoſ. t. 208. Venten. Malmaiſ. t. 59.—Leaves alternate, linear-oblong, dependent. Flowers racemoſe.—Native of marſhes in New South Wales, from whence the ſeeds were received in 1791, by Meſſrs. Lee and Kennedy. It flowers during moſt part of the ſummer, being ſheltered in winter in the green-houſe, and allowed but a ſmall ſupply of moiſture. *Stem* ſhrubby, upright, ſlender, round, leafy, clothed with denſe, ruſty, ſtarry pubeſcence, and, in its native ſituations, throwing out long, ſlender, extremely tough branches, to the extent, as it is reported, of many yards, amongſt other

ſhrubs. *Leaves* alternate, ſtalked, dependent, linear-oblong, bluntiſh, entire or ſlightly wavy, from two to four inches in length, and half an inch broad; heart-ſhaped, rather dilated, and often ſomewhat angular at the baſe; deep-green and ſmoothiſh above; white and downy, with a ruſty rib, beneath. *Flowers* in ſhort, lateral, deflexed cluſters, nearly oppoſite to the leaves, with three or more linear ruſty bracteas cloſe to each flower. *Calyx* half an inch broad, light green, beſprinkled on both ſides with denſe, ſtarry, rather ruſty down. *Petals* and *anthers* brown. The whole ſhrub is more remarkable for ſingularity than beauty. Sometimes, according to Ventenat, the flowers are four-cleft and tetrandrous only.

2. L. *ledifolium*. Roſemary-leaved Woolly-bloſſom. Venten. Malm. at p. 59.—Leaves oppoſite, linear-lanceolate, ſpreading. Stalks ſingle-flowered. Bracteas remote from the flower.—Seen by M. Ventenat in the herbarium of M. Thibaud, profeſſor of botany at Straſburgh. We preſume it muſt be, like the former, and all the known ſpecies beſides, a native of New Holland. It is deſcribed as varying with broader and crowded, or narrower and more diſtant, *leaves*; and as being remarkable for the ſituation of its *bracteas*, in the middle of the flower-ſtalk.

3. L. *purpureum*. Purple Woolly-bloſſom. Ait. Hort. Kew. n. 2.—Leaves oval, entire.—Found in New Holland by Mr. Brown. Sent to Kew in 1803 by Mr. Good. It is a green houſe ſhrub, flowering from April to July. Of this we have no further knowledge, not having ſeen any ſpecimen.

4. L. *arboreſcens*. Nettle-tree-leaved Woolly-bloſſom. Ait. Hort. Kew. n. 3.—Leaves heart-ſhaped, deeply toothed.—Native of New South Wales, from whence it was ſent by Mr. George Caley in 1802, through ſir Joſeph Banks, to Kew. It flowers from May to July, and is ſheltered in the green-houſe.

5. L. *triphyllum*. Three-leaved Woolly-bloſſom. Billard. Nov. Holl. v. 1. 63. t. 88.—Leaves three together; the middle one largeſt and lobed. Stamens ten, the intermediate ones abortive. Petals wanting.—Gathered by M. La Billardiere in Van Lewin's land; by Mr. Menzies at King George's ſound, on the weſt coaſt of New Holland. We received a ſpecimen in flower, by favour of Mr. Aiton, from Kew garden in May laſt. It is a *ſhrub*, kept, like others of its genus, in the green-houſe. The whole plant is clothed with rather ſoft ſtarry pubeſcence, like ſome of the mallow tribe, which aſſumes a ruſty hue on the ſtalks, and on the veins of the leaves. The foliage is remarkable. Three *leaves* grow on ſtalks from one ſpot, (at the ſides of the branches,) of which the middlemoſt is much the largeſt, from one to two inches long and nearly as wide, heart-ſhaped at the baſe, more or leſs diſtinctly five-angled, or five-lobed, and ſomewhat ſinuated, its footſtalk nearly its own length; the ſide ones are unequally heart-ſhaped and entire, on very ſhort ſtalks, and reſemble ſtipulas. Long ſimple *cluſters*, of ſeveral *flowers*, grow ſolitarily, oppoſite to the large leaves, between the ſmall ones. The *calyx* is bluſh-coloured, hairy, with pointed ſegments. *Anthers* dark brown, with yellow tips; the barren ones ſmaller and paler.

6. L. *quercifolium*. Oak-leaved Woolly-bloſſom. Andr. Repoſ. t. 459. Ait. Hort. Kew. n. 4.—Leaves three together, all ſinuated; the middle one largeſt and three-lobed, ſomewhat pinnatifid. Stamens five. Petals wanting.—Gathered by Mr. Menzies, at King George's ſound, on the weſt coaſt of New Holland. Mr. Brown alſo obſerved it in that country. Seeds were ſent to Kew, by Mr. Peter Good, in 1803. This is moſt akin to the laſt, but abundantly diſtinct. The *leaves* are ſmaller, ſomewhat glaucous, and much more harſh, owing to the more rigid and prominent ſtarry briſtles on their upper ſurface; the three which grow together are more ſimilar in ſize and figure, being all ſinuated, though the middle one is much the moſt deeply lobed: the edges are ſlightly revolute. The *flowers* have their calyx of a deeper roſe-colour, with leſs pointed ſegments. We perceive no barren *ſtamens*, nor any *petals*.

7. L. *corniculatum*. Horned Woolly-bloſſom.—Leaves three together, cut and crenate; the lateral ones very ſmall. Petals with linear points as long as the calyx.—Gathered by Mr. Menzies, at King George's ſound.—The *leaves* are more denſely and uniformly hairy than in the laſt, as well as ſofter to the touch. The *flowers* are racemoſe, as in that, but much ſmaller, and are eſſentially diſtinguiſhed by the long prominent linear appendages, or horns, of their petals, which equal the calyx in length, and in its dry ſhrivelled ſtate extend much beyond it.

Several more ſpecies of this genus are in our poſſeſſion, but we forbear to attempt their definition from imperfect dried ſpecimens, as they will doubtleſs be more correctly and amply illuſtrated in the *Prodromus* of Mr. Brown, who has had the advantage of ſeeing them alive, and whoſe meritorious labours we never feel a deſire to foreſtall. S.

LASIOSTOMA, ſo called by Schreber, from λασιος, *hairy*, and ϛομα, *the mouth*, in alluſion to the hairineſs which covers the upper ſide of the flower, and ſurrounds its orifice. Schreb. 75. Willd. Sp. Pl. v. 1. 624. Mart. Mill. Dict. v. 3. (Rouhamon; Aubl. Guian. 93. Lamarck. Illuſtr. t. 81.)—Claſs and order, *Tetrandria Monogynia*. Nat. Ord. *Apocineæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very ſhort, in five deep acute ſegments, with two ſmall oppoſite ſcales at its baſe. *Cor.* of one petal, funnel-ſhaped; tube cylindrical; limb in four acute equal ſegments, villous on their upper ſide. *Stam.* Filaments four, capillary, villous at their baſe, inſerted into the tube of the corolla; anthers oblong. *Piſt.* Germen ſuperior, ovate; ſtyle longer than the corolla; ſtigma obtuſe. *Peric.* Capſule orbicular, of one cell, with a brittle bark. *Seeds* two, hemiſpherical.

Eſſ. Ch. Calyx five-cleft. Corolla funnel-ſhaped, hairy about the mouth. Capſule ſuperior, brittle; of one cell, with two ſeeds.

1. L. *cirroſa*. Willd. (Rouhamon guianenſis; Aubl. Guian. 93. t. 36. Lamarck. Illuſtr. 322.)—Gathered by Aublet on the banks of rivers in Guiana, bearing fruit as well as flowers in November. *Rouhamon* is the Caribean name. The woody *trunk* is ſeven or eight feet high, with many very long, knotty, oppoſite branches, climbing over the neighbouring trees, and clothed with reddiſh down. *Leaves* oppoſite, on ſhort ſtalks, elliptical, pointed, entire, pale, ſmooth, three-ribbed. *Tendrils* axillary, ſimple, rather longer than the leaves, recurved and thickened at the extremity, not always preſent. *Flowers* ſmall, white, in axillary tufts. *Capſule* rather large in proportion, an inch in diameter, yellow.—Juſſieu refers this plant to the genus *Strychnos*, apparently with great reaſon.

LASK, a term uſed by *Farriers*, for a looſeneſs in horſes, often fatal to them.

Lask, or *Laſko*, in *Geography*, a town of the duchy of Warſaw; 30 miles N.E. of Siradia.

LASKETS, or Latches, in a *Ship*, are ſmall lines, like loops, faſtened by ſewing into the bonnets and drablers, in order to lace the bonnets to the courſes, or the drablers to the bonnets.

LASKING, a ſea-term for going large, or veering.

LASNEBOURG, in *Geography*, a town of France, in the department of Mont Blanc, on the Arc, at the foot of mount Cenis, the paſſage of which is the principal ſupport of the inhabitants. The ſun is hidden from this town by the mountain during two months in the year; 20 miles N.N.W. of Suſa.

LASOY, a town of Thibet; 40 miles N.N.W. of Tacpoy.

LASSA, the capital of Thibet, is called by different names, which have occaſioned no ſmall degree of confuſion. Its proper name, in the language of Thibet, is ſaid to be Baronth-la; but the Tartars call it Laſſa or Lahaſſa. Others call it Tonker, and apply the names Laſſa and Baronthala to the diſtrict which contains Laſſa and Putala. Others again give the name of Putala, inſtead of Laſſa, to the capital of Thibet. Rennell ſays that we ought to apply the name Laſſa or Lahaſſa, to the capital, and to conſider Putala as the caſtle and palace of the Lama, and his ordinary place of reſidence. Laſſa, which is not conſidered as a large city, is ſituated on an extenſive plain; the houſes are of ſtone, and are ſpacious and lofty. The mountain of Putala (La Puta, the hill of Puta or Boodh, *la* ſignifying a hill in the native tongue), on the ſummit of which ſtands the palace of the grand lama, the high prieſt and ſovereign of Thibet, (ſee LAMA), is about ſeven miles E. of the city. On the north of Laſſa ſtands another range of mountains, covered with ſnow, which are clearly ſeen from Kambala, a very high mountain on the N. of the lake of Palté. Laſſa is in the province of Ou, and almoſt in the centre of Thibet. The river Sanpooa Burrampooter runs at the diſtance of 24 miles from the city. The royal palace at Laſſa is called Laprang, where, among other ornaments, are maps of the various provinces, painted about 1665, by the orders of the king Tiſri, on 16 walls. Laprang is alſo one of the celebrated academies or ſchools of Thibet, which are frequented by the youth of many ſurrounding countries, as far as Caſhgar, Yarkend, Camul, Turfan, and ſome from Kokonor, Amdoa, and China. The courſe of ſtudies employs twelve years, occupied in logic, aſtronomy, philoſophy, medicine, and, above all, the theology of Boud, or Xaca. In the city of Laſſa are many foreign merchants, and the women have been recently poliſhed by their converſation with the Chineſe. A beneficial traffic is carried on with Laſſa, by exchanging gold duſt for ſilver bullion. N. lat. 30° 30′. E. long. 91° 40′.

LASSAN, or LESSAN, a town of Anterior Pomerania, on a lake formed by the Peene; 38 miles S.S.E. of Stralſund. N. lat. 53° 58′. E. long. 13° 52′.

LASSAY, a town of France, in the department of Mayenne, and chief place of a canton, in the diſtrict of Mayenne; 9 miles N.N.E. of Mayenne. The place contains 2976, and the canton 14,258 inhabitants, on a territory of 132½ kiliometres, in 14 communes. N. lat. 48° 27′. W. long. 0° 24′.

LASSEUBE, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Oleron; 6 miles E. of Oleron. The place contains 2884, and the canton 4974 inhabitants, on a territory of 130 kiliometres, in 5 communes.

LASSIELI, a town on the E. coaſt of the iſland of Bouro. N. lat. 3° 30′. E. long. 127° 34′.

LASSIGNY, a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Compiègne; 6 miles W. of Noyon. The place contains 718, and the canton 10,575 inhabitants, on a territory of 135 kiliometres, in 24 communes.

LASSIRA, in *Ancient Geography*, a town of Spain, in the Tarragonenſis, in the interior of the country of the Edetani. Ptolemy.

LASSITI, in *Geography*, a town of the iſland of Candia; 22 miles S.E. of Candia.

LASSITUDE, in *Medicine*, a ſenſe of wearineſs and debility, independent of fatigue, by which a perſon is induced to ſeek for repoſe and quieſcence.

A laſſitude is felt in almoſt all febrile diſeaſes; and in many chronic affections, in which the circulation is feeble and unequal, as in ſcurvy, chloroſis, &c.; and in diſorders of the ſtomach, liver, and alimentary canal. This feeling of wearineſs and indiſpoſition to exertion, is indeed often the firſt and only perceptible ſymptom of approaching illneſs, as was remarked by Hippocrates: "Laſſitudines ſpontaneæ morbos prænunciant." (Aph. ii. 5.) It is a conſequence alſo of moſt acute diſeaſes, which leave the ſtrength conſiderably impaired; and in this caſe it diminiſhes in proportion as the ſyſtem regains its vigour in the progreſs of convaleſcence. As it is to be conſidered only as a ſymptom of various morbid ſtates of the body, it requires no particular remedies to be ſpecifically adopted for its removal; the cure of it will be effected by remedying the particular morbid conditions with which it is connected.

LASSONE, JOSEPH MARIA FRANCIS DE, in *Biography*, an eminent French phyſician, was born at Carpentras, on the 3d of July, 1717. His parents quitted their native province, to procure him the advantages of education afforded by the capital; and the ultimate ſucceſs of the plan evinced their wiſdom and prudence. In his early years, however, young Laſſone was not remarkable for his perſeverance in ſtudy: on the contrary, his family were frequently alarmed by the propenſity which he ſhewed for the gay pleaſures of youth; but he as often raiſed their hopes by ſome ingenious performances, which merited academic honours, as well as the eſteem of his preceptors. He wrote a comedy, which his parents inſiſted that he ſhould ſuppreſs, and ſacrifice the imprudent production: he ſubmitted, and was never afterwards willing to declare the title of the piece, which had nevertheleſs been acted with much ſucceſs, under a different name, and ſtill remains on the theatre. This juvenile work, foreign as it was to his ſtudies, gave an extraordinary proof of the facility and flexibility of his genius, which afterwards enabled him to acquire in the different ſciences a juſt and elevated reputation. Determining upon a ſtrict attention to ſtudy, he devoted himſelf wholly to the purſuits of anatomy, in which he made ſuch rapid progreſs, that, at the age of twenty-five, he was received into the Academy of Sciences as aſſociate-anatomiſt. He examined, with great care and perſeverance, the ſtructure of the bones, and of the arteries, and demonſtrated the muſcular coat of the latter. He alſo inveſtigated the ſtructure, and inquired into the economy and uſe of the ſpleen, attempting to reconcile the different accounts given of that viſcus by Ruyſch and Malpighi. He had ſtrong hopes of diſcovering the office of this viſcus, when an extraordinary event put a period to his anatomical purſuits. In ſelecting among ſome dead bodies a proper ſubject for diſſection, he fancied he perceived in one of them ſome very doubtful ſigns of death, and endeavoured to reanimate it: his efforts were for a long time vain; but his firſt perſuaſion induced him to perſiſt, and he ultimately ſucceeded in bringing his patient to life, who proved to be a poor peaſant. This circumſtance impreſſed ſo deep a ſenſe of horror on the mind of the anatomiſt, reflecting on the conſequences of his having ſelected this unhappy object for diſſection, that he declined theſe purſuits in future. Natural hiſtory ſucceeded the ſtudy of anatomy, and mineralogy became a favourite object of his purſuit: he publiſhed his obſervations on the cryſtallized free-ſtones of Fontainebleau. But chemiſtry, a ſcience to which he was thus led, finally became the beloved occupation of M. de Laſſone. His numerous memoirs, which were read before the Royal Academy of Sciences, preſented a valuable train of new obſervations, uſeful both to the progreſs of that ſtudy, and to the art of compounding remedies; and in every part of theſe he evinced the ſagacity of an attentive obſerver, and of an ingenious experimentaliſt.

M. Laſſone, although he had, by the number of his works, given every one reaſon to ſuppoſe that he had devoted himſelf excluſively to the ſciences, had not neglected the practice of medicine. After having exerciſed it for a long time in the hoſpitals and cloiſters, he was ſent for to court; and he was the only example, except the celebrated Fernel, of one individual holding the office of firſt phyſician at Verſailles, ſucceſſively to two queens, and afterwards to the king: the miniſters and the courtiers had been all changed, but he preſerved the friendſhip of his ſovereigns. He lived in friendſhip with Fontenelle, Winſlow, D'Alembert, Buffon, and other ſcientific characters; and the affability of his manners, and his ardent zeal for the advancement of knowledge, among the young ſcholars, whoſe induſtry he encouraged, and whoſe reputation was become one of his moſt ſatisfactory enjoyments, gained him general reſpect. When from a natural delicacy of conſtitution, M. de Laſſone began to experience the inconveniences of a premature old age, he became ſorrowful and fond of ſolitude; yet reconciled to his ſituation, he calmly obſerved his death approaching, and expired on the 8th of December, 1788. Laſſone, at the time of his death, held the appointment of firſt phyſician to Louis XVI. and his queen; he was counſellor of ſtate, doctor-regent of the faculty of medicine at Paris, and penſionary-veteran of the academy of ſciences, member of the academy of medicine at Madrid, and honorary aſſociate of the college of medicine at Nancy. Hutchinſon, Biog. Med. Eloy. Dict. Hiſt. Hiſt. de l'Acad. Roy. des Sciences, 1788.

LASSOTH, in *Geography*, a town of Sileſia, in the principality of Neiſſe; 10 miles N. of Neiſſe.

LASSOUR, a town of Hindooſtan, in the circar of Aurungabad; 32 miles N.W. of Aurungabad.

LASSUS, ORLANDUS, or, as he is called by the Italians, Orlando di Laſſo, was a native of Mons, in Hainault, born in 1520, and who not only ſpent many years of his life in Italy, but had his muſical education there, having been carried thither ſurreptitiouſly, when a child, on account of his fine voice. The hiſtorian Thuanus, who has given Orlando a place among the illuſtrious men of his time, tells us that it was a common practice for young ſingers to be forced away from their parents, and detained in the ſervice of princes; and that Orlando was carried to Milan, Naples, and Sicily, by Ferdinand Gonzago. Afterwards, when he was grown up, and had probably loſt his voice, he went to Rome, where he taught muſic during two years; at the expiration of which, he travelled through different parts of Italy and France with Julius Cæſar Brancatius, and at length, returning to Flanders, reſided many years at Antwerp, till being invited, by the duke of Bavaria, to Munich, he ſettled at that court, and married. He had afterwards an invitation, accompanied with the promiſe of great emoluments, from Charles IX., king of France, to take upon him the office of maſter and director of his band; an honour which he accepted, but was ſtopped on the road to Paris by the news of that monarch's death. After this event he returned to Munich, whither he was recalled by William, the ſon and ſucceſſor of his patron Albert, to the ſame office which he had held under his father. Orlando continued at this court till his death, in the year 1593, at upwards of ſeventy years of age. His reputation was ſo great, that it was ſaid of him: "Hic ille Orlandus Laſſus, qui recreat orbem."

As he lived to a conſiderable age, and never ſeems to have checked the fertility of his genius by indolence, his compoſitions exceed, in number, even thoſe of Paleſtrina. There is a complete catalogue of them in Draudius, amounting to upwards of fifty different works, conſiſting of maſſes, magnificats, paſſiones, motets, and pſalms: with Latin, Italian, German, and French ſongs, printed in Italy, Germany, France, and the Netherlands.

As Orlando di Laſſo was the contemporary of Cypriano Rore, a compoſer of equal renown in the 16th century, and who ſo much reſembled him in genius, abilities, and reputation, we ſhall here draw a parallel between them, as the two principal maſters of Flemiſh and Netherlandiſh counterpoint. To form a comparative idea of the ſtyle of theſe two compoſers, with that of Paleſtrina, the ſpecific difference ſeems to be this: that the two Netherlanders, by having ſpent the chief part of their time in the courts of princes, had acquired a lighter and more ſecular caſt of melody than Paleſtrina, who, reſiding conſtantly at Rome, and writing chiefly for the church, had a natural and characteriſtic *gravity* in all his productions. Indeed, the compoſitions *a capella* of Cyprian Rore and Orlando Laſſo are much inferior to thoſe of Paleſtrina in this particular; for by ſtriving to be grave and ſolemn, they only become heavy and dull; and what is unaffected dignity in the Roman, is little better than the ſtrut of a dwarf upon ſtilts in the Netherlanders. They were, however, great maſters of harmony, and, out of the church, prepared the colours, and furniſhed the muſician's pallet with many new tints of harmony and modulation, which were of great uſe to ſubſequent compoſers, particularly in dramatic painting.

In the ſame collection of ſongs, printed 1555, we have a Latin poem, ſet by Orlando di Laſſo, in the manner of a madrigal, in which the modulation is curious; but though elaborate and *recherchée*, it is pleaſing, and has had many imitators.

Cyprian and Orlando were the firſt who hazarded what are now called chromatic paſſages. At the end of the fourteenth book of ſongs in four parts, printed at Antwerp by Tylman Suſata, there is an irregular Latin ode by Cypriano, ſet likewiſe in the madrigal ſtyle, in which not only an A ※, but an A ♭, appear, for the firſt time, in the ſame movement, and almoſt every accident incident to modern muſic. Part of this curious compoſition is inſerted in Burney's General Hiſtory of Muſic, vol. iii. as a ſpecimen of the author's frequent attempts at new harmonies and modulation, which, as it is laid before the learned muſical reader in ſcore, it will afford him much better information concerning the real hiſtory and progreſs of the art of counterpoint at this time, than all the catalogues of books, and deſcriptions of their contents, which diligence and language could furniſh. Many of the forced, crude, and unexpected modulations in the motet of Cyprian Rore, however they may have been admired for their boldneſs and novelty, were never adopted by ſubſequent compoſers. Beautiful, natural, and pleaſing paſſages and effects are ſoon rendered common by plagiariſm and imitation; whereas the unnatural and difficult are long left in the poſſeſſion of the original proprietor. Perhaps in a ſeries of years, ſome other compoſer, unable to aſtoniſh by his inventions in a natural way, and determinto produce ſomething that ſhall, at leaſt, *ſeem* new, will propoſe them again to the public, who will again reject, and ſo on, *ad infinitum*. But theſe muſical hunters after novelty, without genius to find it, forget that ſuch paſſages or modulations muſt have preſented themſelves to thouſands in the courſe of their ſtudies and *ricercate*, but that good taſte and ſound judgment had rejected them. It is at all times eaſy to produce *new* arrangements and combinations of ſounds, if nature, grace, and propriety be renounced ; but at once to be *new* and *natural*, belongs only to genius of the firſt order.

The ſongs in the ſame collection by Orlando, are ſaid by the publiſher to have been compoſed " à la nouvelle compoſition d'aucuns d'Italie." We find but little melody in any of them, though much modulation, different from the other Flemiſh maſters of this period. There is another eſſential difference in the notation, as the diminutions into crotchets and quavers, particularly in the ſongs *alla Napolitana*, are more frequent than in any other compoſitions of the middle of the 16th century. The chromatic accidental ſemitones are expreſſed by a ſharp, and no longer left to the mercy and ſagacity of the finger, as was before the conſtant cuſtom. The occaſional changes in the intervals, which are neceſſary in counterpoint, though formed upon eccleſiaſtical melodies, were at firſt ſmuggled into harmony, perhaps by ſingers whoſe good ears ſuggeſted them, though the compoſer had not dared to point them out, leſt he ſhould be accuſed of corrupting the modes. Orlando ſeems the firſt who, in ſpite of ancient prejudice and pedantry, when he wiſhed to alter a note, dared to expreſs his intentions in writing. In his more gay and comic ſtyle, however, the modulation is overcharged with wanton and unneceſſary tranſitions from one key to another, without remaining long enough in any one to fix it in the hearer's attention.

Of the two compoſitions by Orlando di Laſſo, and Cypriano di Rore, to Latin words, the firſt is in hexameter and pentameter, and the ſecond an irregular ode, partly in the choral meaſures of the Greek tragedies. At this mark +, in Orlando's compoſitions, the firſt A ※ occurs that we had ever ſeen uſed in counterpoint of equal antiquity ; and this ſeems to have been ſuggeſted by the words *novumque melos*. Which of theſe productions was firſt compoſed, we know not, as they were both publiſhed together at Antwerp, in 1555. The only copy of this work which we have ever ſeen, is preſerved in the Britiſh Muſeum. The madrigals, in general, of both Cypriano and Orlando, to Italian words, are excellent, in the ſtyle of the times. But as the ſingularities in the two compoſitions before us ſeem innovations, and preparatory to that revolution in the art, which takes place ſoon after, they ſeemed proper ſubjects of diſcuſſion ; for the laboured and equivocal modulation, attempted by theſe compoſers, who, though often learned and ingenious, by abandoning the ſimplicity of their contemporaries, theſe productions border ſometimes ſo much on caprice and affectation, as to fatigue the attention and offend the ear.

The pedantry of crude harmonies, and learned modulation, only ſuits depraved ears, that have grown callous to every thing that is eaſy and natural. The Italians, when they quitted madrigals, and no longer aſpired at the applauſe of faſtidious chamber-critics, whoſe approbation was beſtowed on no compoſitions that did not ſmell of the lamp, ſimplified their ſecular muſic, and inſtead of puzzling and goading the hearer with complicated contrivances and extraneous modulation, aimed at grace and facility in their melodies, which they clothed with ſuch plain and tranquil harmony, as, inſtead of diſguiſe and ſuffocation, added greatly to their energy and effect. Dramatic muſic was not yet even in idea, and *concerts*, or other aſſemblies of gay and unlearned hearers, ſeem now not to have exiſted ; ſo that muſical compoſers could not be ſaid to write for the public, who will ever prefer ſuch pleaſure and amuſement as give them the leaſt trouble. Authors of all kinds, who ſeek for applauſe, conform to the taſte of their judges ; and we find, in our own times, that thoſe muſicians who are qualified by their genius and abilities, to direct and govern the public opinion, think it neceſſary, however falſe and corrupt it may be, to humour and flatter it, by all the conceſſions in their power. The art never long remains ſtationary at any one point of cultivation ; and if perfection could be attained, its reign would inevitably be ſhort. In muſic, the learned are few and ſilent ; the ignorant numerous and noiſy : in the chamber it was right to pleaſe the former, and in the theatre, where

> " —— the fair, the gay, the young
> Govern the numbers of each ſong,"

there is no choice. A public and mixed audience is ſuch a many-headed monſter, that all its ears cannot be pleaſed at the ſame time ; and whether the good or the bad predominate, the greater number muſt be gratified at the expence of the leſs.

Two of Orlando di Laſſo's ſons, Ferdinand and Rodolph, were able muſicians, and both in the ſervice of Maximilian, duke of Bavaria ; the eldeſt as chapel-maſter, and the other as organiſt to that prince. Theſe collected their father's motets, as well thoſe which had been publiſhed during his life, as thoſe which remained unpubliſhed at his deceaſe, and printed them in a very ſplendid and ſumptuous manner at Munich, in ſeven volumes, large folio, 1604, with a dedication to their patron, the ſovereign of Bavaria. The general reception, however, of theſe compoſitions, ſeems not to have equalled the expectations of the editors. Other productions had taken poſſeſſion of the public ear and favour. It is, we fear, in vain to hope for the revival of old muſic ; too many are intereſted in the ſucceſs of the new ; and ſuch are the viciſſitudes of what are called taſte and expreſſion in this art, that if ſufficient probity and zeal could be found in faſhionable performers to incline them to attempt doing juſtice to the productions of former times, it is hardly poſſible for them to ſucceed ; the accent, energy, and expreſſion are either loſt in the execution, or unintelligible to the hearers. There is, indeed, as little chance for a muſician of the preſent age to perform ſuch productions in the manner of the times in which they were compoſed, as to pronounce a foreign language as well as his own ; and if, againſt all calculation, he ſhould ſucceed, this muſic will ſtill be an unknown tongue to the public.

LAST, or LEST, in general, ſignifies the burden or load of a ſhip.

LAST is alſo uſed for a certain weight and meaſure, which is various in various countries ; though, in the general, the laſt is eſtimated at four thouſand pounds weight. A laſt of cod-fiſh, white herrings, meal, and aſhes for ſoap, is twelve barrels ; of corn, or rape-ſeed, ten quarters ; of gunpowder, twenty-four barrels, or two thouſand four hundred pounds weight ; of red herrings, twenty cades ; of hides, twelve dozen ; of leather, twelve diekers ; of pitch, or tar, fourteen barrels ; of wool, twelve ſacks ; of ſtock-fiſh, a thouſand ; of flax, or feathers, one thouſand ſeven hundred pounds weight.

LAST, in the marſhes of Kent, a court held by the twenty-four jurats, and ſummoned by the bailiffs ; wherein orders are made to lay and levy taxes, impoſe penalties, &c. for the preſervation of the ſaid marſhes.

LAST *Heir*, is he to whom lands come by eſcheat, for want of lawful heirs; which, in many caſes, is the lord of whom they are held: but in others the king.

LAST *Will.* See WILL.

LAST, *Port.* See PORT-*Laſt*.

LASTAGE, or LESTAGE, according to Raſtal, is a duty exacted in ſome fairs and markets, for carrying things bought whither one will.

LASTAGE, according to another author, is properly that cuſtom which is paid for wares ſold by the laſt.

In the law of Richard II. laſtage is taken for the ballaſt, or for lading of a ſhip. See BALLAST.

LASTAGE is ſometimes alſo uſed for garbage, rubbiſh, or ſuch filth.

LASTEIN, in *Geography*, a town of Pruſſia, in the province of Samland; 15 miles S.E. of Ragnitz.

LASTISANA, a town of Italy, in Friuli; 7 miles E. of Concordia.

LASTRES, a ſea-port town and cape of Spain, on the N.E. coaſt of Aſturia; 30 miles N.E. of Oviedo. N. lat. 43° 33′. W. long. 5° 19′.

LASTRINGE, a town of Sweden, in Sudermanland; 12 miles N. of Nykoping.

LASULA, a ſmall iſland near the E. coaſt of Luçon. N. lat. 13° 27′. E. long. 123° 57′.

LASUS, in *Biography*, was born at Hermione, a city of Achaia, in the time of Darius Hyſtaſpes, in the 58th Olympiad, 538 years B. C. Diogenes Laertius ſays, that he deſerves to be ranked among the ſeven ſages. He was generally allowed to be the firſt among the Greeks who wrote about muſic, and was not only a theoriſt and great practitioner, but a dithyrambic poet, perhaps the inventor of that kind of poetry in honour of Bacchus, which was ſung in the Phrygian mode at the public games, and partook of all that fire and hilarity which the god to whom it was addreſſed inſpired.

Plutarch ſays, that he introduced new rhythms in his poetry and dithyrambic muſic, and upon the lyre, imitated the compaſs and variety of the flute; for which he is mentioned, in the Dialogue on Muſic, as a great innovator. Among the corruptions complained of, in the *new* muſic, the frequent and licentious tranſitions from one mode and genus to another, was not the leaſt. If the object for multiplying the ſtrings of the lyre, and the holes in the flute, ſo much complained of by the adherents to the old ſchool, may be ſuppoſed to have occaſioned the convenience by having an inſtrument nearly tuned for all the modes, like our harpſichords, it ſeems probable, that Laſus and other innovators might have been *temperers*, and have accommodated their *doctrine* to their *practice*.

Theon of Smyrna teſtifies that Laſus, as well as the Pythagorean Hippaſus of Metapontus, made uſe of two vaſes of the ſame ſize and tone, in order to calculate the exact ratio or proportion of concords. For by leaving one of the vaſes empty, and filling the other half full of water, they became octaves to each other: and filling one a fourth part full, and the other a third, the percuſſion of the two veſſels produced the concords of 4th and 5th; from which proceſs reſulted the proportions of theſe three concords contained in the numbers 1, 2, 3, 4.

This aſſertion, which has been taken upon truſt, like the anvil ſtory of Pythagoras, is equally falſe: to tune glaſſes by water has been lately practiſed, and thought a new diſcovery; but that their tones are altered in the proportions given above, is by no means true. Moſt glaſſes are lowered about a whole tone, by being half filled with water, and not more than a major 6th if quite filled.

LATA, LIGAMENTA, in *Anatomy*. See LIGAMENTUM.

LATABI, in *Geography*, a town of Africa, in the kingdom of Aquamboe.

LATAC, or LADAK, a town and country of Thibet, forming a kind of detached ſovereignty. The town is ſeven miles N. of the river Lachu, which falls into the Ganges. N. lat. 30° 55′. E. long. 74° 34′.

LATACUNGA, a town of South America, and a juriſdiction in the audience of Quito. This juriſdiction is called Aſſiento Latacunga; aſſiento denoting a place leſs than a town, but larger than a village. This place is ſituated on a wide plain, having on the E. ſide the eaſtern Cordillera of the Andes, from which projects a very high mountain, at a ſmall diſtance from the foot of which is ſituated Latacunga, in S. lat. 55° 14′. W. long. 78° 16′; 50 miles S. of Quito. This aſſiento is large and regular; the ſtreets broad and ſtraight; the houſes of ſtone, arched and well contrived; but on account of the dreadful earthquakes to which it is ſubject, conſiſting only of one ſtory; one of theſe happened in June, 1698, and its effect was ſuch, that of 600 ſtone houſes, which the aſſiento then contained, only a part of one, and the church of the Jeſuits, were left ſtanding in a damaged ſtate, and moſt of the inhabitants were buried under their ruins. The ſtone of which the houſes and churches are conſtructed, is a kind of pumice, or ſpongy ſtone, ejected from volcanoes; inexhauſtible quarries of it being found in the neighbourhood. This juriſdiction contains ſeventeen principal villages. The temperature of the air is cold: as this aſſiento is only ſix leagues diſtant from the mountain of Cotopaxi, which, not being leſs in extent and height than thoſe of Chimborazo and Cayamburo, is, like them, covered with ice and ſnow; but the temperature is very different in the ſeveral villages of this juriſdiction; being hot in the vallies, temperate on the plains, and often exceſſively cold in places bordering on the mountains. The villages are generally larger, and more populous, than thoſe of the other juriſdictions in the ſame province. Their inhabitants are Indians, Meſtizos, and a few Spaniards. The aſſiento, beſides a pariſh church, ſerved by two prieſts, one for the Spaniards, and the other for the Indians, has convents of Franciſcans, Auguſtines, Dominicans, the Fathers of Mercy, and a college of Jeſuits. The inhabitants amount to between ten and twelve thouſand, chiefly Spaniards and Meſtizos. The Indians live in a ſeparate quarter, as they do at Quito. In this aſſiento all kinds of trades and mechanic arts are carried on; and, as in all the other parts of this juriſdiction, it has a conſiderable number of manufactories of cloth, bays, and tucuyos. Great quantities of pork are ſalted here for exportation to Quito, Guayaquil, and Riobamba. The neighbouring country is ſowed with clover, and interſperſed with plantations of willows, the perpetual verdure of which gives a chearful aſpect to the country. The Indians of Pugili and Saquiſili, two villages in this juriſdiction, are noted for making earthenware, as jars, pans, pitchers, &c. which are much valued. The clay of which they are made is of a lively red colour, and emits a ſort of fragrancy. The workmanſhip is very neat and ingenious. Juan and Ulloa's Voyage to South America, vol. i.

LATAKIA, the ancient *Laodicea* (which ſee), a ſea-port town of Syria, in the pachalic of Tripoli, is ſituated at the baſe, and on the ſouthern ſide of a ſmall peninſula, which projects half a league into the ſea. Its port, like all the others on the ſame coaſt, is a ſort of baſin, environed by a mole, with a very narrow entrance. It is capable of containing twenty-five or thirty veſſels, but the Turks have ſuffered it to be choaked up, ſo that it can ſcarcely admit four. Ships of above 400 tons cannot ride here ; and hardly a year paſſes in which one is not ſtranded in the entrance. Nevertheleſs, Latakia carries on a very great commerce, partly of olives, but chiefly of tobacco, of which upwards of twenty cargoes are annually ſent to Damietta ; the returns from thence are rice, which is bartered in Upper Syria for oils and cottons. In the time of Strabo, inſtead of tobacco, the exports conſiſted of its famous wines, the produce of the declivities of its hills. Even then, Egypt was the market by way of Alexandria. Neither Latakia nor Tripoli can be mentioned as places of ſtrength ; they have neither cannon nor ſoldiers : a ſingle privateer would conquer them both. Each of them is ſuppoſed to contain from four to five thouſand inhabitants ; 50 miles S. of Antioch. N. lat. 35° 36′. E. long. 35° 50′. Volney's Travels in Egypt, &c. vol. ii.

LATALATTA, one of the Molucca iſlands. S. lat. 0° 3′. E. long 127° 5′.

LATANG, a town of Thibet ; nine miles S. of Dſaprong.

LATANIA, in *Botany*, a name given by Commerſon to a kind of palm, found in the Iſle de Bourbon, and which ſeems to be barbarouſly conſtructed of the French word *late*, a lath, this palm being called in that language *latanier*.—Juſſ. 39. Lamarck. Dict. v. 3. 427.—Claſs and order, *Dioecia Monadelphia*. Nat. Ord. *Palmæ*.

Eſſ. Ch. Male, Spatha of numerous imbricated leaves. Spadix branched, its branches fingered at the top, catkin-like, ſomewhat cylindrical, of many imbricated ſingle-flowered ſcales. Corolla in ſix deep ſegments ; the three outer ones ſmalleſt. Stamens 15 or 16 ; anthers oblong, two-celled. Female unknown.

1. L. *Borbonica*. Lamarck.—Its *trunk* is ſtraight, ſimple, cylindrical, leafy at the top. *Leaves* ſtalked, fan-ſhaped, glaucous ; their ribs cottony at the back. *Footſtalk* without ſpines. *Spatha* at the baſe of the foliage. The *flowers* are yellow, imbedded in each ſcale of the catkin. *Filaments* united at their lower part into a thick column.

LATATSI, in *Geography*, a mountain of Thibet. N. lat. 31° 35′. E. long. 77° 14′.

LATCHA, a lake of Ruſſia, in the government of Olonetz, about 32 miles long and eight broad. N. lat. 61° to 61° 20′. E. long. 38° 30′.

LATCHETS. See Laskets.

LATCHOU, or Lachu, in *Geography*, a river of Thibet, which runs into the Ganges, N. lat. 30° 50′. E. long. 77° 49′.

LATE, a town of Peru, in the juriſdiction of Lima.

LATEEN Sail, in *Sea Language*, a long triangular ſail extended by a lateen-yard, frequently uſed by xebecs, polacres, ſettees, and other veſſels navigated in the Mediterranean ſea.

LATERAL. See Collateral, Multilateral, and Quadrilateral.

Lateral *Equation*, in *Algebra*, denotes a ſimple equation ; an equation whoſe root is of one dimenſion.

Lateral *Ligaments*, in *Anatomy*, are thoſe placed at the ſides of the joints. See Joint.

Lateral *Line*. See Line.

Lateral *Operation for the Stone*. See Lithotomy.

Lateral *Palſy*. See Palsy.

Lateral *Sinuſes*, in *Anatomy*, the right and left ; are the two branches into which the ſuperior longitudinal ſinus of the dura mater is divided at the internal tranſverſe ridge of the occipital bone. See Vein.

LATERALIS Morbus, a name given by ſome writers to the pleuriſy.

Lateralis *Naris Muſculus*, a name given by many authors to that muſcle of the face which Albinus has called, from its office, the levator labii ſuperioris alæque naſi. It is alſo called the obliquus naſi.

Lateralis *Rectus Capitis*. See Rectus.

LATERAN was originally the proper name of a man, whence it deſcended to an ancient palace in Rome, and to the buildings ſince erected in its place ; particularly a church called St. John of Lateran ; which is the principal ſee of the popedom.

Lateran, *Councils of the*, are thoſe held in the baſilica of the Lateran : of theſe there have been five, held in 1123, 1139, 1179, 1215, and 1513.

Lateran, *Canons regular of the Congregation of the*, is a congregation of regular canons, whereof that church is the principal place, or ſeat.

It is pretended there has been an uninterrupted ſucceſſion of clerks, living in community from the time of the apoſtles ; and that a number of theſe were eſtabliſhed in the Lateran in the time of Conſtantine. But the canons were not introduced till the time of Leo I. and theſe held the church eight hundred years, till the reign of Boniface, who took it from them, and placed ſecular canons in their room : one hundred and fifty years after, the regulars were reinſtated.

LATERCULUM, among the *Romans*, was uſed for a roll or liſt of all the magiſtrates and military officers under the Roman emperors, with an account of their reſpective offices and fees.

LATERE, A, a Latin term uſed to denote the qualification of cardinals, whom the pope ſends as legates into foreign courts ; who are called cardinals *à latere*, as being his holineſs's counſellors in ordinary, and aſſiſtants. See Legate.

The guards of princes were heretofore called *laterones*, becauſe always attending at their ſides, *à latere*.

Du Cange, in his Gloſſary, ſays there were anciently counts *à latere*, and monitors *à latere*.

LATESA, in *Geography*, a town of Naples, in Abruzzo Citra ; 10 miles S. of Lanciano.

LATEWA, a town of Bengal ; 45 miles N.W. of Ramgur.

LATEX, in *Chemiſtry*, a name by which Van Helmont has, in ſome of his writings, called the famous menſtruum, which he boaſts Paracelſus and himſelf to have been poſſeſſed of, and which he uſually calls *alkaheſt*.

LATH, in *Building*, ſlips of wood uſed in plaſtering, tiling, and ſlating. Theſe are what Feſtus calls *ambrices* ; in other Latin writers they are denominated *templa* ; and by Gregory of Tours, *ligaturæ*.

In plaſtering, the narrower the laths are the better they are for the purpoſe, ſo as they are of ſufficient breadth to hold the nails, as the number of interſtices are increaſed, the lime or ſtuff will hang more readily, and the thicker they are they will be the better adapted to reſiſt violence ; but then they would be much more expenſive. The laths are generally made of fir, in three, four, and five feet lengths, but may be reduced to the ſtandard of five feet. Laths are ſingle or double; the latter are generally about three-eighths of an inch thick, and the former barely one quarter, and about an inch broad. Lath is ſold in bundles ; the three feet are eight ſcore to the bundle, four feet, ſix ſcore, and the five feet, five ſcore. The lath for plain tiling is the ſame as that uſed in plaſtering. Laths are alſo diſtinguiſhed into heart and ſap-laths ; the former ſhould always be uſed in plain tiling, and the latter, of an inferior quality, is moſt frequently uſed by the plaſterer. Heart-of-oak laths, by the ſtatute Edw. III., ſhould be one inch in breadth, and half an inch in thickneſs: but now, though their breadth be an inch, their thickneſs is ſeldom more than one quarter of an inch; ſo that two laths, as they are now made, are but equal to one lath. According to the ſaid ſtatute, pan-tile laths are nine or ten feet long, three-quarters of an inch thick, and one and a half inch broad, and ſhould be made of the beſt yellow deal: the bundle conſiſts of twelve ſuch laths. A ſquare of plain tiling will require a bundle of laths, more or leſs, according to the pitch. The diſtance of laying laths one from another is various, differing more in ſome places than in others; but three and a half, or four inches, are uſual diſtances, with a counter-lath between rafter and rafter: but if the rafters ſtand at wide intervals, two counter-laths will be neceſſary. Laths are employed for various other purpoſes as well as plaſtering and tiling, as in filleting for ſuſtaining the ends of boards; in naked flooring and roofing; for furring up the ſurfaces; and in every kind of ſmall work, where the dimenſions of the parts do not exceed the ſcantling of laths.

In lathing for plaſtering, it is too frequent a cuſtom to lap the ends of the laths upon each other, where they terminate upon a quarter or batten, in order to prevent cutting them; but though this practice ſaves a row of nails, it leaves only a quarter of an inch for plaſter, and if the laths are very crooked, as they frequently are, there will be no ſpace whatever left to ſtraighten the plaſter: the finiſhed ſurface muſt, therefore, be rounded, contrary to the intention and to the good effect of the work; but if the ends are to be laid upon each other, they ſhould be thinned at the lapping out to nothing at the extremity, or otherwiſe they ſhould be cut to exact lengths.

Laths ſhould be as evenly ſplit as poſſible; thoſe that are very crooked ſhould not be uſed, or the crooked part ſhould be cut out; and ſuch as have a ſhort concavity on the one ſide, and a convexity on the other, not very prominent, ſhould be placed with the concave ſide outwards.

The following is the method of ſplitting laths: the lath-cleavers having cut their timber into lengths, they cleave each piece with wedges into eight, twelve, or ſixteen pieces, according to the ſcantling of the timber: the pieces thus cloven are called bolts; then, in the direction of the felt-grain, with their dowl-ax, into ſizes for the breadth of the laths: this operation they call felting; and, laſtly, with their chit they cleave them into thickneſs by the quarter-grain.

Lath *Bricks* are bricks made much longer than the ordinary ſort, and uſed inſtead of laths for drying malt upon; for which purpoſe they are extremely convenient, as not being liable to catch fire, and retaining the heat much longer than thoſe made of wood, ſo that a very ſmall fire is ſufficient after they are once heated.

LATHAM, in *Geography*, is a townſhip in the pariſh of Ormſkirk, hundred of Weſt Derby, Lancaſhire, England, ſituated 210 miles from London, and containing 434 houſes, and 2179 inhabitants. In this townſhip is Latham-houſe, the ſeat of Edward Wilbraham Bootle, eſq. M. P. This place is noted in the Topographical Annals of Lancaſhire as the ancient ſeat of the Lathams in the reign of Edward III., and afterwards of the Stanleys, and laſtly, of the Bootles. In the civil wars of the 17th century, Latham-houſe was heroically and gallantly defended by Charlotte, counteſs of Derby, who was beſieged here by colonels Egerton, Rigby, Aſhton, and Holcroft, from the 28th of July, 1644, to the 27th of the following May. This is a memorable inſtance of feminine courage and fortitude: a ſimilar example, however, was manifeſted in Blanch, lady Arundel, at Wardour-caſtle, in Wiltſhire. A particular account of the former is recorded in the "Hiſtory of the Houſe of Stanley," 8vo 239; and of the latter in Britton's "Beauties of Wiltſhire," 8vo. vol. i. Latham-park is about five miles in circumference, and contains ſome fine foreſt ſcenery. Nearly in the centre is the houſe, built of ſtone, after a deſign of Leoni. In this townſhip is alſo Croſs-hall, once belonging to the earls of Derby, but is now the property of colonel Stanley, M. P. Near it is Blythe-hall, the ſeat of Thomas Langton, eſq. Beauties of England, vol. IX.

LATHE, an engine of the moſt extended application in the mechanic arts, for forming wood or metal into any article of a circular figure. The mode of action in a lathe is eſſentially different from any other method of cutting, as the work is cauſed to revolve in a circle, while the tool is held upon a fixed ſupport, and preſented to it to cut away any parts projecting beyond the circle deſcribed by the motion of the work. To the mechanic the lathe is an invaluable machine, as a very great proportion of all the parts of machines is formed in it, and as it is the only method of working metal which may be conſidered as perfect. All things which can be turned are made in the lathe, both for accuracy and expedition. The common wooden lathe, in uſe among wood-turners for making articles of houſhold furniture, is ſo generally underſtood, that it is needleſs to give a minute deſcription of it; we have, therefore, given drawings in *Plate* (*Lathe*) of a metal lathe, the moſt perfect of its kind, proper for turning accurate and delicate works for mathematical inſtruments, or machinery: it was made by Mr. H. Maudſlay, London, who has a great number of different ſizes, but on a ſimilar conſtruction, in conſtant uſe, at his manufactory for ſteam-engines, and other machinery, in the Weſtminſter-road. *Figs.* 1. and 2. of the plate are a front and end elevation of the whole lathe, where A A is a ſtrong mahogany bench, ſupported on iron ſtandards B, B, which are ſhewn fully in *fig.* 2; beyond theſe are ſuits of drawers C, C, to contain the tools, &c.: the ſtandards B carry the axis D of the great foot-wheel E, which gives motion to the work when it is turned by its crank D and treadle F, on which the workman preſſes his foot, at intervals, to turn the wheel round. The lathe itſelf, which is fixed upon the bench, conſiſts of a triangular bar G. See alſo *fig.* 3, which is an enlarged figure of it; it is ſupported on ſmall ſtandards *a*, *b*, *c*, fixed to the bench A by ſcrews going through it: upon this bar the puppets H, I, and K, are fitted with perfect accuracy, and H, which is called the back puppet, can be faſtened at any part of the bar by a ſcrew beneath it; the other two puppets, I, K, are ſcrewed down upon the ſtandards *a* and *b*, and are connected together by a piece of metal *d* fitting upon the bar, and caſt in the ſame piece with them: theſe two puppets ſupport the mandrel, or ſpindle L, one having a ſcrew with a conical ſteel point to enter a hole in the end of the ſpindle, and the other having a hard ſteel collar to receive the neck of the ſpindle, which fits it with the moſt perfect accuracy, to turn round freely (by a band encompaſſing its pulley M), but without any ſhake in its collar; on the end of the ſpindle, beyond the collar, is a ſmall ſcrew to fix on the work to be turned. The back puppet H has a hole through the top of it, exactly in a line with the ſpindle, and a ſteel pin *e*, with a conical point fitted into it to ſupport the end of a long piece of work; the point is faſtened by a ſcrew *g* in the top of the puppet, and has a ſcrew *f* behind it to force it forwards: the bar G, alſo, has the reſt, or ſupport, for the tool fixed upon it, by a piece of metal *g*, (*fig.* 1.) fitted upon the bar; a ſlider is fitted upon this piece to ſlide in a direction perpendicular to the bar, and the ſame ſcrew beneath faſtens the reſt upon the bar at any place, and the ſlider at any length acroſs the bar. On this ſlider is a ſocket to receive a pin, on the top of which is a croſs-piece, formed like a T, upon which the tool is laid; this T can be adjuſted to the height of the work the tool is to be applied to, and can be faſtened at any height by the ſcrew in the ſide of the ſocket. The various kinds of work to be turned are faſtened to the end of the ſpindle, ſo as to be turned round with it, by means of what are called chucks: theſe are pieces of wood, or metal, fitted to ſcrew faſt upon the end of the ſpindle, and a hollow, like a diſh, being turned out in it; the piece of wood or metal to be turned is driven into this hollow, and thus held to be turned, by holding a tool over the T of the reſt, which is previouſly fixed cloſe to the work, and preſenting the edge to the work as it revolves by the treadle F, turning the foot-wheel, &c.; this, by its band turning the pulley M, and the work with an increaſed velocity. A chuck of this deſcription is ſhewn mounted in *fig.* 1, with what is ſuppoſed to be a plate of braſs, held in it to turn the flat face. Some chucks are flat, with holes through them, and the work is held by ſcrews againſt it; others are provided with three jaws, like a vice, which can be altogether cauſed to advance to, or recede from, the centre, by turning a ſcrew, ſo as to encompaſs a piece of work of any dimenſions. This method of chucking is adopted to form all kinds of flat or hollow work, as cups, boxes, circular rings, or plates, wheels, &c. which are, therefore, termed chuck-work; but articles of conſiderable length are ſupported at both ends, which method is called turning between centres. In this method the puppet H is ſlid along the bar to the length of the work, and fixed there by its ſcrew: the point *e* is now, by its ſcrew *f*, thruſt forwards, and its point enters a ſmall hole, previouſly drilled in the end of the work: the ſcrew *g* is now tightened, to faſten the point *e*, upon which one end of the work revolves as a centre, the other end is received into a ſquare hole in the end of a chuck ſcrewed to the ſpindle. In other caſes, the ſpindle has a chuck ſcrewed to it, terminating in a conical point ſimilar to that at *e*; this forms a ſupport for the end, and an arm, projecting from the chuck, intercepts a pin or arm fixed to the work, and by this means turns it round with the ſpindle. This method of turning between centres is employed to turn ſpindles of wheels, bolts, ſcrews, rollers, the outſides of cylinders, or any other articles of greater length than their diameter. When a piece of work is to be turned, which is larger than the lathe will admit, the bar is to be drawn out, as in *fig.* 1, and ſupported by an additional ſtandard *c* ſcrewed to the bench. In the ſame ſtate it will admit longer work.

The particular manner of holding the tool to the work is not eaſy to deſcribe in words, but is ſoon acquired by practice. The tools for braſs are ſquare or flat bars of ſteel, the ends of which are cut off obliquely, to form an edge like a chiſſel, but with a very obtuſe angle. It is held in ſuch a poſition, that its upper flat ſurface points to the centre of the work to be turned: it is to be held down as firmly as poſſible to the reſt, and advanced to the work at intervals, whenever it ceaſes to cut, by having removed all the projections of the work without the circle it deſcribes. For turning with extreme accuracy, the ſlide-reſt is a very uſeful addition to the lathe. It is a reſt with two ſliders in different directions, to one of which the tool is fixed: by means of ſcrews with handles, the ſliders and the tool can be moved in either direction, to bring the tool to the work. *Figs.* 3, 4, and 5, explain the ingenious piece of mechaniſm. N A is a piece of metal, fitted to the bar of the lathe, and provided with a ſcrew to faſten it at any place: upon the upper ſurface, which is flat, two pieces of braſs are ſcrewed, to form a dove-tailed groove, in which a ſlider, *h*, is fitted, to move with freedom and preciſion; a ſcrew, *i*, is mounted in the frame N, and is lapped into a piece projecting from the lower ſide of the ſlider, ſo that the ſcrew, when turned round by a handle fitted on its ſquare, advances or draws back the ſlider in its groove. Upon this ſlider, *h*, is a frame *k*, having at the top of it a ſlider *l*, provided with a ſcrew *m*, as the former, to move it, and carrying a piece *n*, with ſquare holes through it in two directions to receive the tool *o*, and a ſcrew at top to faſten it in. The ſlide-reſt being mounted, in the manner of *fig.* 3, upon the bar, the upper ſlider, *l*, is parallel with the ſpindle, and the lower one, *h*, perpendicular thereto. For turning flat work, the tool is put in as there ſhewn: now by turning the ſcrew, *m*, of the upper ſlider, the tool is advanced in contact with the work, which is mounted as in *fig.* 1; then by the other ſcrew, *i*, it is drawn acroſs the face of the work, turning it as it proceeds, to a perfectly flat ſurface. For turning a cylinder between centres, the tool, *o*, is put through its holder *n*, in a direction perpendicular to that ſhewn in *fig.* 3; and then the lower ſlider, *h*, is moved to adjuſt the tool to the diameter of the intended work; and the upper ſlider is moved, to carry the tool along the length of the cylinder, and cut it as it goes. The ſlide-reſt will alſo turn cones, by the following contrivance: the frame *k*, ſupporting the upper ſlider, is fitted to the lower ſlider by one pin, upon which the whole frame and upper ſlider may be turned round and faſtened at any inclination, by two ſcrews paſſing through circular grooves. By this means the upper ſlider is inclined in any angle to the ſpindle, to turn a cone either hollow or ſolid, as the tool is put into its holder in one or other direction.

The ſlide-reſt can be made to cut ſcrews by an ingenious application, which is explained in *figs.* 6 and 7. A ſhort bar P, exactly of the ſame dimenſions as the large one, is fitted thereon, and faſtened by its ſcrew *p*. Upon this the ſlide-reſt is placed: its ſliders now ſtand in a direction perpendicular to what they did before, though on the ſame level. The ſcrew to be cut, repreſented by Q, *fig.* 6, is mounted between the centres, and turned to a true cylinder by a tool put in the holder *n*, and carried along parallel to the ſpindle, by turning the ſcrew, *i*, of the lower ſlider: this being done, a cog-wheel, V, is fitted on the chuck, at the end of the ſpindle, and another, W, is attached to the end of the ſcrew, *i*, of the lower ſlider, ſo that it will be turned round at the ſame time with the ſpindle. A tool, with a point of the proper form to cut the thread of the ſcrew, is put in the holder *n*, and advanced by the ſcrew, *m*, of the upper ſlider to touch the cylinder Q. The lathe being now put in motion, the tool is moved along by the ſcrew of the lower ſlider, at the ſame time the work revolves, and upon which it traces a ſpiral groove. When it arrives at the end of the ſcrew, which it only ſcratches the firſt time, the tool is drawn back clear of the work, and the lathe turned the contrary way, to return the tool to the place where it firſt ſet out. The tool is then ſet by the ſcrew *m*, to cut deeper than the firſt time, and the ſcrew is cut over again: this being repeated four or five times, the ſcrew is completed. By this method a ſcrew of any degree of fineneſs may be cut, by merely changing the proportion of the cog-wheels, V, W, which connect the ſpindle and the ſcrew of the lower ſlider. It is plain, if theſe wheels are of equal ſize, a ſcrew will be formed of the ſame width of threads as the ſcrew of the ſlide-reſt at *i*; and if the wheel, W, on the ſcrew, is the largeſt, the ſcrew cut will be finer; if, on the other hand, the ſmalleſt wheel is fixed on the ſcrew at W, it will cut a ſcrew of a coarſer thread than the ſcrew *i*. The lathe is provided with wheels of all the different ſizes, ſhewn by the dotted circles V, *fig.* 7, any of which may be fixed on at pleaſure, either on the ſcrew or the chuck. The ſcrew cut in this manner will have its threads inclined in a contrary direction to the ſcrew of the ſlide-reſt; and if that is a left-handed ſcrew, it will cut a right-handed ſcrew, becauſe the ſlider-ſcrew revolves in an oppoſite direction to the ſpindle. That the lathe may cut ſcrews of either kind, an intermediate cog-wheel is introduced between the two, to cauſe them to turn the ſame way. This gives another advantage, *viz.* that any two wheels may be uſed together; the intermediate wheel communicating motion from one to the other, though they are conſiderably diſtant from touching each other. The application of the intermediate wheels is explained in *figs.* 8 and 9, where *r* is a projecting ſhelf from the ſtandard *a*; upon this a piece of metal, *s*, is faſtened by a ſcrew, and a ſhort hollow ſpindle, *v*, is fitted into it, and faſtened by proper ſcrew-collars which admit its rotation; upon the end of this the cog-wheel W, which turns the ſcrew of the ſlide-reſt, is faſtened by a nut: an arm, *w*, is fitted on the ſhort ſpindle *v*, ſo as to have an angular motion round the centre: the arm has a groove in its length, in any part of which the centre pin of the intermediate wheel, *x*, can be faſtened; and by theſe two motions this wheel may be fixed at any joint, ſo as to connect the wheels of any ſize. The hollow ſpindle, *v*, is adapted to receive an arbor or axis *y*, which has a ſocket in the end adapted to the ſquare, upon the end of the ſlide-reſt ſcrew *i*: by this method the ſlide-reſt may be ſet at any part of the lathe bar; when it is required to cut a ſcrew at the end of a long bolt; the arbor *y*, forming the connection between the cog-wheel, W, and the ſcrew, for which purpoſe it ſlides through the hollow ſpindle *v*, but is cauſed to revolve with it, by a feather or fillet projecting from one ſide; the ſocket of the hollow ſpindle may be ſet and faſtened at any required diſtance from the lathe bar, and faſtened by its ſcrew; the ſlide-reſt being ſet at a correſpondent diſtance from the ſpindle of the lathe, by moving it upon the bar P, will admit a large piece of work, when a ſcrew is required to be cut upon it. R, *fig.* 7, is an iron frame, faſtened to the lower ſlider of the ſlide-reſt, to ſupport the ſcrew from bending by the preſſure of the tool, when it is long and ſlender. The frame is ſhewn in plan in *fig.* 10, where the holes are ſhewn for the two ſcrews which hold down the frame upon the lower ſlider.

The methods of holding various pieces of work in the lathes to turn them are endleſs, and depending in a great meaſure upon the ingenuity of the workman to adapt them to the particular occaſions he meets with. This ſubject, as well as the figure and manner of holding the tools, will be reſumed under the article TURNING; an art which, from the facility with which it produces ſo many beautiful forms, has become a faſhionable amuſement among gentlemen, who may require many practical inſtructions, which would be needleſs to the mechanic regularly educated in the workſhop. We ſhall alſo deſcribe the method of turning elliptic work, as well as circular.

LATHE, in *Law*. See LETHE and LATHREVE.

LATHE, in *Rural Economy*, a provincial term uſed in ſome counties to ſignify a barn.

LATHRÆA, in *Botany*, (λαθραιος, *clandeſtine* or *concealed*, becauſe the herbage is moſtly under the ground, or at leaſt covered with dead leaves of trees.) Toothwort. Linn. Gen. 3 5. Schreb. 402. Willd. Sp. Pl. v. 3. 200. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 654. Juſſ. 102. Lamarck Illuſtr. t. 551. Gærtn. t. 52.—Claſs and order, *Didynamia Angioſpermia*. Nat. Ord. *Perſonatæ*, Linn. *Pediculares*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, erect; its orifice deeply four-cleft. *Cor.* of one petal, ringent; tube longer than the calyx; limb ringent, ſwelling; its upper lip concave, helmet-like, broad, with a narrow hooked point; lower lip ſmalleſt, reflexed, obtuſe, moſtly three-cleft. Nectary a very ſhort notched gland, depreſſed on both ſides, inſerted into the receptacle of the flower at one edge of the germen. *Stam.* Filaments four, awl-ſhaped, the length of the corolla, and concealed under its upper lip, two rather ſhorter than the reſt; anthers oblong, two-lobed, barbed, flattened, cohering in pairs. *Piſt.* Germen ſuperior, globoſe, ſlightly compreſſed; ſtyle thread-ſhaped, of the length and ſituation of the ſtamens; ſtigma tumid, abrupt, drooping. *Peric.* Capſule roundiſh, obtuſe with a point, inveſted with the enlarged ſpreading calyx, of one cell and two elaſtic valves, each bearing a central, longitudinal, fungous receptacle. *Seeds* few, nearly globular, inſerted into the receptacles.

Obſ. The nectariferous gland ſhews its very near affinity to *Orobanche*. Linn.

Eſſ. Ch. Calyx four-cleft, inferior. A depreſſed gland at the baſe of the ſuture of the germen. Capſule of one cell, with lateral fungous receptacles. Seeds globoſe.

1. L. *Clandeſtina*. Subterraneous Toothwort. Linn. Sp. Pl. 843. Lamarck, fig. 1. (Clandeſtina flore ſubcæruleo; Tourn. Inſt. 652. t. 424. Orobanche, ſive Dentaria aphyllos purpurea, ceſpite denſo; Moriſ. Sect. 12. t. 16. f. 15.) —Stem branched, ſubterraneous. Flowers erect, ſolitary.—Native of ſhady woods in France, Italy, and the Pyrenées, growing paraſitically on the roots of trees. The *ſtem* is ſubterraneous, at firſt ſhort, and denſely clothed with crowded, ſeſſile, rounded, convex, very fleſhy, entire, whitiſh *leaves*. In this ſtage of the plant the *flowers* riſe above the ground, and are at firſt nearly ſeſſile, very large, the corolla being two inches long, of a blueiſh colour, ſometimes white, and they grow in rather cloſe tufts. Afterwards the *ſtem* is greatly elongated, the *leaves* become remote, and ſhrivelled, the *corolla* falls, and each *calyx* is elevated on its own ſeparate ſimple *ſtalk* above an inch long. This latter ſtate is repreſented in Rudbeck's Elys. p. 229. f. 2. As we find no correct account of the growth of this ſingular plant, the above may not be unacceptable. It ſeems to ſhew the herb, if not the root, to be but of annual duration. What have been called ſcales of the root in this genus, ſeem equivalent to leaves, and we have ſo denominated them above.

2. L. *Anblatum*. Oriental Toothwort. Linn. Sp. Pl. 844. (Anblatum orientale, flore purpuraſcente; Tourn. Cor. 48. t. 481.)—Lips of the corolla undivided.—Found by Tournefort in the Levant. Linnæus has taken up this ſpecies entirely from the plate and ſhort definition of the great French botaniſt. It ſhould appear to be moſt akin to the following, with which it conſtitutes Tournefort's genus of *Anblatum*, whoſe name is of German etymology, and adopted from Valerius Cordus.

3. L. *Squamaria*. Greater Toothwort. Linn. Sp. Pl. 844. Fl. Dan. t. 136. Engl. Bot. t. 50. (Squamaria; Rivin. Monop. Irr. t. 89. f. 2. Dentaria major Matthioli; Ger. em. 1585.)—Flowers racemoſe, pendulous. Lower lip three-cleft.—Native of ſhady woods throughout Europe, flowering in March or April, and growing paraſitically on the roots of the haſel, for the moſt part. The ſubterraneous portion of the *ſtem* is branched, clothed with fleſhy-white *leaves*, as in the firſt ſpecies; what riſes above-ground is ſimple, purple, downy, racemoſe, bearing numerous drooping purple *flowers*, with a pale calyx, each partial flower-

ſtalk attended by a leaf like thoſe that grow below the ſurface.

Lathræa *Phelypæa.* See Orobanche.

LATHREVE, Leidgreve, or *Trithingreve*, was an officer under the Saxon government, who had authority over a third part of the county; and whoſe territory was therefore called trithing, otherwiſe a leid, leithin, or lathe, in which manner the county of Kent is ſtill divided; and the rapes in Suſſex ſeem to anſwer to the ſame. As to the juriſdiction of this officer, thoſe matters that could not be determined in the hundred court, were thence brought to the trithing; where all the principal men of the three or more hundreds being aſſembled by the lathreve, or trithingreve, did debate and decide it: or if they could not, then the lathreve ſent it up to the county court, to be there finally determined.

LATHRUS, in *Entomology*. See Scarabæus.

LATHYRIS, in *Botany*, a name given by many authors to a ſpecies of tithymal, or ſpurge, commonly known by the name of *tithymalus latifolius*, the broad-leaved ſpurge, and called by ſome alſo *cataputia*.

LATHYRUS, a name adopted from Theophraſtus, whoſe λαθυρος appears evidently to be, like our's, ſomething of the pea or vetch kind, though it is impoſſible preciſely to determine what.—Linn. Gen. 375. Schreb. 497. Willd. Sp. Pl. v. 3. 1077. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 763. Juſſ. 359. Lamarck. Illuſtr. t. 632. Gærtn. t. 152.—Claſs and order, *Diadelphia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminoſæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped; its ſegments lanceolate, acute; the two uppermoſt ſhorteſt, the lower one longeſt. *Cor.* papilionaceous. Standard very large, inverſely heart-ſhaped, reflexed at the ſides and ſummit. Wings ſmaller, oblong, ſomewhat creſcent-ſhaped, ſhort and obtuſe. Keel ſemicircular, the ſize of the wings but broader, ſeparating about the middle inwards. *Stam.* Filaments in two ſets, one ſimple the other in nine diviſions, curved upwards; anthers roundiſh. *Piſt.* Germen compreſſed, oblong, linear; ſtyle in its upper part erect, flat, broader upwards, acute at the ſummit; ſtigma on the upper or inflexed ſide of the ſtyle, extending from the middle to the top, hairy. *Peric.* Legume very long, cylindrical or compreſſed, pointed, of two valves and one cell. *Seeds* ſeveral, either cylindrical, globoſe, or ſlightly angular.

Eſſ. Ch. Style flattened, downy above, broader upwards. Two upper ſegments of the calyx ſhorteſt.

Tournefort divides this genus into four by the foliage. His *Lathyrus*, t. 216, 217, has only a ſingle pair of leaflets on each footſtalk, the latter terminating in a compound tendril; his *Clymenum*, t. 218, has many leaflets to each ſtalk; his *Niſſolia*, Inſt. 656, has ſimple leaves without any tendril; and his *Aphaca*, t. 223, bears ſtipulas without leaves, at leaſt in the adult plant. Theſe, however, are very juſtly deemed by Linnæus mere differences in habit, among the ſpecies of one great genus, which is on the whole ſufficiently natural. His 14th edition of Syſt. Veg. enumerates 21 ſpecies, Willdenow 36, in three ſections. The firſt ſection, with ſingle-flowered ſtalks, now and then varying to two flowers, embraces 13 ſpecies; the ſecond, with two-flowered ſtalks, has ſix; the third, with many flowers on each ſtalk, has 17.—Seven of the genus only are natives of Britain. The reſt grow either in the warmer countries of Europe, or in the north of Africa, ſome in America, and one it is ſaid in Japan. They are ſtationed for the moſt part in cultivated fields, in meadows, or about hedges and thickets. Thoſe referrible to the firſt and ſecond ſections are, perhaps without exception, always annual plants, many of them capable of being uſed as pulſe; thoſe of the third are generally perennial, with very tenacious, deep or creeping roots, and more calculated for fodder. Examples are here ſubjoined.

* *Stalks ſingle-flowered.*

L. *Aphaca.* Linn. Sp. Pl. 1029. Curt. Lond. faſc. 5. t. 51. Engl. Bot. t. 1167. (Aphaca; Raii Syn. 320, Ger. em. 1250.)—Flowers ſolitary. Tendrils leafleſs. Stipulas between heart and arrow-ſhaped.—Found in the borders of gravelly corn-fields, but rarely. The *ſtem* is weak, a foot or two high, ſupported by its numerous ſimple tendrils, each ſpringing from between two large, angular, almoſt halbert-ſhaped *ſtipulas*, which give the plant a peculiar aſpect. One or two of the very firſt ſtipulas only are accompanied by a pair of ſmall *leaflets*, with or without any elongated tendril. The *flowers* are ſmall and yellow, very rarely two together on each flower-ſtalk.

L. *amphicarpos.* Linn. Sp. Pl. 1029. (L. minimus perennis αμφικαρπος, ſeu ſupra infraque terram ſiliquas gerens; Moriſ. Sect. 2. Append. t. 23. f. 1.)—Stalks ſingle-flowered, longer than the calyx. Tendrils two-leaved, quite ſimple.—Native of Syria. A humble plant, remarkable for producing many of its pods, with perfect ſeed, immediately from the root, or rather from the ſubterraneous part of the ſtem; yet theſe are the offspring of perfect flowers, (at leaſt as to ſtamens and piſtil,) though born under ground; as we have verified by examining the plant in Kew garden 30 years ago. Whether the roots be annual or perennial, we are not certain, but this ſubterraneous mode of fructifying is ſeen in two or three more ſpecies of *Lathyrus* or *Vicia*. Moriſon's figure exhibits the preſent plant very tolerably. What riſes above ground bears linear-lanceolate rather glaucous *leaflets*, in pairs, with half arrow-ſhaped *ſtipulas*, and large ſolitary dull-purple *flowers*, which alſo produce ſeed.

L. *articulatus.* Linn. Sp. Pl. 1031. Curt. Mag. t. 253.—Stalks with one or two flowers. Tendrils accompanied by many alternate lanceolate leaflets, on a winged ſtalk.—Native of France and Italy. A common hardy annual in our gardens, to a place in which it is recommended by its elegant though ſcentleſs *flowers*, whoſe crimſon ſtandard is prettily contraſted with their white wings.

** *Stalks two-flowered.*

L. *odoratus.* Common Sweet Pea.—Linn. Sp. Pl. 1032. Curt. Mag. t. 60.—Stalks two-flowered. Leaflets ovate-oblong, two to each branched tendril. Legumes hairy.—Native of Sicily, and ſome ſay of Ceylon; but the latter may perhaps be doubted, the plant being in the Engliſh gardens ſo hardy an annual, as frequently to ſurvive our winters, when it comes up in autumn. Its great beauty, delicious fragrance, and variety of colours, render it a general favourite. More than two flowers are frequent on each ſtalk, though the uppermoſt are commonly blighted.

*** *Stalks many-flowered.*

L. *tuberoſus.* Linn. Sp. Pl. 1033. Curt. Mag. t. 111.—Stalks many-flowered. Leaflets oval, in pairs. Stem without wings. Roots tuberous.—A troubleſome weed in ſome parts of Germany and Italy, ſpreading widely over all kinds of cultivated ground, by means of its tuberous fleſhy perennial *roots*, hardly to be extirpated. In our gardens it is a beautiful hardy plant, conſpicuous for the peculiarly delicate roſe-colour of its *bloſſoms*, and we have never heard of its being troubleſome in its increaſe. The *ſeeds* rarely ripen. The *knobs* of the root are eatable when boiled.

L. *latifolius.* The Great Everlaſting Pea. Linn. Sp. Pl. 1033. Engl. Bot. t. 1108. Mill. Illuſtr. t. 62.—Stalks many-flowered. Leaflets elliptical, in pairs. Stem winged.—Very commonly cultivated in gardens, where its roots endure for a long courſe of years, throwing up tall climbing *ſtems,* which bear large bunches of beautiful crimſon *flowers,* well known to moſt people. We rather doubt whether the plant be truly wild in England, yet it appears in ſome places to be ſo, and finds a place in all our Britiſh Floras.

L. *ſylveſtris.* Narrow-leaved Everlaſting Pea. Linn. Sp. Pl. 1033. Engl. Bot. t. 805. Curt. Lond. faſc. 6. t. 52.—Differing from the laſt in the narrowneſs of its *leaflets,* and leſs gaudy hues of its *flowers,* is perhaps a more elegant plant, and certainly wild in many parts of England in low buſhy ſpots.

Lathyrus, in *Gardening,* contains plants of the herbaceous climbing flowery kinds, of which the ſpecies chiefly cultivated are the ſweet lathyrus, or pea, L. odoratus; the tangier lathyrus, or pea, L. tingitanus; and the broad-leaved lathyrus, or everlaſting pea, L. latifolius.

But ſeveral other ſpecies may be cultivated where variety is wanted.

The firſt of theſe ſorts has ſeveral varieties; as the purple-flowered, the white-flowered, the variegated or painted lady, ſweet-ſcented, and the ſcarlet.

The ſecond ſort is a ſhowy plant for ſhrubberies, wilderneſs quarters, arbours, and trellis-work; but too large and rampant for borders of the common flower-garden.

It has many varieties; as the red-flowered, the purple-flowered, the ſcarlet-flowered, and the large-flowered.

Method of Culture.—Theſe plants may be readily raiſed, by ſowing the ſeeds of the different ſorts in the autumn or ſpring ſeaſons, at different times in patches of ſix or eight together, in the places where they are to grow. Where the ſoil is light and dry, the autumn is the beſt ſeaſon, as the plants appear more early, but in other caſes the ſpring ſhould be preferred. The plants afterwards only require to be kept clean from weeds, and be properly ſupported by branchy ſticks.

The laſt ſort may likewiſe be increaſed by tranſplanting the roots in the autumn; but the plants in this way are ſeldom ſo good as by ſeeds.

And the two firſt ſorts muſt be ſown annually, but the laſt will remain many years.

It may be noticed that it is the practice with the gardeners who raiſe the firſt ſorts for the London markets, to ſow them in the autumn in pots, and ſecure them from ſevere weather, by placing them in hot-bed frames: by which means they can bring them much more early to market. They may be continued in flower the whole of the ſummer by repeated ſowings in the ſpring. When ſown in pots, they ſhould be watered frequently in a ſlight manner.

All theſe plants are highly ornamental in the borders, clumps, and other parts of pleaſure-grounds, when properly intermixed in their ſpecies and different varieties in ſuch compartments.

LATIANO, in *Geography,* a town of Naples, in the province of Otranto; five miles E. of Oria.

LATIAR, a feaſt or ceremony, inſtituted by Tarquinius Superbus, in honour of Jupiter Latiaris, or Latialis.

Tarquin, having made a treaty of alliance with the Latins, propoſed, for perpetuating it, to erect a common temple, where all the allies, the Romans, Latins, Hernici, Volſci, &c. ſhould aſſemble themſelves every year, hold a kind of fair, exchange merchandizes, feaſt, ſacrifice, and make merry together. Such was the inſtitution of the Latiar. The founder only appointed one day for this feaſt; the firſt conſul added another to it, upon concluding the peace with the Latins; and a third was added, after the people who had retired to the Mons Sacer were returned to Rome; and a fourth, after appeaſing the ſedition raiſed on occaſion of the plebeians aſpiring to the conſulate.

Theſe four days were called the *Latin* feriæ; and all things done during the courſe of the feriæ, as feaſts, ſacrifices, offerings, &c. were called *Latiares.*

LATICLAVIUM, or Latus-clavus, a garment which was a diſtinction and dignity among the Romans, contradiſtinguiſhed from the anguſticlavium.

The lati-clavium was a kind of tunic or long coat, faced with one or two ſlips of purple, applied lengthwiſe to the two ſides of the tunic.

In the latus-clavus theſe ſlips were pretty broad, and in the anguſtus-clavus narrower; though there is nothing about which the learned differ more than the difference between thoſe two habits.

There were buttons ſet on the latus-clavus, which appeared like the heads of large nails; whence ſome think it took its name.

The ſenators, prætors, and the chief magiſtrates of colonies and municipal cities, had a right to wear it. The robe called prætexta was worn over the latus-clavus. When the prætor pronounced ſentence of death, he put off the prætexta; but retained the latus-clavus.

LATICZOW, in *Geography,* a town of Poland, in the palatinate of Braclaw; 60 miles N.W. of Braclaw.

LATILLA. Gaetano, in *Biography,* an excellent Neapolitan compoſer, much eſteemed by connoiſſeurs, in every ſpecies of vocal muſic. His comic operas, however, were the moſt ingenious and ſucceſsful of all burletta compoſitions, till the Buona Figliuola of his nephew Piccini came out, which ſurpaſſed all preceding comic operas ſo much, that no other excited any curioſity in the public, till Paeſiello's ſuperior fertility was known and felt.

Latilla's comic operas, that were performed in London, from 1748 to 1753, when the Mingotti firſt arrived, were "La Comedia in Comedia," "Orazio," and "Don Calaſcine," which were admirable. The melodies new, eaſy, and pleaſing; humour without buffoonery; and the actors conſidered as well as the ſingers, in allowing time for Pertici and Laſchi, thoſe nice obſervers of whatever was ridiculous in the voice, countenance, or geſture of man, to convey their obſervations to the ſpectators.

We met with poor Latilla 20 years afterwards at Venice, "fallen from his high eſtate," and ſhrunk into an humble deputy organiſt, at the church of St. Maca; but found him an intelligent and well informed man, on other ſubjects than that of his own profeſſion, which, however, he had cultivated in all its departments.

LATIMER, Hugh, the ſon of a reſpectable Leiceſterſhire yeoman, was born about the year 1470. He was initiated in ſchool learning in the country, and making a very rapid progreſs in his youthful ſtudies, he was, at the age of fourteen, ſent to Chriſt's college, Cambridge, where he was diſtinguiſhed for his rapid proficiency in the ſtudies of the place. Here he took his degrees, entered upon holy orders, and was at this period a zealous Papiſt, read the ſcriptures and the ſchoolmen with the ſame reverence, and held Thomas á Becket and the apoſtles in equal honour. He had taken alarm at the progreſs of Lutheraniſm, and inveighed with great bitterneſs, publicly and privately, againſt thoſe principles,

ciples, of which he was hereafter to become a moſt zealous defender. His zeal as a Papiſt was ſo diſtinguiſhed in the univerſity, that he was elected croſs-bearer in all public proceſſions, an employment which he is ſaid to have accepted with a high degee of reverence, and to have diſcharged with much ſolemnity. Our good divine was a Papiſt from conviction, and had a mind open to arguments on all ſides of the queſtion: he fortunately met with Mr. Thomas Bilney, a clergyman of great piety, and who, by the peruſal of Luther's works, had become a ſecret favourer of the reformation. By degrees he infuſed into the mind of Latimer all thoſe doubts which he had formerly felt reſpecting the diſcordance of Popery with pure Chriſtianity. Latimer heard the arguments of his friend, and was prepared at firſt to diſpute the ground inch by inch. At length he found the ground on which he ſtood abſolutely untenable; and acknowledged the errors in which he had been educated. But the temper of the ſcholar was not like that of the maſter: he could not be a Proteſtant in ſecret: he muſt come forth boldly and declare the convictions of his heart: he had ſought truth as the pearl of great price, and having, as he believed, found it, was determined not to conceal its beauty from his friends and the world. He became an active apoſtle in the cauſe of Proteſtantiſm: he preached in public, he exhorted in private, and every where enforced the neceſſity of a holy life, in oppoſition to the ſuperſtitious ceremonies and obſervances inculcated by the Romiſh religion. He ſoon became obnoxious to the generality of the clergy, but being contented to go through evil as well as good report, he continued on his courſe with more ardour in proportion to the outcry made againſt him. He inveighed againſt the ceremonies which encumbered true religion, and expoſed the pride and uſurpation of the Romiſh hierarchy: but what he moſt inſiſted on was the right of the people to read the ſcriptures in their native tongue. Dr. Buckenham, one of the Black-friars, was ſelected to anſwer, from the pulpit, the arguments of Latimer: he performed the taſk with great pomp, but not to the complete ſatisfaction even of his own party, and in a ſhort time afterwards the whole univerſity met to hear what the reformer had to ſay in his defence. Mr. Latimer at firſt recapitulated Dr. Buckenham's arguments; placed them in the ſtrongeſt light, and gave them much greater importance than the friar had been able to do: he then attacked them with ſo much force of reaſoning, and ſuch abundance of wit, as to render the learned doctor truly ridiculous: he next appealed to his hearers, urging them to reſpect their own underſtandings, and not to ſubmit to be led by the prieſts, who had ever been accuſtomed to treat the people at large with contempt; and he concluded with ardently hoping, that his honeſt countrymen might be permitted to have the uſe of the ſcriptures, till they ſhewed themſelves to be as abſurd interpreters of them as the learned friar. Latimer, by this exertion, and by an anſwer to Venetus, greatly increaſed the credit of the Proteſtant party at Cambridge. Bilney and Latimer were regarded as the heads of the party and to them the ſtudents looked with reſpect, attachment, and even veneration. The heads of the colleges, and the ſenior members of the univerſity, were alarmed, and determined to withſtand the progreſs of hereſy. Frequent convocations were held, and the ſtricteſt injunctions were laid on all the tutors to be watchful of the opinions of their pupils; but theſe efforts were in vain, and the biſhop of Ely was applied to, and entreated to cruſh, by his authority, the new opinions. The prelate, though a Papiſt, was not a friend to perſecution: he was willing to judge for himſelf, and though he went to Cambridge and preached againſt the heretics, yet he did not ſcruple to attend himſelf the ſermons of Latimer, and with much candour declared, that the reformer was the beſt preacher he had ever heard. Latimer's enemies next appealed to the court, and tranſmitted very heavy complaints reſpecting the increaſe of hereſy; and Wolſey, contrary, it is thought, to his own inclination, inſtituted a court, conſiſting of biſhops and other divines, to put the laws in execution againſt hereſy. Bilney and Latimer were called to anſwer for their conduct, and as the former was regarded as the moſt guilty, by being the firſt promulgator of the new doctrines, his examination was the moſt ſevere, and he was pronounced guilty; but not having a mind formed for the ſufferings prepared for him, he recanted, and after ſome ignominious treatment was diſmiſſed. Latimer, and others who were involved in the charge, were, by the management of the cardinal, and the merciful diſpoſition of Tunſtal, biſhop of London, diſmiſſed probably without a reproach: the cardinal even granted Latimer his licence to preach throughout England. The friends of the reformers received them with open arms; but the fate of Bilney was truly wretched; he was ſtruck with remorſe at the thought of his recantation, and the agonies of his mind deprived him for a time of his reaſon. In a few years he returned to a ſane ſtate, and determined to expiate his abjuration by his death. He accordingly left his friends at Cambridge, went into Norfolk, his native country, and preached moſt earneſtly againſt the corruptions of the eſtabliſhed religion; he was ſeized, impriſoned, and executed, at Norwich, exhibiting, at his cloſing ſcene, a moſt admirable example of compoſure, firmneſs, and Chriſtian courage. Latimer, in the mean time, exerted himſelf more than ever: he was conſtant in his exertions, and once or twice he had the honour to preach before the king at Windſor. Encouraged by the gracious reception afforded him by Henry, he took the liberty of writing a very bold letter to his majeſty, againſt a proclamation which the clergy had prevailed upon the king to publiſh, forbidding the uſe of the bible in Engliſh. The king received the letter with good temper, and even thanked Mr. Latimer for his well-meant advice. When meaſures were taken for the eſtabliſhment of the king's ſupremacy, Latimer exerted all his powers in forwarding his majeſty's deſigns. His zeal in the buſineſs procured for him the preſentation of the rectory of Weſtkinton, in Wiltſhire, and, notwithſtanding the remonſtrances of his friends, who conſidered this as the firſt ſtep only to higher dignities in the church, he went to reſide on his living. His preaching rendered him very popular, and he was ſoon after appointed by the mayor of Briſtol to preach on Eaſter Sunday. Public notice of this appointment had been given, and received by the people with great joy; but an order was ſuddenly iſſued by the biſhop of Briſtol, prohibiting any one to preach there without his licence. This was but the firſt inſtance of oppoſition which the clergy in that neighbourhood excited againſt him; they traduced his character, and inveighed againſt him with the greateſt violence; and at length they drew up a ſet of articles, in the form of an accuſation, which was laid before Stokeſley, biſhop of London, who immediately cited Latimer to appear before him. To this mandate he was not obedient, but on a citation from the archbiſhop he inſtantly ſubmitted. He ſet out in the midſt of winter, and at a moment when he was grievouſly afflicted with the ſtone and other acute diſorders. On his arrival in London he found the court ſitting, but inſtead of being examined as to any particular charges, he was ordered to ſubſcribe a paper put into his hand, containing the obnoxious doctrines againſt which he had been preaching. This he poſitively refuſed, and he was diſmiſſed, for the preſent, with an exhortation to reflect upon his conduct, and ſubmit.

Frequently was he brought before the court, and as frequently he rejected the propoſal. At length he remonſtrated againſt their ill-treatment, and was probably reſcued by the interpoſition of the king. In 1534, he was appointed chaplain to queen Anne Boleyn, and in the following year he was offered the biſhopric of Worceſter, which he accepted, and diſcharged the duties of the office with zeal, piety, and diligence. In 1536, he was called on to attend the parliament and convocation; and it was hoped that this ſeſſion would bring with it many important advantages for the Proteſtant cauſe. The convocation was opened by an eloquent Latin diſcourſe from Latimer, who had been appointed to this office on account of his great talents, and becauſe it was known that no other perſon could ſo ably expoſe the corruptions of the clergy as himſelf, and thus lead them to an active diſcharge of their duty. In a ſhort time after this, an Engliſh tranſlation of the bible was publiſhed and recommended by authority to a general peruſal. During the ſitting of the convocation, an animated but unſucceſsful attempt was made to ſtigmatize archbiſhop Cranmer and biſhop Latimer, by ſome public cenſure. As ſoon as the convocation broke up the biſhop repaired to his dioceſe; he had no taſte for ſtate affairs, and he had a mind ill adapted to the manners of a court. It was the cuſtom at that period for the biſhops, at the commencement of every new year, to make preſents to the ſovereign, and many of them were very liberal in their donations; but Latimer, on this occaſion, preſented, inſtead of a purſe of gold, a New Teſtament, with a leaf doubled down on this paſſage, "Whoremongers and adulterers God will judge."

Attempts were frequently made to ruin the biſhop, but hitherto they were unſucceſsful; and he continued in favour with the king. After the paſſing of the bloody ſtatute, or the act of the ſix articles, the biſhop proteſted againſt it by his conduct; he reſigned his biſhopric, and retired into the country. Here he intended to paſs the remainder of his days, but an accident, which befel him, by the fall of a tree, obliged him to come to London for ſurgical aſſiſtance. His arrival was ſoon known in the metropolis, and the ſpies of the bloody-minded Gardiner watched him in every place. At length they obtained, or made, matter for accuſation; he was charged with ſpeaking againſt the ſtatute of the ſix articles, and was, without heſitation, committed to the Tower, where he ſuffered a cruel impriſonment during the remainder of king Henry's reign. On the acceſſion of Edward VI. Latimer, and all the others who had been impriſoned in the ſame cauſe, were ſet at liberty. He might have been reinſtated in his biſhopric, but he preferred a more private life, accepted an invitation from Cranmer, and took up his reſidence at Lambeth, where his chief employment was to hear the complaints, and to procure redreſs for the injuries, of poor people. No man was ſo well qualified for an office of this kind, and he continued in it during two years, interfering very little with public tranſactions. It was, however, known that he aſſiſted the archbiſhop in compoſing the Homilies, which were publiſhed, by authority, in the beginning of king Edward's reign, and intended to ſupply the want of preaching, which was now at a very low ebb. Being one of the moſt eloquent preachers of the age, he was appointed to preach the Lent ſermons before the king, during the firſt three years of his reign. After this he retired into the country, and made uſe of his majeſty's licence, as a general preacher, in thoſe parts where he thought his labours might be moſt ſerviceable. He continued in this practice till Popery was re-eſtabliſhed in the reign of queen Mary, when he was cited to appear before the council in London. He immediately obeyed, and as he paſſed through Smithfield, the ſcene of the moſt horrid cruelties exerciſed upon thoſe who had been denominated heretics, he ſaid, very cheerfully, to his attendants, "this place has long groaned for me." The next day he appeared before the council, who, after loading him with many reproaches, committed him to the Tower. His impriſonment was rendered uncommonly ſevere, but he endured every evil with reſignation, and true Chriſtian humility. The weather was exceedingly ſevere, but no fire was allowed him, which led him to tell the lieutenant of the Tower, that, however his enemies might expect he ſhould be burned, unleſs he was permitted to have a fire this froſty weather, he ſhould be firſt ſtarved to death with cold. About this time archbiſhop Cranmer and biſhop Ridley were committed to the Tower, which became ſo crowded with priſoners, that the three prelates were confined in the ſame room, a circumſtance which, no doubt, they greatly enjoyed. The pleaſure, however, was but of ſhort duration; they were hurried to Oxford under the pretence of a public diſputation to be held there by the moſt eminent divines on both ſides. At this place they were moſt cloſely confined in the common priſon, and deprived of every comfort, and of almoſt all the neceſſaries of life; hence they readily inferred what kind of diſputation would be allowed them. They fully expected that the argument of power was the only one that would be reſorted to, and having made up their minds to this, Latimer ſaid he ſhould give them very little trouble. "I ſhall," ſaid he, "offer them a plain account of my faith, and ſay but little more; for I know that any thing more will be to no purpoſe. They talk of free diſputation; but I am aſſured, their grand argument will be, as it was that of their forefathers, *We have a law, and by our law ye ought to die.*" When he was brought into court, he had a cap on his head, buttoned under his chin, a pair of ſpectacles hanging at his breaſt, a new teſtament under his arm, and a ſtaff in his hand. He was exhauſted in preſſing through the crowd, and was permitted to ſit down: after a ſufficient pauſe, he was told he muſt diſpute againſt the articles brought againſt him; he declared he was unable, through age, to do any ſuch thing; "I am not able to debate," ſaid the venerable old man, "I will avow my faith, and then do with me as you pleaſe." He was next enſnared, by the artful conduct of his accuſer, to make conceſſions which were againſt him, and upon this the prolocutor aroſe, and exclaimed to the populace, "Here you ſee the weakneſs of hereſy againſt the truth; here is a man, who, adhering to his errors, hath given up the goſpel, and rejected the fathers." The good old man made no reply, but wrapping his gown about him, and taking his new teſtament and his ſtaff, walked out with the greateſt compoſure. On the following Friday he was again brought into court, was firſt excommunicated, and then condemned to death. As ſoon as the ſentence was read, Latimer, lifting up his eyes to heaven, exclaimed, "I thank God moſt heartily, that he hath prolonged my life to this end."

No ſteps were taken towards putting the ſentence againſt the prelates into execution, for nearly a year and a half; but, in 1555, new laws in ſupport of the Romiſh religion having been enacted, a commiſſion was granted by cardinal Pole, the pope's legate in England, to the biſhops of Lincoln, Glouceſter, and Briſtol, empowering them to try biſhops Latimer and Ridley for hereſy. The prelates were ordered before the commiſſioners, and when Ridley had been examined, biſhop Latimer was brought to the bar, whom the biſhop of Lincoln addreſſed, in an eloquent, and very pathetic ſpeech, earneſtly exhorting him to accept the mercy that was offered, and to acknowledge the authority of the ſee of Rome. The good biſhop was too firmly fixed in his opinions to give them up through motives of timidity, and the deſire of prolonging his life. He was, however, remanded, and on the next day judgment was paſſed on him and Ridley. Their execution was fixed for the 16th of October, and the place fixed on was the north ſide of the city, near Baliol college. Leſt the bloody ſcene ſhould excite a tumult, the military were ordered to attend the place of execution. On the day appointed, the vice-chancellor of Oxford, and other perſons of diſtinction, repaired to the ſpot which was to witneſs the ſufferings of theſe worthy men; the priſoners, at the fixed hour, were ſent for, and the concern of the ſpectators, which was apparent in every countenance, excepting in thoſe who were actors in the ſcene, was greatly augmented by the ſtriking contraſt of their appearance. Ridley was dreſſed in his epiſcopal habit, ſhewing what they had formerly been, and biſhop Latimer wore his priſon attire, by which he exhibited the condition to which they were now reduced. Having heard a ſermon, by a Popiſh doctor, in which they were treated with great inhumanity, they prepared for their laſt trial, and were chained to the ſtake. The fire was ſpeedily kindled, and at the ſight of the flames Latimer exclaimed, "Be of good cheer, maſter Ridley, and play the man, we ſhall this day light ſuch a candle, by God's grace, in England, as I truſt ſhall never be put out." He then recommended his ſoul to God, and a few minutes put an end to the ſufferings of theſe noble martyrs. Such was the glorious and triumphant end of Hugh Latimer, who had been indefatigable in the diſcharge of the duties of life, and who exhibited the moſt aſtoniſhing firmneſs and compoſure in the ſeveral trials to which he was expoſed. He was not learned, in the uſual ſenſe of the word, for he cultivated only uſeful learning, and he lived rather what the world calls a good than a great man. He was eminent as a preacher, but his ſermons, that are extant, are not patterns of good compoſition; his manner of preaching was affecting, as he ſpoke from the heart, and made deep and laſting impreſſions on his auditors. He diſplayed at all times a noble and apoſtolic zeal in the propagation of the truth. No one had a higher ſenſe of what became his office, or was leſs influenced by any ſiniſter motive; and none ever reproved vice with more freedom, without any regard to the rank of his hearers. A collection of his ſermons was publiſhed, in 1570, by Auguſtus Bernhere, a Swiſs, who dedicated them to Catharine, the ducheſs of Suffolk. It conſiſts of forty ſermons, and has been frequently reprinted. In Mr. Fox's Acts and Monuments, ſeveral of his letters are preſerved, among which is the celebrated one to king Henry VIII. for reſtoring the free liberty of reading the holy ſcriptures. Biog. Brit.

LATIN, a dead language, firſt ſpoken in Latium, and afterwards at Rome, and ſtill uſed in the Romiſh church, and among men of letters.

Some authors rank the Latin among the number of original languages, but by miſtake: it is formed principally from the Greek, and particularly from the Æolic dialect of that tongue; though it has a great number of words which it borrowed from the languages of the Etruſci, Oſci, and other ancient people of Italy; and foreign commerce and wars, in courſe of time, added a great many more.

The Latin is a ſtrong, nervous language, perfectly ſuitable to the character of the people who ſpoke it. The Romans were engaged in wars and commotions, foreign and domeſtic, which for ſeven hundred years engroſſed all their thoughts. Hence, therefore, ſays the ingenious Mr. Harris, their language became like their ideas, copious in all terms, expreſſive of things political, and well adapted to the purpoſes both of hiſtory and popular eloquence. But the Romans were no philoſophers; and hence the unfitneſs of their language to this ſubject; a defect, which even Cicero is compelled to confeſs, and more fully makes appear, when he writes philoſophy himſelf, from the number of terms he is obliged to invent. Harris's Hermes, p. 411, &c.

The Latin is more figurative than the Engliſh, leſs pliant than the French, leſs copious than the Greek, leſs pompous than the Spaniſh, leſs delicate than the Italian, but cloſer and more nervous than any of them.

We may here obſerve, that the proſody both of the Greeks and Romans was carried much farther than our's; or that they ſpoke with more, and ſtronger, inflexions of voice than we uſe. The quantity of their ſyllables was much more fixed than in any of the modern languages, and rendered much more ſenſible to the ear in pronouncing them. Beſides quantities, or the difference of ſhort and long, accents were placed upon moſt of their ſyllables, the acute, grave, and circumflex: the uſe of which accents we have entirely loſt, but which, it is well known, determined the ſpeaker's voice to riſe or fall. (See ACCENT and PROSODY.) We may alſo obſerve, that ſtrong tones and animated geſtures always accompany one another. The action both of the orators and the players in Greece and Rome was far more vehement than that to which we are accuſtomed. (See ACTION and GESTURE.) When the Barbarians ſpread themſelves over the Roman empire, theſe more phlegmatic nations did not retain the accents, the tones and geſtures, which neceſſity at firſt introduced, and cuſtom and fancy afterwards ſo long ſupported, in the Greek and Roman languages. As the Latin tongue was loſt in their idioms, ſo the character of ſpeech and pronunciation began to be changed throughout Europe. The ſame attention was no longer paid to the muſic of language, or to the pomp of declamation, and theatrical action. The arrangement which commonly obtains in the Latin language conſiſts in placing, firſt in the ſentence, that word which expreſſes the principal object of the diſcourſe, together with its circumſtances; and afterwards the perſon, or the thing that acts upon it. Thus Salluſt, comparing together the mind and body, uſes the following expreſſion; "Animi imperio, corporis ſervitio, magis utimur;" in which the order renders the ſentence more lively and ſtriking than when it is arranged according to our Engliſh conſtruction; "We make moſt uſe of the direction of the ſoul, and of the ſervice of the body." The Latin order more gratifies the rapidity of the imagination, which naturally runs firſt to that which is its chief object; and having once named it, carries it in view through the reſt of the ſentence. But though the common arrangement in the Greek and Roman languages is to place that firſt which ſtrikes the imagination of the ſpeaker moſt, yet this does not hold without exception. Sometimes regard to the harmony of the period requires a different order, and to this the ancients attended. The Latin order is more animated; but the Engliſh is more clear and diſtinct. The Romans generally arranged their words according to the order in which the ideas roſe in the ſpeaker's imagination. We arrange them according to the order in which the underſtanding directs thoſe ideas to be exhibited in ſucceſſion, to the view of another. Our arrangement, therefore, appears to be the conſequence of greater refinement in the art of ſpeech; as far as clearneſs in communication is underſtood to be the end of ſpeech. The limitation of arrangement in the modern tongues is, in a great degree, owing to the diſuſe of thoſe differences of termination, which, in the Greek and Latin, diſtinguiſhed the ſeveral caſes of nouns, and tenſes,

tenſes of verbs; and which, by means of theſe, pointed out the mutual relation of the ſeveral words in a ſentence to one another, though the related words were disjoined and placed in different parts of the ſentence. As articles contribute very much to the clearneſs and preciſion of language, the want of them in the Latin tongue is unqueſtionably a defect, though they recur for the ſupply of this defect to the uſe of pronouns. (See ARTICLE and PRONOUN.) Blair's Lectures, vol. i.

For a while the Latin tongue was confined almoſt wholly within the walls of Rome; nor would the Romans allow the common uſe of it to their neighbours, or to the nations they ſubdued. Cicero obſerved, that even in his time, Greek was uſed almoſt among every people, but the Latin only confined to a very narrow compaſs. By degrees they were brought to grant the uſe of it as a favour; and, in time, became ſenſible of the neceſſity there was of its being generally underſtood, for the conveniency of commerce: and, accordingly, uſed their utmoſt endeavours, that all the nations ſubject to their empire ſhould be united by one common language: ſo that at length they impoſed that as a law, which they had before granted as a favour.

After the tranſlation of the ſeat of the empire from Rome to Conſtantinople, the emperors of the Eaſt, being always deſirous of preſerving the title of Roman emperors, appointed the Latin to be ſtill retained in uſe, both in their reſcripts and edicts, as appears by the conſtitutions of the eaſtern emperors, collected in the Theodoſian Code; but at length the emperors, neglecting the empire of the Weſt, abandoned all care of the Latin tongue, and allowed their judges to paſs ſentence in Greek; and, accordingly, we find the emperor Juſtinian's Novels are compoſed in Greek.

Charlemagne, coming to the empire of the Weſt, appointed the law proceedings in ſovereign courts to be made in Latin; and the notaries were to draw their acts and inſtruments in the ſame tongue: this practice continued a long time through a great part of Europe; but at length it gave way, and the French took place of the Latin, not only in France, but, in ſome meaſure, in England too; and the reaſon given for it was, that abundance of difficulties aroſe about the underſtanding of Latin terms. See LAW *Language*.

The Latin, however, was prodigiouſly degenerated and corrupted, before it came to be laid aſide. The incurſions of the Goths and Vandals into Italy brought an inundation of foreign words and phraſes into it; inſomuch that Valla and Naud call Boethius the laſt Latin author. By command of Theodoric, king of the Goths, it was the hard fate of this worthy man, ſays Mr. Harris, to ſuffer death; with whom the Latin tongue, and the laſt remains of Roman dignity, may be ſaid to have ſunk in the weſtern world. But that was not all; when it once got into the courts of juſtice, it was ſtill worſe handled; till, at laſt, being introduced amongſt the monks, and become the common language of miſſals and breviaries, it was debauched to that degree, that it was almoſt become ſcandalous to uſe it.

In this condition it was found at the time of the Reformation, when Vives, Eraſmus, &c. began to open the way for its recovery; ſince which time monkiſh Latinity has been declining, and all endeavours have been uſed to retrieve the pure language of the Auguſtan age.

It was ſaid of cardinal Bembo, that he would never read the breviary for fear of corrupting his fine Latin.

LATIN *Bible*. See BIBLE.

LATIN *Character*. See CHARACTER.

LATIN *Church*, is a term uſed for the Romiſh or weſtern church, by way of oppoſition to the Greek church. See CHURCH.

LATINÆ FERIÆ. See FERIÆ.

LATINI, BRUNETTO, in *Biography*, an early reviver of literature in Italy, was born at Florence in the early part of the thirteenth century; he was employed, about the middle of that century, by the Guelphs, in Florence, as ambaſſador to Alphonſo, king of Caſtile, with the view of obtaining aid againſt Manfred, king of Naples and Sicily. By the prevalence of the oppoſite party he was driven from his country, and retired to France. At Paris he opened a ſchool of philoſophy, and wrote ſeveral books. We find him in his native country in 1284, and acting as ſyndic at Florence. He died in 1294. The moſt celebrated of his works was his "Teſoro," a compilation from various authors, in hiſtory, philoſophy, rhetoric, and morals. He tranſlated into the Italian language part of the firſt book of Cicero de Inventione, and he was author of a moral work in verſe, entitled "Il Teſoretto." He is repreſented as a profound rhetorician and philoſopher, and is ſaid to have been the firſt who began to poliſh the language, and refine the underſtanding of his countrymen. Though he does not appear to have been a public inſtructor at Florence, he probably gave private aſſiſtance in the ſtudies of his friends, and he is mentioned as having been, in ſome meaſure, the tutor of Dante.

LATINI, LATINO, a learned Italian, was born at Viterbo in 1513. He ſtudied ſeveral years at Sienna, with a view to juriſprudence, which an ill ſtate of health obliged him to relinquiſh. He then aſſumed the eccleſiaſtical habit, went to Rome, and became librarian to cardinal Rodolfo Pio, who, dying in 1564, left Latini the bequeſt of his copious library. He was employed in the reformation of the Decretal of Gratian, firſt undertaken by deſire of pope Pius IV. and publiſhed under Gregory XIII. and committed to the care of many of the moſt learned eccleſiaſtics of the Roman court. He died in 1593, and bequeathed all his books to the chapter of Viterbo. He was highly eſteemed for his learning and induſtry, though his modeſty did not permit him to publiſh any thing during his life-time. After his deceaſe there appeared two volumes of his "Latin Letters, Poems, and other ſmall Pieces." He communicated many emendations of Tertullian to the edition of that father publiſhed by Pamelius. His MS. annotations on the fathers, and on other authors, were given to the public in the "Bibliotheca Sacra et Profana," printed at Rome in 1667. Moreri.

LATINI, the *Latins*, in *Ancient Geography*, comprehended in general all the people of Latium, and particularly thoſe who inhabited the territory along the Tiber from Rome to the ſea. They were formed, it is ſaid, by the union of the Aborigines, or of people whoſe origin was not known, of the Pelaſgi, who had migrated from Theſſaly, and of the Arcadians, brought thither by Evander, 60 years before the war of Troy.

LATION is uſed by ſome for the tranſlation or motion of a body from one place to another.

LATISSIMUS COLLI, in *Anatomy*, a muſcle of the neck, often called platyſma myoides. See DEGLUTITION.

LATISSIMUS *Dorſi*, is a muſcle of the back, deſcribed under DORSI.

LATITAT, in *Law*, a writ, whereby all men in perſonal actions are called originally to the king's bench.

It has this name, as ſuppoſing the defendant lurks, lies hid, and cannot be found in the county of Middleſex, to be taken by bill; but is gone to ſome other county, to the ſheriff whereof this writ is directed. See BILL *of Middleſex*.

LATITUDE, in *Geography* and *Aſtronomy*. The latitude of a place on the terreſtrial globe is its angular diſtance from the equator. It is meaſured on the meridian, being that part of it which is intercepted between the zenith of the place and the equator. See MERIDIAN.

If the place is ſituated to the north of the equinoctial line, it is ſaid to have north latitude; if on the other ſide, its latitude is ſouth.

When the ſpherical figure of the earth was once admitted, obvious methods, founded on aſtronomical principles, were immediately invented, to determine the latitude of places, or their relative ſituation to the equator. Previous to the eſtabliſhment of this theory, nothing could be more vague and unſatisfactory than the methods employed by the ancients of determining the relative ſituations of the principal cities of the world to each other. But the knowledge of the true figure of the earth, not only ſuggeſted a more ſcientifice diviſion of its ſurface by imaginary circles, ſuppoſed to be drawn on its circumference; but by referring theſe circles to correſponding ones in the heavens, aſtronomy and geography were combined, and the principles of the former were ſucceſsfully applied to the improvement of the latter. Long before the apparent motion of the heavens was known to ariſe from the real motion of the earth, the two points which we now call the poles were referred to thoſe two points in the heavens which were obſerved to be ſtationary; and a great circle of the terreſtrial ſphere, ſuppoſed to be every where equally diſtant from the poles, was called the equinoctial line, and aſſumed as a principal circle, to which geographical ſituations were to be referred; and as aſtronomers, in taking the ecliptic for their principal circle, had defined the poſitions of the heavenly bodies by their diſtances from this circle, and a perpendicular to it, calling theſe diſtances *longitudes* and *latitudes*; ſo, in imitation of this method, geographers aſſumed the equinoctial line as their ſtandard, and taking another circle perpendicular to it, they referred all poſitions on the earth to theſe circles by the ſame name. Hence longitude and latitude, in geography, are not defined in the ſame terms as in aſtronomy, being in the latter always referred to the ecliptic, and on the terreſtrial globe to the equator. This circumſtance often embarraſſes the young ſtudent in aſtronomy, who is naturally at a loſs to comprehend why the ſame terms ſhould have ſuch different ſignifications, when applied to the terreſtrial and celeſtial globe. It being once clearly underſtood that every point of the convex ſurface of the earth has at any given inſtant of time its correſponding point on the concave ſurface of the heavens, a number of methods were immediately ſuggeſted (and quite independent of actual meaſurement), for determining the ſituation of places, or their latitudes and longitudes as defined above. The moſt obvious method of defining the ſituation of points on a ſphere, is to refer them to two great circles perpendicular to each other. On the celeſtial globe, whether we aſſume the equator or the ecliptic for one of theſe circles, we can have no heſitation in the choice of the other, becauſe the equinoctial points are ſo remarkable, that they naturally indicate the advantage of making the ſecond circle paſs through them. Still, however, it muſt be remembered, that this choice is to a certain degree arbitrary; we might have aſſumed the equator or ecliptic for one principal circle, and for the other, a great circle perpendicular to either of them, which ſhould paſs through any remarkable fixed ſtar, as Sirius, or Arcturus. The preference, however, has always been given to the equinoctial points, and, accordingly, as we aſſume the equator, or the ecliptic, as the principal circle, we define the ſituation of the different points by *right aſcenſion* and *declination*, or by longitude and latitude. See RIGHT ASCENSION, and DECLINATION.

There is likewiſe another method occaſionally employed by aſtronomers, but which relates only to their own particular ſituation at the moment of obſervation: this is by altitude and azimuth. The place of a heavenly body determined by this method is not permanent, but changes at every inſtant; and ſince no two obſervers can have the ſame zenith, no ſtar can have the ſame altitude and azimuth at the ſame inſtant of time to different obſervers. See ALTITUDE, AZIMUTH, &c. &c.

In this latter method the principal circle aſſumed is the *horizon*, and the great circle perpendicular to it is that which paſſes through any two oppoſite cardinal points, as the North and South, or the Eaſt and Weſt.

Let us now conſider the terreſtrial globe. Here the equinoctial line preſents itſelf as the great circle, of all others the moſt proper for our purpoſe; but what is to guide our choice in the ſelection of another great circle perpendicular to it? We are not here aſſiſted, as in the celeſtial globe, by finding any one point poſſeſſing ſome remarkable property peculiar to itſelf; and even if there were ſuch a point ariſing from local circumſtances, it would have no repreſentation in the heavens; and, therefore, would not facilitate the object of our preſent inveſtigation, which is to ſhew by what method aſtronomers have contrived to determine the ſituation of points on the earth's ſurface, by finding their correſponding zenith points in the heavens.

Finding, therefore, but one great circle on the terreſtrial globe indicated by nature, aſtronomers and geographers have been obliged to aſſume a ſecond from circumſtances entirely accidental. The firſt meridian has been differently aſſumed by writers of different countries. The French aſtronomers divide the terreſtrial globe by two great circles; one of which is the equator, the other a great circle paſſing through the obſervatory of Paris, and to theſe great circles all other places are referred; hence, according to their definitions, if a great circle be conceived to paſs through any place, and to be perpendicular to the equator, then the latitude of that place will be the arc of this ſecondary circle between the equator and the place, and its longitude will be the arc of the equator, intercepted between this great circle and that which in a ſimilar manner paſſes through the obſervatory of Paris.

Engliſh geographers and aſtronomers, in like manner, ſuppoſe their firſt meridian to paſs through the Royal Obſervatory of Greenwich.

Having thus minutely deſcribed what is meant by longitude and latitude, both on the celeſtial and terreſtrial globe, it remains to explain the different problems connected with the ſubject, and, agreeably to the arrangement adopted in this work, we ſhall confine ourſelves as much as poſſible to that part of the ſubject connected with *Latitude*, referring to *Longitude* that which more immediately belongs to it.

The theory of finding the latitude of a place by aſtronomical obſervation is ſo ſimple, that it may be underſtood by merely inſpecting a celeſtial globe. See GLOBE.

The meridian (*Plate* XVI. *fig.* 147. *Aſtronomy*,) riſes (in our latitudes) in the north point of the horizon O, paſſes through the pole P, through the zenith, and croſſes the equator Æ before it meets the ſouthern point of the horizon. It is thus divided into four parts:

PO = the latitude,
PZ = the co-latitude,
AZ = the latitude,
HÆ = the co-latitude.

It is evident, that if the value of either of theſe four arcs can be determined, the latitude is known.

The moſt ancient method of determining the latitude was by means of a gnomon; in this caſe the mean of the greateſt and leaſt altitude of the ſun was taken, which is always equal to the co-latitude, or A H. The altitude of the equator above the horizon, and the complement of this to 90, is the latitude of the place. See Gnomon.

We ſhall firſt give the methods of determining the latitudes of fixed obſervatories on ſhore, and then deſcribe thoſe which are beſt adapted to perform the ſame operation at ſea.

Method of determining the Latitude of a fixed Obſervatory.—The beſt method of determining the latitude of a fixed obſervatory, is by a long ſeries of obſervations of the pole-ſtar, made with an 18-inch repeating circle of Borda. The method of adjuſting and obſerving with this inſtrument has been already ſufficiently explained under Circle and Declination. But as this inſtrument is not in this country in very general uſe, we ſhall ſuppoſe the obſerver to be in poſſeſſion of an aſtronomical circle or quadrant, or ſome equivalent inſtrument adapted to the determination of zenith diſtances by meridional obſervations.

The latitude of an obſervatory may be determined with very conſiderable accuracy by zenith diſtances of the ſun when near the ſummer ſolſtice, as the obliquity of the ecliptic is very correctly aſcertained; but the moſt preferable method is certainly by a regular ſeries of obſervations on circumpolar ſtars. Polaris, and β Urſæ minoris, are the moſt eligible ſtars for this purpoſe. They ſhould be obſerved continually, both above and below the pole, and all the obſervations carefully reduced to the firſt of January, of the year in which the obſervations are made. It is evident, that the mean of the altitudes above and below the pole, will be the altitude of the pole itſelf. The accuracy of the reſult will depend on the goodneſs of the inſtrument, the ſkill of the obſerver, and the exactneſs with which the neceſſary corrections have been applied. When the altitude of a heavenly body is taken with an aſtronomical inſtrument, the obſerver muſt firſt conſider what correction is required from the nature and conſtruction of the inſtrument itſelf; ſuch as the error of collimation, or index error, error of diviſion, &c. This being properly allowed for, the obſervation is next to be corrected for refraction, and here attention muſt be paid to the ſtate of the barometer and thermometer, and the mean refraction corrected accordingly. The true altitude, or zenith diſtance, being thus aſcertained, the next ſtep is to determine what would have been the true zenith diſtance if the obſervation had been made on the firſt of January, inſtead of the given day. For this purpoſe we muſt apply the preceſſion, aberration, ſolar and lunar nutation, and likewiſe a correction ariſing from the proper motion of the ſtar whenever this can be known. By a careful diſcuſſion of a ſeries of obſervations thus corrected, the latitude is to be obtained, and with a good two-feet circle a ſkilful obſerver will never err above a ſecond or two from the truth, except from the little remaining uncertainty which ſtill attends the ſubject of aſtronomical refractions.

In the Philoſophical Tranſactions for 1806, Mr. Pond ſuggeſted a method of correcting the reſpective latitudes of any two obſervatories, by means of the catalogues of ſtars made at each of them, and applied it with ſucceſs to the correction of the latitude of Palermo. The principle of the method is this: If the declinations of a number of ſtars are obſerved at two obſervatories, ſubject only to the errors of diviſion in the reſpective inſtruments, the poſitive and negative errors may be naturally expected to be nearly equal to each other: if, therefore, the declinations of one catalogue ſhould be all either greater or leſs than in the other, it would indicate that the error was in the aſſumed latitude, which enters as a common element of calculation, and not in the obſervations themſelves. Now if ſuch a correction be applied to the latitude of each obſervatory, as will make the ſum of the poſitive differences equal to the ſum of the negative, the latitudes thus corrected will be much more accurately determined than by any method that can be practiſed ſeparately.

Examples of deducing the latitude from obſervations of the ſun; taken from the Greenwich Obſervations of 1810.

	°	′	″
1810, June 18, ⊙'s L. L. zen. diſt.	28	19	6.3
⊙'s U. L. -	27	47	34.1
	2)56	6	40.4
Zenith diſtance, ⊙'s centre -	28	3	20.2
Error of collimation - - -		+	4.6
Error of diviſion - - -		+	1.0
Refraction - - - -		+	30.0
Parallax - - - - -		−	4.1
True zenith diſtance - -	28	3	42.5
⊙'s declination - - -	23	24	56.0
Latitude deduced - - -	51	28	38.5

	°	′	″
1810, June 21, Z. D. ⊙'s centre -	28	0	38.8
Error of collimation - - -		+	4.6
Error of diviſion - - - -		+	1.0
Refraction - - - -		+	29.9
Parallax - - - - -		−	4.1
True zenith diſtance - -	28	1	1.0
⊙'s declination - - -	23	27	37.0
Latitude deduced - - -	51	28	38.0

	°	′	″
1810, June 23, Z. D. ⊙'s centre -	28	0	58.9
Error of collimation - - -		+	4.6
Error of diviſion - - - -		+	1.0
Refraction - - - -		+	30.1
Parallax - - - - -		−	4.1
True zenith diſtance - -	28	1	21.3
⊙'s declination - - -	23	27	20.0
Latitude deduced - - -	51	28	41.3

	°	′	″
1810, June 24, Z. D. ⊙'s centre -	28	1	42.8
Error of collimation - - -		+	4.6
Error of diviſion - - - -		+	1.0
Refraction - - - -		+	30.0
Parallax - - - - -		−	4.1
True zenith diſtance - -	28	2	5.1
⊙'s declination - - -	23	36	34.0
Latitude deduced - - -	51	28	39.1

Reſults.

Reſults.

	° ′ ″
June 18	51 28 38.5
21	38.0
23	41.3
24	39.1
	356.9
Mean of 4	51 28 39.2

This method is ſubject to whatever error may exiſt in the ſolar tables relative to the declination of the ſun. The following method is, therefore, preferable, and is quite independent of the errors of the ſolar tables.

Let the ſun be obſerved as often as poſſible within ten or twelve days of each ſolſtice, and let each obſervation be reduced to the ſolſtice, either by Guerin's tables or by direct calculation. Then, after the proper correction for nutation, parallax, and error of collimation has been duly applied, let the ſolſticial zenith diſtances be added together; half their ſum will be the zenith diſtance of the equator, or the latitude of the place.

The following example is taken from Dr. Bradley's Obſervations, for the purpoſe of determining the latitude of the Royal Obſervatory at Greenwich.

1753. Dec.	☉'s Longitude.	Reduction to Solſticial Point.	Obſ. Z. D. corrected for Refraction.	Solſticial Z. D. with Parallax.	Dr. Bradley's Refraction.
	s ° ′ ″	° ′ ″	° ′ ″	° ′ ″	° ′ ″
3	8 11 34 43	1 16 6.2	73 40 53.5	74 56 59.7	3 21 3
8	8 16 39 52	40 8.6	74 16 47.0	74 56 55.6	3 22 9
18	8 26 50 30	2 16.0	74 54 39.5	56 55.5	3 27 5
26	9 5 0 0	5 40.6	74 51 12.3	56 52.9	3 23 4
27	9 6 1 19	8 14.0	74 48 33.8	56 53.8	3 28 8
28	9 7 2 34	11 15.3	74 45 39.9	56 55.2	3 34 6
29	9 8 3 42	14 44.2	74 42 11.7	56 55.9	3 38 1
30	9 9 4 57	18 41.5	74 38 13.3	56 54.8	3 40 2
31	9 10 6 7	23 6.2	74 33 49.8	56 56.0	3 38 3
		9 Mean.		74 56 55.49	3 31 7 Mean.
Mean day, Dec. 17, long. ☽ ☊ 6^s 23° 39′			Nutation +	8.73	
			Parallax −	8.50	
With Dr. Bradley's refraction mean of thermometers				74 56 55.72	
Additional correction for refraction - -				— 1.46	
Winter ſolſticial zenith diſtance - -				74 56 54.26	
1754. June,					
7	2 16 30 40	41 4.0	28 41 39.8	28 0 33.8	0 30 8
14	2 23 11 49	10 30.0	28 10 58.0	28.0	0 29 0
15	2 24 9 3	7 46.0	28 8 22.0	36.0	0 29 7
20	2 28 55 23	0 15.8	28 0 51.6	35.8	0 30 3
23	3 1 47 1	0 43.4	28 1 21.0	37.6	0 29 6
25	3 3 41 32	3 5.8	28 3 42.5	36.7	0 29 3
26	3 4 38 45	4 54.0	28 5 30.8	36.8	0 29 4
30	3 8 27 31	16 13.0	28 16 49.6	36.6	0 29 6
		8 Mean.		28 0 35.19	0 29 7
Mean day, June 18, long. ☽ ☊ 6^s 14° 0′			Nutation	— 9.3	
			Parallax	— 4.0	
				28 0 21.86	
Additional correction for refraction - -				+ 0.10	
Summer ſolſticial zenith diſtance - -				28 0 21.96	

Winter ſolſtice -	74° 56′ 54.26″
Summer ſolſtice -	28 00 21.96
Sum - -	102 57 16.22
Half ſum or latitude	51 28 38.11

By taking half the difference, the obliquity of the ecliptic is determined at the ſame time.

	74° 56′ 54.26″
	28 00 21.96
Sum - -	46 56 32.30
Half difference or obliquity of the ecliptic for 1753 -	23 28 16.15

Notwithſtanding this method appears ſo unobjectionable in theory, the uncertainty of refraction at the winter ſolſtice renders it leſs exact than a ſeries of obſervations of the pole-ſtar, obſerved conſtantly above and below the pole.

Example.—The mean of 94 zenith diſtances of the pole-ſtar at Greenwich above the pole, reduced to Jan. 1, 1749, is, according to Dr. Bradley's obſervations,

	36° 29′ 4.83″
Mean of 109° below the pole	40 33 39.29
	77 2 44.12
Co-lat. - -	38 31 22.06
Or latitude of Greenwich	51 28 38
And polar diſtance of *	2 2 17.23

On the method of finding the latitude at ſea.—The method of finding the latitude at ſea by a meridional obſervation of the ſun or ſtar, differs ſo little from that above explained, and is ſo fully deſcribed in books which mariners are never unprovided with, that ſcarcely any thing need be added on the ſubject. Some of the nicer corrections uſed at land may be omitted, and others will be neceſſary; ſuch as the correction for the depreſſion of the horizon, and the index error of the ſextant, all which are to be found in every book of navigation. (See DEPRESSION.) The latitude may be found either by taking the meridian altitude of the ſun, moon, or fixed ſtar. But it ſometimes happens that, in the winter ſeaſon, a meridian altitude cannot be taken for many days together: in that caſe, recourſe muſt be had to two altitudes of the ſun taken at different times, the interval between the two obſervations being ſuppoſed to be given by a pocket chronometer.

Many able mathematicians have ſucceſsfully laboured to improve this problem, and to render it eaſy to mariners. Mr. Profeſſor Lax of Cambridge preſented a very valuable paper on this ſubject to the Royal Society in 1799, in which a method is given of finding the latitude by a double obſervation, with extreme preciſion; and Dr. Brinkley likewiſe conſtructed a ſet of very uſeful tables, which were for ſome time annually inſerted in the Nautical Almanacs.

Problems relating to the finding the longitude and latitude of the heavenly bodies, from their obſerved paſſage over the meridian, with their zenith diſtance.

We have already explained, under DECLINATION and RIGHT ASCENSION, how theſe quantities are obtained. We ſhall now add an example of the calculation, by which the longitude and latitude are deduced from an obſerved right aſcenſion and declination.

Example.—October 2, 1811. The right aſcenſion of the comet was obtained from obſervation 6^s 23° 42′ 13″, and its declination 49° 31′ 2″ N.; required its longitude and latitude.

Example.

Dec.	49° 31′ 2″	t. 10.0687655			
A. R.	6^s 23 42 13	ſ. 9.6042320	t. - -	9.6425085	
A.	71 3 40	t. 10.4645335	- -	10.4645335	
Obliq. of ec.	23 27 41		Co. ar. coſ. A.	0.0241707	
			B. coſ. -	8.8968049	
			t.	9.0280176	5^s 23° 54′ 42″ longitude.
O + A = B	94 31 21	t. 11.1018408			
		t. 9.0280176			
		Coſ. 9.9975435			
			Longitude	5^s 23° 54′ 52″	
Lat. -	53 17 9	t. 10.1274019	Latitude	0 53 17 9	

Vide Introduction to Taylor's Logarithms.

Or thus, as a verification of the preceding method.

O. 23° 27′ 41″	-	Co. ar. coſ. 0.0374751	- -	ſ. 9.6000260
A. R. -	- -	t. 9.6425085		
Aprox. long.	6^s 25° 34′ 35″	t. 9.6799836	- - -	ſ. 9.6351962
Eclipt. dec.	9 53 50	-	- -	ſ. 9.2352222
* declination	49 31 2			
	59 24 52	t. 0.22837	- -	ſ. 9.9349377
O -	-	ſ. 9.60003	- -	coſ. 9 9625249
A. R. -	-	Coſ. 9.96172	Eclip. dec. ar. co. coſ.	0.0065119
	1 1 39 54	t. 9.79012	Latitude 53° 17′ 9″	ſ. 9.9039745
Long. -	5 23 54 41			

Example 2.—December 2, 1811. The right aſcenſion of the comet was $9^s\ 25^\circ\ 24'\ 32''$, declination $8^\circ\ 55'\ 48''$ N. required its longitude and latitude.

Dec.	$8^\circ\ 55'\ 48''$	t. 9.1962655			
A. R.	$9^s\ 25\ 24\ 43$	ſ. 9.9558170	-	t. 10.3232835	
A.	9 52 6.2	t. 9.2404485	C. a. coſ. A.	0.0064938	
O.	23 27 41		coſ. B.	9.9219578	
B.	33 19 47.2	t. 9.8179760		10.2517151	$9^s\ 29^\circ\ 15'\ 15''$ longitude.
		ſ. 9.9407458			
		t. 9.7587218	Latitude $29^\circ\ 50'\ 42''$ N.		

Or thus,

O		Co. ar. coſ. 0.0374751	ſ. 9.6000260
A. R.		t. 10.3232835	
App. long.	$9^s\ 23^\circ\ 32\ 43''$	10.3607586	ſ. 9.9622434
Ecliptic dec.	28 24 24		ſ. 9.5622744
Dec.	28 55 48		
	30 20 12	t. 9.76731	ſ. 9.7033602
O		ſ. 9.60003	coſ. 9.9625249
A. R.		coſ. 9.63253	Ecl. dec. coſ. 0.0310441
	5 42 32	t. 8.99987	ſ. 9.6969292
Long.	9 29 15 15		
			Lat. 29 50 42

When the moon's longitude and latitude are to be deduced from its obſerved right aſcenſion and zenith diſtance, the proceſs is much longer; and as the calculation is not given at length in any author we are acquainted with, we ſhall add an example, with the method of comparing it with the Nautical Almanac.

Firſt, compute the mean time by Dr. Maſkelyne's folio tables, or other equivalent ſolar tables. To the mean time of the tranſit thus found, apply the equation of time taken out of the Nautical Almanac with a contrary ſign, and this will be true or apparent ſolar time. From the moon's horizontal equatorial parallax, taken from the Nautical Almanac, ſubtract the correction, page 75 of Mayer's Lunar Tables, (or, ſtill more correctly, a quantity which will be given in a table we propoſe to annex to the article PARALLAX,) the remainder will be the moon's horizontal parallax. From the obſerved zenith diſtance of the ☽'s U L or L L corrected for refraction, ſubtract the conſtant quantity 10′ 3″, which is the angle the vertical makes with the radius, (ſee DEGREE and *Figure of the* EARTH,) and add the log. ſine of remainder to the log. ſine of ☽'s horizontal parallax, the ſum will be the log. ſine of ☽'s parallax in zenith diſtance; which ſubtracted from the obſerved zenith diſtance, gives the corrected zenith diſtance. To this add ☽'s horizontal ſemidiameter, (taken from Nautical Almanac,) if U L was obſerved; or ſubtract, if L L; and thus the correct zenith diſtance of the ☽'s centre will be obtained. The difference of this quantity, and the latitude of the place, ± error of collimation, will give the required declination north or ſouth, as the firſt is greater or leſs than the ſecond.

But if the ☽'s zenith diſtance was not obſerved exactly at the time of the tranſit of the preceding or ſubſequent enlightened limb, this declination muſt be corrected by the following proportion

As 12 hours is to the interval of time between the two obſervations, ſo is the variation of declination on 12 hours by the ephemeris to the correction required, and which muſt be thus applied:

☽'s zenith diſtance obſerved before tranſit of limb,	☽'s declination increaſing, add. ☽'s declination decreaſing, ſubtract.
☽'s zenith diſtance obſerved after tranſit of limb,	☽'s declination increaſing, ſubtract. ☽'s declination decreaſing, add.

Thus the true declination will be obtained from obſervation.

From log. ſine of ☽'s horizontal ſemidiameter, ſubtract log. coſine of ☽'s true declination, the remainder will be log. ſine of ☽'s ſemidiameter in A. R., which add, if preceding limb was obſerved, namely, before the full; or ſubtract, if ☽'s ſubſequent limb was obſerved after the full, to or from A. R. of limb; and this will give the true A. R. of ☽'s centre.

Next with the apparent time previouſly found, compute the ☽'s longitude and latitude by proportion from the Nautical Almanac, and apply the corrections for a ſecond difference (from Taylor's Sexageſimal Tables). N. B. Compute the proportional part of the moon's motions in longitude doubly by the rule of practice, by changing the ſecond and third terms of the proportion for each other, for greater certainty.

Then from the true A. R. and declination found above, and the apparent obliquity of the ecliptic, compute the longitude and latitude by Dr. Maſkelyne's rules, annexed to the precepts prefixed to Taylor's Logarithms, and the difference between this and the longitude and latitude, found as above by proportioning from the Nautical Almanac, gives the error of the tables. N. B. Compute the longitude and latitude from A. R. and declination aſſumed to the neareſt ſecond over or under; and after the operation, correct it, that is, as much as the true A. R. exceeds or falls ſhort of that found. And as much as the true declination is north or ſouth of that aſſumed, ſo much the true latitude may be north or ſouth of that found; which correct accordingly.

Example of the calculation of the moon's longitude and latitude, January 6, 1811, and compared with the Nautical Almanac.

		H. M. S.			
1811, - - -		18 37 0.24	Tab. 19. 20. 14.	}	Dr. Maſkelyne's folio Tables.
January 6 - -	+	0 23 39.30			
Equat. of equinoxes -	-	0 00			
		19 0 39 54			
A. R. ☽'s 1ſt L. -		4 55 15.60		=	$2^s 13^\circ 48' 54.0''$
		9 54 36.06	☽'s ſemidiameter -		15 3.7
Table 21 - -	—	1 37.42			
Mean time - -		9 52 58 64	Equatorial parallax -		55 17.2
Equation of time -	—	6 10.39	Reduction - -	—	8.6
Apparent time -		9 46 48.25	Horizontal parallax -	=	55 8.6

☽'s L. L. - -		$34^\circ 27' 53.3''$			
Refraction -	+	0 41.4			
Error quad. -	+	0.7			
Z.D. L.L. -	=	34 28 35 4			
∠ radius of ⊕ with vertical	—	10 3	Horizontal parallax ſin.	-	8.20521
		34 18 32.4	- - - - ſin.	-	9.75101
Parallax - -	—	31 4.9	ſin.	-	7.95622
Z.D. L.L. -		34 28 35.4			
Z.D. correction for parallax		33 57 30.5			
☽'s ſemidiameter -	—	15 3.7			
Z.D. centre -	—	33 42 26.8			
Lat. + error of collimation	=	51 28 44.6	☽'s ſemidiameter ſin.	-	7.64160
Declination N. -	=	17 46 17.8	- - - - coſ.	-	9 97876
☽'s ſemidiameter in A.R.	+	15 49.0			7.66284
A.R. ☽'s 1ſt L. -		2^s 13 48 54 0			
A. R. centre -		2 14 4 43.0			

For the ☽'s longitude and latitude by Dr. Maſkelyne's rule.

Declination	$0^s 17^\circ 46' 18''$	tan.	9.5058544		
A.R. -	2 14 4 43	ſin.	9.9830121	tan. -	10.5447574
A -	18 26 0.6	tan.	9.5228423	Co. ar. coſ. A.	0.0228751
O -	23 27 40.7			Coſ. B. -	9.9983258
B -	5 1 40.1	tan.	8.9443726	Tan. longitude	10.5659583
		Long. ſin.	9.9845374	True longitude } =	$2^s 14^\circ 48' 4''.6$
Latitude S. =	4 51 10.1	tan.	8.9289100		
Cor. for decl. +	.2				
True latitude	4 51 10.3 S.				

Second Method.

Obliquity -	$0^{s}\,23^{\circ}\,27'\,40.7''$	Co. ar. coſ.	0.0374748	- - ſin.	9.6000245
A.R. -	-	tan.	10.5447574		
Approx. longitude	2 15 20 8.7	tan.	10.5822322	- - ſin.	9.9856179
Ecliptic declination	22 39 13.5	-	-	ſin.	9.5856424
☽ 's declination	17 46 18.0				
Approx. latitude	4 52 55.5	tan.	8.93153 - -	- ſin.	8.9299574
Obliquity -	-	ſin.	9.60002 - -	- coſ.	9.9525252
Ecliptic declination co. ar. coſ. -	- - - -	- -	- -	-	0.0348692
A. R. -	-	coſ.	9.43825		
Corrrection -	$32'\,4.0''$	tan.	7.96980		
Approx. longitude	$2^{s}\,15^{\circ}\,20\;\;8.7$	-	$4^{\circ}\,51'\,10.1''$ S.	ſin.	8.9273518
Longitude -	2 14 48 4.7		+ .2		
	Latitude north		4 51 10.3		

Moon's longitude by Nautical Almanac.

	s ° ′ ″	1ſt Diff. ° ′ ″	Mean of 2d Difference.
Jan. 5. Mid.	2 3 29 28		
6. Noon	2 9 44 19	6 14 51	
6. Mid.	2 15 56 43	6 12 24	$-2'\,21''.5$
7. Noon	2 22 6 51	6 10 08	

Moon's latitude by Nautical Almanac.

	° ′ ″	1ſt Diff. ′ ″	Mean of 2d Difference.
Jan. 5. Mid.	4 30 39		
6. Noon	4 43 26	+ 12 47	
6. Mid.	4 52 47	+ 9 21	$-3'\,2.''85$
7. Noon	4 58 37	+ 5 50	

In the following examples the ſecond and third terms of the proportion are reverſed by way of proof.

H. ° ′ ″ *H. M. S.*
As 12 : 6 12 24 :: 9 46 48.25

H.	6	3 6 12.00	°	6	4 53 24.12
	2	1 2 4.00	′	6	4 53.40
	1	31 2.00		6	4 53.40
M.	30	15 31.00	″	6	4.89
	15	7 45.50		18	14.67
	1	31.03			
S.	30	15 51			
	15	7.75			
	3	1.55			
	3	0.16			
		5 3 30.50			5 3 30.48
	Equation of ſecond difference				+ 10.68
					5 3 41.16
	☽ 's longitude, January 6, noon				2 9 44 19
	☽ 's longitude by Naut. Almanac				2 14 48 0.16
	Ditto by obſervation -				2 14 48 4.60
	Error of Nautical Almanac -				− 4.44

H. ′ ″ *H. M. S.*
As 12 : 9 21 :: 9 46 48.25

H.	6	4 40.50	′	6	4 53.40
	2	1 33.50		2	1 37.80
	1	46.75		1	48.90
M.	30	23.37	″	20	16.30
	15	11.69		1	0.82
	1	.78			
S.	30	.39			
	15	.19			
	3	.04			
	3				
		7 37.21			+ 7 37.22
	Equation of ſecond difference				+ 15.68
					+ 7 52.90
	☽ 's latitude, January 6, noon				4 43 26
	☽ 's latitude by Naut. Almanac				4 51 18.90
	Ditto by obſervation -				4 51 10.3
	Error of Tables - -				+ 8.6

On the ſecular variation in Longitude and Latitude of the fixed ſtars.

We have already explained, under Ecliptic, the cauſe of the change of poſition in this circle, which produces a ſecular variation both in the longitude and latitude of the fixed ſtars. The following table by M. Zach is intended to facilitate the calculation of this quantity, and has not yet been publiſhed in this country.

The formulæ uſed for the conſtruction of theſe tables are,
Sec. var. north lat. $= 52''.6318$ ſin. (long ∗ + 8 $53'\,13''$)
Sec. diminut. in long. $52''.6318$ coſ. (long ∗ + 8 $53'\,13''$) tang. lat. ∗. See Precession.

Examples of the uſe of the following tables.

Let it be required to find the ſecular variation in latitude and longitude of Aldebaran for 1700—1800.

The long. of Aldebaran for 1750	=	$2^s\ 6^\circ 16'\ 0''$
Latitude ſouth - -		5 29 16
Var. in lat. by Table III. for $2^s\ 6^\circ$		+ 50.812
Prop. part for 18′ - -		+ 0.070
Sum		50.882

But the latitude being ſouth, the ſign muſt be changed: the ſecular diminution of latitude is therefore − 50″.882.

To find the ſecular variation in longitude.—Firſt find the ſubſidiary angle α.

Arg. lat. $5^\circ\ 29'\ 16''$, Table I. — angle $\alpha = 2^s\ 29^\circ\ 27'\ 0''$.

This will give two arguments with which enter Tab. IV:

Arg. I. $= 2^s\ 6^\circ 18' + 2^s\ 29^\circ 27' = 5^s\ 5^\circ 45' = + 253.75$
Arg. II. $= 2\ 6\ 18 - 2\ 29\ 27 = 11\ 6\ 51 = - 255.04$
$-\ 1.29$

Since the latitude is ſouth, the ſign muſt be changed: therefore the ſecular increaſe of longitude of Aldebaran is 1″.29.

Auxiliary Angle α for calculating the ſecular Variation in Longitude.

Arg. Lat.	Angle α + IIˢ	Diff.	Arg. Lat.	Angle α + IIˢ	Diff.	Arg. Lat.	Angle α + IIˢ	Diff.
°	° ′	′		° ′	′	° ′	° ′	′
0	0 0.0		30	26 41.4		60 0	20 1.5	
1	29 54.0	6.0	31	26 33.3	8.1	60 30	19 49.2	12.3
2	29 48.0	6.0	32	26 25.0	8.3	61 0	19 36.4	12.8
3	29 42.0	6.0	33	26 16.6	8.4	61 30	19 23.2	13.2
4	29 36.0	6.0	34	26 8.0	8.6	62 0	19 9.6	13.6
5	29 29.9	6.1	35	25 59.1	8.9	62 30	18 55.5	14.1
6	29 23.9	6.0	36	25 50.0	9.1	63 0	18 40.9	14.6
7	29 17.8	6.1	37	25 40.7	9.3	63 30	18 25.8	15.1
8	29 11.7	6.1	38	25 31.1	9.6	64 0	18 10.1	15.7
9	29 5.6	6.1	39	25 21.3	9.8	64 30	17 53.9	16.2
10	28 59.4	6.2	40	25 11.2	10.1	65 0	17 37.0	16.9
11	28 53.2	6.2	41	25 0.8	10.4	65 30	17 19.5	17.5
12	28 46.9	6.3	42	24 50.0	10.8	66 0	17 1.2	18.3
13	28 40.6	6.3	43	24 39.0	11.0	66 30	16 40.2	19.0
14	28 34.3	6.3	44	24 27.5	11.5	67 0	16 22.4	19.8
15	28 27.9	6.4	45	24 15.6	11.9	67 30	16 1.8	20.6
16	28 21.4	6.5	46	24 3.3	12.3	68 0	15 40.2	21.6
17	28 14.8	6.6	47	23 50.6	12.7	68 30	15 17.6	22.6
18	28 8.2	6.6	48	23 37.4	13.2	69 0	14 54.0	23.6
19	28 1.5	6.7	49	23 23.7	13.7	69 30	14 29.2	24.8
20	27 54.8	6.7	50	23 9.4	14.3	70 0	14 3.2	26.0
21	27 48.0	6.8	51	22 54.4	15.0	70 30	13 35.9	27.3
22	27 41.1	6.9	52	22 38.8	15.6	71 0	13 7.0	28.9
23	27 34.1	7.0	53	22 22.5	16.3	71 30	12 36.6	30.4
24	27 26.9	7.2	54	22 5.4	17.1	72 0	12 4.5	32.1
25	27 19.6	7.3	55	21 47.4	18.0	72 30	11 30.5	34.0
26	27 12.2	7.4	56	21 28.4	19.0	73 0	10 54.5	36.0
27	27 4.7	7.5	57	21 8.5	19.9	73 30	10 16.2	38.3
28	26 57.1	7.6	58	20 47.4	21.1	74 0	9 35.4	40.8
29	26 49.3	7.8	59	20 25.1	22.3	74 30	8 51.9	43.5
30	26 41.4	7.9	60	20 1.5	23.6	75 0	8 5.2	46.7

Auxiliary Angle for calculating the ſecular Variation in Longitude.

Arg. Lat.	Angle β + IIˢ	Diff.	Arg. Lat.	Angle β + IIˢ	Diff.	Arg. Lat.	Angle β + Iˢ	Diff.
° ′	° ′	′	° ′	° ′	′	° ′	° ′	′
75 0	27 51.7	4.6	86 10	21 25.0	23.6	88 55	28 4.4	181.5
75 30	27 47.1	5.0	86 20	21 1.4	26.0	89 0	25 2.9	40.9
76 0	27 42.1	5.4	86 30	20 35.4	13.9	89 1	24 22.0	42.8
76 30	27 36.7	5.7	86 35	20 21.5	14.7	89 2	23 39.2	44.5
77 0	27 31.0	6.2	86 40	20 6.8	15.3	89 3	22 54.7	46.7
77 30	27 24.8	6.6	86 45	19 51.5	16.3	89 4	22 8.0	48.9
78 0	27 18.2	7.2	86 50	19 35.2	17.1	89 5	21 19.1	51.3
78 30	27 11.0	7.9	86 55	19 18.1	18.1	89 6	20 27.8	53.9
79 0	27 3.1	8.7	87 0	19 0.0	19.2	89 7	19 33.9	56.7
79 30	26 54.4	9.5	87 5	18 40.8	20.2	89 8	18 37.2	59.9
80 0	26 44.9	10.5	87 10	18 20.6	21.6	89 9	17 37.3	63.3
80 30	26 34.4	11.6	87 15	17 59.0	22.9	89 10	16 34.0	67.0
81 0	26 22.8	13.0	87 20	17 36.1	24.4	89 11	15 27.0	71.2
81 30	26 9.8	14.6	87 25	17 11.7	26.1	89 12	14 15.8	76.0
82 0	25 55.2	16.6	87 30	17 45.6	27.9	89 13	12 59.8	81.2
82 30	25 38.6	18.9	87 35	16 17.7	30.1	89 14	11 38.6	87.1
83 0	25 19.7	21.8	87 40	15 47.6	32.3	89 15	10 11.5	94.1
83 30	24 57.9	25.4	87 45	15 15.3	34.9	89 16	8 37.4	102.0
84 0	24 32.5	9.5	87 50	14 40.4	37.7	89 17	6 55.4	111.3
84 10	24 23.0	10.0	87 55	14 2.7	41.4	89 18	5 4.1	122.6
84 20	24 13.0	10.7	88 60	13 21.6	44.8	89 19	3 1.5	136.5
84 30	24 2.3	11.3	88 5	12 36.8	49.1	89 20	0 45.0	154.0
84 40	23 51.0	11.9	88 10	11 47.7	54.1	89 21	28 11.5	177.5
84 50	23 39.1	12.9	88 15	10 53.7	59.7	89 22	25 13.5	211.0
85 0	23 26.2	13.7	88 20	9 53.9	66.4	89 23	21 42.5	266.0
85 10	23 12.5	14.7	88 25	8 47.5	74.5	89 24	17 16.5	386.5
85 20	22 57.8	15.8	88 30	7 33.0	84.0	89 25	10 50.0	650.0
85 30	22 42.0	17.0	88 35	6 9.0	95.7	89 26	0 0.0	
85 40	22 25.0	18.4	88 40	4 33.3	109.9			
85 50	22 6.6	19.9	88 45	2 43.4	127.9			
86 0	21 46.7		88 50	0 35.5				

Secular Variation of Latitude of Northern Stars.

Argument. Longitude of the Star.

If the Latitude is South change the Sign.

Deg.	0^{s} +	I^{s} +	II^{s} +	III^{s} +	IV^{s} +	V^{s} ±	Deg.
	″	″	″	″	″	″	
0	8.130	33.041	49.098	52.000	40.968	18.959	0
1	9.036	33.751	49.421	51.850	40.386	18.100	1
2	9.940	34.450	49.730	51.685	39.790	17.235	2
3	10.840	35.139	50.024	51.503	39.183	16.364	3
4	11.738	35.818	50.302	51.306	38.564	15.488	4
5	12.631	36.486	50.564	51.093	37.933	14.608	5
6	13.521	37.142	50.812	50.865	37.290	13.723	6
7	14.407	37.787	51.043	50.622	36.636	12.834	7
8	15.288	38.421	51.259	50.363	35.971	11.941	8
9	16.165	39.043	51.460	50.088	35.295	11.045	9
10	17.036	39.653	51.645	49.798	34.608	10.144	10
11	17.903	40.251	51.814	49.493	33.911	9.242	11
12	18.764	40.837	51.968	49.173	33.204	8.337	12
13	19.619	41.410	52.105	48.838	32.486	7.429	13
14	20.468	41.971	52.227	48.489	31.758	6.518	14
15	21.311	42.519	52.333	48.124	31.021	5.605	15
16	22.148	43.053	52.423	47.745	30.274	4.691	16
17	22.978	43.574	52.496	47.351	29.518	3.776	17
18	23.801	44.083	52.554	46.943	28.753	2.859	18
19	24.617	44.578	52.596	46.520	27.979	1.941	19
20	25.424	45.060	52.622	46.083	27.197	1.023	20
21	26.225	45.528	52.632	45.633	26.406	0.105	21
22	27.017	45.982	52.626	45.169	25.608	0.814	22
23	27.801	46.412	52.603	44.690	24.802	1.732	23
24	28.576	46.847	52.565	44.198	23.988	2.650	24
25	29.344	47.259	52.511	43.692	23.166	3.567	25
26	30.103	47.657	52.441	43.173	22.338	4.483	26
27	30.852	48.039	52.354	42.641	21.503	5.598	27
28	31.591	48.407	52.252	42.097	20.661	6.311	28
29	32.321	48.760	52.134	41.539	19.813	7.221	29
30	33.041	49.098	52.000	40.968	18.959	8.130	30
Deg.	− VI^{s}	− VII^{s}	− VIII^{s}	− IX^{s}	− X^{s}	± XI^{s}	Deg.

Secular Variation in Longitude.

Argument $\left(\text{Long.} * {}^{+\,\alpha}_{+\,\beta}\right)$ and $\left(\text{Long.} * {}^{-\,\alpha}_{-\,\beta}\right)$.

If the Declination is South change the Sign.

Deg.	0^s	I^s	II^s	III^s	IV^s	V^s	Deg.
	−	−	∓	+	+	+	
	″	″	″	″	″	″	
0	260 00	204.84	94.80	40.65	165.20	245.49	0
1	259.25	201.92	90.50	45.18	168.75	247.11	1
2	258.42	198.94	86.17	49.70	172.25	248.65	2
3	257.52	195.91	81.82	54.20	175.70	250.12	3
4	256.42	192.81	77.44	58.69	179.09	251.51	4
5	255.47	189.66	73.04	63.16	182.43	252.82	5
6	254.33	186.45	68.62	67.61	185.71	254.06	6
7	253.11	183.18	64.17	72.03	188.94	255.22	7
8	251.81	179.85	59.71	76.43	192.11	256.30	8
9	250.44	176.47	55.23	80.82	195.22	257.30	9
10	248.99	173.04	50.73	85.18	198.27	258.22	10
11	247.47	169.55	46.21	89.51	201.26	259.07	11
12	245.87	166.02	41.68	93.82	204.18	259.84	12
13	244.19	162.43	37.14	98.10	207.05	260.52	13
14	242.44	158.79	32.59	102.34	209.85	261.13	14
15	240.62	155.10	28.03	106.56	212.59	261.66	15
16	238.72	151.37	23.46	110.74	215.27	262.11	16
17	236.75	147.59	18.88	114.89	217.87	262.48	17
18	234.71	143.77	14.30	119.01	220.41	262.77	18
19	232.60	139.90	9.71	123.08	222.89	262.98	19
20	230.42	135.98	5.12	127.12	225.30	263.11	20
21	228.16	132.03	0.52	131.13	227.64	263.16	21
22	225.83	128.04	4.08	135.09	229.91	263.13	22
23	223.44	124.01	8.66	139.01	232.11	263.02	23
24	220.98	119.14	13.25	142.89	234.24	262.83	24
25	218.46	115.83	17.84	146.72	236.30	262.55	25
26	215.87	111.69	22.42	150.51	238.28	262.20	26
27	213.21	107.51	26.99	154.26	240.20	261.77	27
28	210.48	103.30	31.55	157.96	242.03	261.26	28
29	207.69	99.06	36.11	161.60	243.80	260.67	29
30	204.84	94.80	40.65	165.20	245.49	260.00	30
	+	+	+	−	−	−	
Deg.	VI	VII	VIII	IX	X	XI	Deg.

The ſum or difference of the two quantities taken from this table by the two arguments, will be the ſecular variation in longitude, which, when the auxiliary angle β is uſed, is to be multiplied by 10.

Latitude *of a Planet*, is an angle, as PTR (*Plate* XVI. *Aſtronomy*, *fig.* 148.) under which a planet's diſtance from the ecliptic P R is ſeen on the earth.

The ſun never has any latitude, but the planets have; for which reaſon, in the common ſphere, the zodiac has ſome breadth. The ancients only allowed ſix degrees on each ſide the ecliptic, but the moderns have extended it to nine.

When they have no latitude, they are ſaid to be in the nodes of the ecliptic, or in the interſection of their orbit with that of the ſun; and in this ſituation it is that they eclipſe, or are eclipſed by, the ſun.

Latitude, *Circle of*, is a great circle, M S T *m*, paſſing through the poles of the ecliptic. See Circle.

Latitude *of the Moon, north aſcending*, is when ſhe proceeds from the aſcending node towards her northern limit, or greateſt elongation.

Latitude, *North deſcending*, is when the moon returns from her northern limit to the deſcending node.

Latitude, *South deſcending*, is when ſhe proceeds from the deſcending node to her ſouthern limit.

Latitude, *South aſcending*, is when ſhe returns from her ſouthern limit to her aſcending node.

And the ſame holds good of the other planets. See Ascending and Descending.

Latitude, *Heliocentric, of a Planet*, is its diſtance from the ecliptic, ſuch as it is ſeen from the ſun.

This, when the planet comes to the ſame point of its orbit, is always the ſame, and unchangeable.

Latitude, *Geocentric, of a Planet*, is the diſtance of the planet from the ecliptic, as it is ſeen from the earth.

This, though the planet be in the ſame point of its orbit, yet is not conſtantly the ſame, but alters according to the poſition of the earth, in reſpect to the planet. See Heliocentric, and Geocentric.

Dr. Halley has ſome conſiderations, in the Philoſophical Tranſactions, which make it probable, the latitudes of ſome of the principal fixed ſtars, particularly Palilicium, Sirius, and Arcturus, alter in time; whence it may be argued, the reſt likewiſe alter, though the variation may be leſs conſpicuous in theſe, becauſe they are ſuppoſed at a greater diſtance from us. See Stars.

Latitude, *Difference of*, is an arc of the meridian, or the leaſt diſtance of the parallels of latitude of two places; and it is found when theſe have the ſame name, by ſubtracting the leſſer latitude from the greater; and when they have contrary names, by adding them together.

Latitude, *Parallax of*. See Parallax.

Latitude, *Refraction of*. See Refraction.

LATITUDINARIAN, among *Divines*, denotes a perſon of moderation, with regard to religious opinions, who believes there is a latitude in the road to heaven, which may admit people of different perſuaſions. This name was given by way of diſtinction to thoſe excellent perſons in England, who, about the middle and towards the cloſe of the 17th century, endeavoured to allay the conteſts that prevailed between the more violent Epiſcopalians on the one hand, and the more rigid Preſbyterians and Independents on the other, with reſpect to the forms of church government and public worſhip, and alſo between the Arminians and Calviniſts, with reſpect to certain religious tenets. Many of them were zealouſly attached to the forms of eccleſiaſtical government and worſhip that were eſtabliſhed in the church of England, and they recommended epiſcopacy with all their eloquence; but they did not conſider it as of divine inſtitution, and abſolutely neceſſary to the conſtitution of a Chriſtian church; and therefore they maintained that thoſe who followed other forms of government and worſhip were not, on that account, to be excluded from their communion, or to forfeit the title of brethren. Others had no great liking for the liturgy or ceremonies, or, indeed, the government of this church, but yet, for the ſake of peace and order, conformed. As to the doctrinal part of religion, they took the ſyſtem of the famous Epiſcopius for their model, and, like him, reduced the fundamental doctrines of Chriſtianity, *i. e.* thoſe doctrines, the belief of which is neceſſary to ſalvation, to a few points. By this manner of proceeding they ſhewed that neither the Epiſcopalians, who, generally ſpeaking, embraced the ſentiments of the Arminians, nor the Preſbyterians and Independents, who as generally adopted the doctrine of Calvin, had any reaſon to oppoſe each other with ſuch bitterneſs and animoſity, ſince the ſubjects of their debate were matters of indifference with reſpect to ſalvation, and might be variouſly explained and underſtood, without any prejudice to their eternal intereſts.

The chief leaders of theſe Latitudinarians were Hales and Chillingworth: to them may be added the reſpectable names of More, Cudworth, Gale, Whitchcot, Wilkins, and Tillotſon. The firſt fruits of their charitable zeal were the odious appellations of Atheiſts, Deiſts, and Socinians, liberally beſtowed upon them by the Roman Catholics, and the more rigid of the Proteſtant contending parties. However, they were afterwards raiſed to the firſt dignities of the church, and deſervedly held in general eſteem. And at this time the church of England is chiefly governed by Latitudinarians of this kind; and the ſpirit of moderation and mutual charity has generally prevailed, with that of liberal enquiry, among the various ſects and denominations of Chriſtians. Moſheim's Eccl. Hiſt. vol. iv. and Birch's Life of Tillotſon, p. 407. See Comprehension.

LATIUM, in *Ancient Geography*, a conſiderable diviſion of Italy, which acquired importance from its having given name to the Latins, and from its having Rome for its capital. Some authors have thought that this was a denomination given to the whole of Italy, or at leaſt to a more conſiderable extent of territory, than that to which it was afterwards reſtrained. Several of the ancients have ſought the etymology of Latium, in the verb *latere*, *to conceal*, and they have imagined that this name was given to the country, becauſe Saturn retired hither in order to ſhelter himſelf from the fury of his children. M. Gébelin, in his Oriental Allegories, ſuggeſts, that the primitive *lat* ſignifies *to conceal*, and that *terra* alſo alludes to the application of the ſoil, for the concealment of the ſeed that was ſown in it. Hence, he ſays, Latium might have ſignified the country where ſeed was ſown, in contradiſtinction to that part which was mountainous and uncultivated. The ancients diſtinguiſhed Latium into ancient and modern, and under theſe appellations it comprehended different territories. Ancient Latium extended from the Tiber to Circeii, and was eſtimated at 50 miles in length. Its inhabitants, in ſucceſſion, were the Aborigenes, the Pelaſgi, the Arcades, the Siculi, the Arunci, and the Rutili; and beſides theſe, the Circeii, the Volſci, the Oſci, and the Auſones; and by degrees the name Latium extended as far as the river Liris. At the firſt, ſays Strabo, the Latins had poſſeſſion of it, and were not ſubject to the Romans; but when theſe had vanquiſhed the Æqui, Volſci, and Hernici, as well as the Rutili, the Aborigenes, the Rocci, and the Argyrulci, and alſo the Privenates; the whole country, thus ſubdued, aſſumed the name of Latium; and it afterwards extended to Campania, and the country of the Samnites. Among the original inhabitants we may reckon the Siculi; and it was afterwards occupied by various tribes, which migrated thither at different periods; being at this time an inconſiderable territory, along the coaſt of the Tuſcan ſea, ſouth of the Tiber. Under the Latin kings, it extended ſouthward to the Promontorium Circæum, as we have already ſtated, which was 50 miles beyond the Tiber. Under the conſular government, the territories of the Æqui, Volſci, and Hernici, were annexed to this province, and the river Liris (Garigliano) was held to be the ſouthern boundary. At the commencement of the Chriſtian era, Sinueſſa, now Sinope, and the circumjacent territory noted for its baths, were included in Latium; ſo that, in its greateſt extent, it comprehended Campagna di Romagna, and a conſiderable part of Terra di Lavora. The principal rivers in this province were the *Tiber* and *Liris;* which ſee reſpectively. The chief cities and towns were Rome, Oſtia, Laurentum, Lavinium, Ardea, Tibur or Tivoli, Tuſculum or Freſcati, Gabii, now extinct, between Rome and Præneſte, Præneſte, Alba Longa or Albano, Aricia near Alba Longa, on the Appian way, &c. See Italy.

LATMOS, or Latmus, a mountain of Aſia Minor, partly in Ionia and partly in Caria.

LATMUS, originally a village of Aſia, in Cilicia, on the banks of a river of the ſame name, which afterwards became an epiſcopal town of Iſauria. The river had its ſource in mount Latmus, and diſcharged itſelf into the Latmic gulf, near the town Heraclea. The Latmic gulf was a gulf of Ionia, which commenced between the mountains Latmus and Grius, and extended from thence towards the N.W., communicating with another gulf at the mouth of the Meander.—Alſo, a ſmall iſland ſituated to the S.E. of the Latmic gulf, near to and W.N.W. of Heraclea.

LATOAN, in *Geography*, a ſmall iſland in the Eaſt Indian ſea, near the N. coaſt of Borneo. N. lat. 7° 16'. E. long. 117° 21'.

LATOMIA, Λατομια, derived from the Greek λας, *ſtone*, and τεμνω, *I cut*, properly ſignifies a quarry, or place where ſtones are dug. See Quarry.

Theſe were anciently uſed as gaols for criminals. Dionyſius had a place of this kind dug in a rock near Syracuſe, where an infinite number of people were ſhut up. Cicero reproaches Verres with impriſoning Roman citizens in latomiæ; ſo that latomia became a general name for a priſon; ſo the priſoners incloſed in them were called *latomarii.*

Latomia, in *Ancient Geography*, the name of ſix ſmall iſlands in the Arabian gulf, according to Strabo.

LATONA, a town of Egypt, upon the Nile, which was the capital of a nome called the Nomos Latopolites. Ptolemy.

Latona, in *Mythology*, a goddeſs of paganiſm, whoſe hiſtory is very obſcure. Heſiod makes her the daughter of Titan Cœus and Phœbe, his ſiſter. The fable adds, that Apollo and Diana were her offspring by Jupiter, and that they advanced her to the rank of celeſtial deities in ſpite of Juno. According to Herodotus, ſhe was an Egyptian deity, the nurſe, and not, as the Greeks repreſented her, the mother of Apollo and Diana, and was worſhipped at Buto, or Buthos, in Egypt. The inhabitants of Delos erected a temple for her, pretending that Neptune, with a blow of his trident, had made the iſland of Delos to riſe up from the bottom of the ſea, to ſecure to Latona, perſecuted by Juno, a place where ſhe might, without moleſtation, bring forth her children: but that at Argos was the moſt magnificent, and celebrated for her ſtatue, executed by Praxiteles. Latona, Venus, and Diana, were the three goddeſſes moſt in veneration among the Roman women.

LATOPOLIS, in *Ancient Geography*. See Esneh.

LATOPOLITES Nomos, a diſtrict of Egypt, the capital of which was dedicated to Latona, and ſituated on the left of the Nile. This nome is mentioned both by Strabo and Pliny.

Latopolites *Nomos*, or *Hermonthites Nomos*, another diſtrict of Egypt, the capital of which was called the town of "Latonum," according to Ptolemy.

LATORCZA, in *Geography*, a river of Hungary, which riſes near the Carpathian mountains, and runs into the Theyſs, near Tokay.

LATOUCHE's Island, an iſland in the North Pacific ocean, at the entrance of Prince William's ſound, 13 miles long and three broad. N. lat. 60°. E. long. 212° 39'.

LATOVICI, in *Ancient Geography*, a people of Upper Pannonia.

LATOUR, in *Geography*, a town of Hindooſtan, in the circar of Aurungabad; 25 miles W. of Aurungabad.

LATOWIC, a town of the duchy of Warſaw; 18 miles E. of Czerſk.

LATRIA, Λατρεια, in *Theology*, a religious worſhip, due only to God.

The Romaniſts ſay, "They honour God with the worſhip of *latria;* and the ſaints with the worſhip of *dulia;*" but the terms, however diſtinct, are uſually confounded.

The worſhip of latria, beſides its inner characters, has its external marks to diſtinguiſh it; the principal whereof is ſacrifice, which cannot be offered to any other but God himſelf, as being a ſolemn acknowledgment, or recognition, of the ſovereignty of God, and our dependence on him.

M. Daillé ſeems to own, that ſome of the fathers of the fourth century allowed the diſtinction between latria and dulia. See Adoration and Worship.

LATRIS, in *Ancient Geography*, a town of Germany, at the mouth of the Viſtula. Pliny.

LATRONICA, in *Geography*, a town of Naples, in Baſilicata; 22 miles S.W. of Turſi.

LATSCHACH, a town of the duchy of Carinthia; 14 miles S.W. of Clagenfurt.

LATTANZIO, Gambara, in *Biography*, a painter of hiſtory and portraits. He was the ſon of a taylor at Cremona; but being more inclined to painting than the uſe of the needle, he ſpent his youthful days in covering the walls and furniture of his father's houſe with drawings in charcoal, and thus drew upon himſelf the diſpleaſure of his parents; who evinced their diſſatisfaction by the unequivocal teſtimony of the ſcourge.

Giulio Campo, an artiſt of ſome celebrity, reſiding at Cremona, happened one day to paſs by when the taylor was exerting his energies upon the back of his ſelf-willed ſon Lattanzio; hearing the cauſe, he took the boy home with him, and for ſix years aſſiſted and encouraged him in his purſuit of the art of painting. Such was the ſucceſs accompanying this act of generoſity, that according to Vaſari, Gambara became the beſt painter of his time in Breſcia, where he took up his reſidence; and where many ingenious artiſts practiſed painting in conjunction or competition with him.

His principal works are in freſco, and ſome are ſtill to be ſeen at Breſcia, particularly the cloiſter of Santa Euphemia, wherein he painted a ſeries of ſcriptural and evangelical ſubjects. Venice, Parma, and Cremona all poſſeſs teſtimonials of his ſkill, which adorn their churches and many of their private houſes. His ſtyle is very much like that of Pordenone, an attempt to unite the colour of the Venetian with the drawing and deſign of the Florentine ſchool, but it is not ſo powerful. He married a daughter of Romanino, but died at the early age of 32, by a fall from a ſcaffold while painting in the church of St. Lorenzo in Breſcia, about the year 1570. Ridolfi. Vaſari.

LATTIMO, in the *Glaſs Trade*, a name for a fine milk-white glaſs. There are ſeveral ways of making it, but the beſt of all is this: Take four hundred weight of cryſtal frit, and ſixty pounds of calcined tin, and two pounds and a half of prepared mangeneſe; mix theſe well with the frit, and ſet them in a pot in a furnace to melt and refine. At the end of eighteen hours this will be purified; then caſt it into water, purify it again afterwards in the furnace, and make a proof of it. If it be too clear, add fifteen pounds more of calcined tin; mix it well with the metal, and let it ſtand one day to purify; it will then be of a whiteneſs ſurpaſſing even that of ſnow, and is fit to work into veſſels. Neri's Art. of Glaſs, p. 98. See GLASS.

LATTIN, or LATTEN, a name by which we uſed to call the plates of iron covered with tin, and now uſually called *tin*, of which our mugs, and ſuch other things, are made. The principal part of the work is to prepare the leaves, beat out to a proper thinneſs, ſo as that they ſhall readily receive the tin; for if there be but the ſmalleſt particle of duſt on them, or only the ſlighteſt ruſt in any part, the tin will never fix there.

This ſmoothing of the plates is effected by ſteeping them in acid water, till the ſurface is a little preyed upon by it, and then they are ſcowered with ſand, which makes them very ſmooth and fine. By this means a woman cleans more plates in an hour, than the moſt expert workman can do otherwiſe in many days. M. Reaumur, to whom the world owes the diſcovery of this proceſs, mentions ſeveral waters, any one of which will ſucceed, but the Germans themſelves uſe nothing but common water, made eager with rye. This they make a great ſecret of, but the preparation is very eaſy. After they have ground the rye groſsly, they leave it to ferment in common water for ſome time; and they are thus ſure of a ſharp and eager menſtruum, excellently fitted for their purpoſe. With this liquor they fill certain troughs, or tuns, and into theſe they put ſeveral bundles of the plates of iron: and to make the liquor more eager, and to act the better on them, they keep it in ſtoves, where it has little air, and is kept warm with ſmall charcoal fires.

There are ſeveral other ways of making iron ruſt, as keeping it in a moiſt cellar, expoſing it to the dew, ſprinkling it with ſimple water, or, which is ſtill better, with water in which ſal ammoniac has been diſſolved, ſeveral times a day: and in thoſe countries where the pyrites is common, the vitriolic waters, which partake of it, will do it very well. This water may be prepared at little or no expence, only by heaping up large quantities of the pyrites, and letting it moulder in the air, then putting it into common water, and making a lixivium of it. Whichever method of ruſting the plates be uſed, it is always neceſſary to ſcower them with ſand as ſoon as it is done; and when they are thus cleaned, they muſt be immediately plunged into water, to prevent their ruſting again, and they are to be left in this water till the inſtant in which they are to be tinned, or, in the language of the workmen, *blanched*. The people employed in this part of the operation are called *blanchers*; and the others, who aſſiſt at the cleaning of the plates, the *ſcalers*. The blancher makes as great a ſecret of his art, as the ſcaler does of his; and it was with great difficulty that M. Reaumur obtained it. The manner of doing it is this:

They flux the tin in a large iron crucible, which has the figure of an oblong pyramid with four faces, of which two oppoſite ones are leſs than the two others. The crucible is heated only from below, its upper part being luted with the furnace all round. The crucible is always deeper than the plates, which are to be tinned, are long; they always put them in downright, and the tin ought to ſwim over them. To this purpoſe artificers of different trades prepare plates of different ſhapes, but M. Reaumur thinks them all exceptionable. But the Germans uſe no ſort of preparation of the iron, to make it receive the tin, more than the keeping it always ſteeped in water till the time; only when the tin is melted in the crucible, they cover it with a layer of a ſort of ſuet, which is uſually two inches thick, and the plate muſt paſs through this before it can come to the melted tin. The firſt uſe of this covering is to keep the tin from burning: as if any part ſhould take fire, the ſuet would ſoon moiſten it, and reduce it to its primitive ſtate again. The blanchers ſay, this ſuet is a compounded matter. It is indeed of a black colour, but M. Reaumur ſuppoſed that to be only an artifice to make it a ſecret, and that it is only coloured with ſoot, or the ſmoke of a chimney; but he found it true ſo far, that the common unprepared ſuet was not ſufficient; for after ſeveral attempts, there was always ſomething wanting to render the ſucceſs of the operation certain. The whole ſecret of blanching, therefore, was found to lie in the preparation of this ſuet; and this he at length diſcovered to conſiſt only in the firſt frying and burning it. This ſimple operation not only gives it the colour, but puts it into a condition to give the iron a diſpoſition to be tinned, which it does ſurpriſingly.

The melted tin muſt alſo have a certain degree of heat, for if it is not hot enough, it will not ſtick to the iron; and if it is too hot, it will cover it with too thin a coat, and the plates will have ſeveral colours, as red, blue, and purple; and upon the whole will have a caſt of yellow. To prevent this, by knowing when the fire has a proper degree of heat, they might try with ſmall pieces of iron; but, in general, uſe teaches them to know the degree, and they put in the iron when the tin is at a different ſtandard of heat, according as they would give it a thicker or thinner coat. Sometimes alſo they give the plates a double layer, as they would have them very thickly covered. This they do by dipping them into the tin, when very hot, the firſt time, and when leſs hot, the ſecond. The tin, which is to give the ſecond coat, muſt be freſh covered with ſuet, and that with the common ſuet, not the prepared. Philoſ. Tranſ. N° 406, p. 634. See TIN.

LATTYPOUR, in *Geography*, a town of Bengal; 20 miles N. of Kiſhenagur.

LATUS, in *Ichthyology*, the name of a fiſh of the coracinus, or umbra kind, caught in the Nile, and in the Adriatic and Mediterranean ſeas. It much reſembles the common coracinus, but is larger, and has not the beard which hangs from the chin in that ſpecies; and its body is ſomewhat rounder. It is eſteemed a very delicate diſh. Rondelet. de Piſc. p. 130.

LATUS, in *Anatomy*, a name given by many authors to one of the muſcles of the anus, now generally called the levator ani.

LATUS *Rectum*, in *Conics*, the ſame with parameter. See CONIC *Sections*, and PARAMETER.

LATUS *Tranſverſum* of the hyperbola, is a right line, intercepted between the vertices of the two oppoſite ſections; or that part of the common axis which is between the vertices of the upper and lower cone. See HYPERBOLA.

LATZKI, in *Geography*, a town of Auſtrian Poland, in Galicia; 80 miles W.S.W. of Lemberg.

LAVA. This word, in its ſtrict ſenſe, denotes only the fuſed ſtony ſubſtance which iſſues from volcanoes during the time of their activity, and according to the degree of fluidity it has acquired, and the quantity in which it is diſcharged, either collects near the crater in amorphous groups, or extends its courſe to various diſtances. But much greater latitude (as we ſhall ſee hereafter) has been given to the term *lava* by ſeveral authors, for not only other volcanic ejections, to which the above definition cannot be applied, have been deſcribed under that name, but even ſuch unaltered rocks as will be allowed by unbiaſſed obſervers to have ſcarcely any one character in common with real volcanic productions.

Werner has divided lava into two varieties only; *viz.* 1. Scorious or ſlaggy lava (*Schlackige lava*), and 2. Foamy lava (*Schaumige lava.*)

The colour of the *ſcorious lava* is greyiſh-black, which paſſes into ſmoke-grey, yellowiſh-grey, reddiſh-grey, greeniſh-grey, and through ſeveral ſhades of this into greeniſh-black. Decompoſition, ſulphuric and other vapours, frequently modify the principal colours, and often produce the higher tints of yellow.

It occurs more or leſs knotty and veſicular, with veſicles of different ſize, ſometimes glazed over, and empty. Internal luſtre between glimmering and gliſtening, ſeldom ſhining. Fracture imperfectly conchoidal, alſo fine-grained, uneven. Is commonly opaque, ſometimes faintly tranſlucent on the edges. It is ſemi-hard, brittle, eaſily frangible, and not particularly heavy.

The colour of the *foamy lava* is generally dark greeniſh-grey, approaching to greeniſh-black. Its veſicular ſtructure, brittleneſs, and lightneſs are indicated by its name.

This the Wernerian ſchool carefully diſtinguiſh from *pumice;* which ſee.

Lava is often porphyritic, but the cryſtals of hornblende, augite, &c. are, according to Werner, wrapped up, not imbedded, in its baſis; and when they occur in the hollows or veſicles of lava, are not in the form of druſes, but generally part of the cryſtals projects into the cavity, while the other is included in the lava.

Though the Neptuniſts profeſs to find characters ſufficiently obvious to diſtinguiſh lava from unaltered rocks that might be miſtaken for it, ſuch as the rough aſpect which it preſents both internally and externally, &c.; yet their deciſion in dubious caſes is known to be chiefly regulated by the mode of occurrence of the rock; and ſubſtances, that preſent regular ſtrata, not ſeldom of very conſiderable extent and comparative thickneſs, and frequently conformable to all the ſinuoſities of the older formations, can never be expected to find a place in their catalogue of volcanic productions.

The queſtion, whether lava ever occurs in a *compact* ſtate, involves the various controverſies with regard to the origin of baſalt, which will be treated of at large in its proper place. But as it is neceſſary in this article briefly to advert to the reaſons that have induced Werner, and other Neptuniſts, to exclude compact lava from their ſyſtems, we ſhall extract the excellent obſervations given on this ſubject by Mr. Kirwan, in the ſecond appendix to his Mineralogy.

"By compact lava," ſays this diſtinguiſhed mineralogiſt, "volcanic writers denote an earthy ſubſtance, which, after having been fuſed, but not vitrified, becomes, on cooling, compact, cloſe, and ſolid. Whether this degree of ſolidity is ſuch as *totally* to exclude that evidently porous and cavernous ſtructure, which cellular lava preſents, is not perfectly agreed upon.

"Thoſe who are guided by obſervation on modern and undiſputed volcanic torrents, allow that no lava, abſolutely compact and deſtitute of pores, in an extent of more than a few ſquare inches, is ever found. Thus Mr. Bergman defines compact lavas to be "thoſe which, though not abſolutely deſtitute of cavities, yet contain ſo few, that they may be cut into ſlabs with an almoſt entire ſurface, and poliſhed like marble." (3 Bergm. p. 201.) To this definition, Mr. Dolomieu, in his notes on Bergman's Diſſertation, makes no objection; from which we may conclude, that in a ſmall extent, ſuch as that of common marble ſlabs, they never exhibit an uninterrupted ſurface. This laſt mentioned philoſopher, indeed, having unfortunately wiſhed to comprehend, in his definition of compact lava, ſtony maſſes, not found in modern and undiſputed beds of lava, but in *ſuppoſed* ancient currents, found himſelf much embarraſſed: There is, ſays he, ſuch uncertainty in the characters of compact lava, that, independently of local circumſtances, the moſt experienced eye may be deceived. (Iſles Ponces, p. 171.) Yet theſe circumſtances, not properly attended to, are thoſe which have ſeduced him into the moſt palpable miſtakes.

"Gioeni, though in many inſtances miſled by Dolomieu, yet acknowledges that lava, ſo compact as to be totally deſtitute of pores, is not found. (Lithol. Veſuv. p. 85). Padre Torre, who, independently of any ſyſtem, has candidly and impartially examined the products of Veſuvius, expreſsly denies the exiſtence of lava deſtitute of pores, none other but the porous being found in currents of modern date. Galeani, in his catalogue of the lavas of Veſuvius, drawn up in 1772, hardly mentions any compact lavas. Gioeni, in his catalogue, entirely omits this diſtinction; and Mr. Dolomieu acknowledges that not a ſingle ſpecimen of compact lava is to be found in the cabinet of prince Biſcari.

"Thoſe, on the other hand, who, guided by ſyſtem, beſtow the name of lava on ſtony maſſes, which they *ſuppoſe* to have anciently flowed, either from real ſtill ſubſiſting, or imaginary ancient extinct, volcanoes, find *compact* lava entirely deſtitute of pores, very *ſcarce* indeed in the *ſuppoſed* currents from modern, but in *great plenty* in thoſe which they aſcribe to their fictitious volcanoes now extinct, as well as in the very bowels of thoſe volcanoes.

"Gioeni, after telling us, from Dolomieu, that compact lava occupies the centre of the beds of lava, and porous lava the upper part, acknowledges that this gradation ſeldom takes place; '*few*, however, ſays he, are the viſible currents of lava on Veſuvius, in which we meet this gradation.' It ſeems, he ſhould rather have ſaid, *none;* for, ſome lines after, he tells us, that modern volcanoes have loſt the power of producing any. (Lith. Veſuv. xlvii.) The detached maſſes that paſs for compact lava, he acknowledges to have been ejected in their ſolid form by the exploſive power of the volcano, and conſequently are not real lavas, but rather natural ſtones, torn from the ſides of the mountain. (Lith. Veſuv. li.). Mr. Dolomieu tells us, that compact lavas are ſtones which, after having been melted, re-aſſume their natural ſtate and appearance without any change in their external or internal properties, or ſcarce any change; and that ſome are perfectly compact (that is, deſtitute of pores), namely, thoſe that are buried under, not other lavas, but under an entire and immenſe volcano (De Prod. Volcan. p. 162. Ponces. 170. 179.); he, therefore, gives up the idea of finding theſe not only in the *beds* of modern, but even in thoſe of extinct ancient volcanoes. Hence he tells us, that they are much more common in extinct volcanoes; and that in Ætna they do not conſtitute the $\frac{1}{1000}$dth part of the whole; whereas in Vivarais and Auvergne they form whole mountains. Now moſt of theſe ancient volcanoes of the Vivarais appear to me and many others, to be mere creatures of imagination, and conſequently, until the ſubſtances they contain are proved to have been in fuſion, no definition, grounded on the appearances of theſe ſubſtances, can paſs for that of real compact lava.

"In beds, however, of real undiſputed lava, ſome parts are found, that, having been preſſed by the ſuper-incumbent weight, are more compact than common porous lava ; and theſe, comparatively to the former, may be called compact ; but ſcarcely more than a few ſquare inches of their ſubſtance is deſtitute of viſible pores.

"Their colour is brown, yellowiſh, reddiſh brown, bluiſh, or black, more rarely grey. Their luſtre 0.1. Tranſparency 0.1. Their fracture earthy, or fine ſplintery, more rarely foliated, and preſents ſmall internal pores, if of ſufficient ſize, in ſome part of the ſubſtance. Hardneſs from 7 to 9. Specific gravity 2.75 to 2.88.

"Much circumſpection is requiſite in framing a deſcription of compact lava, from a view of the ſpecimens brought to us from volcanic countries, as they are all collected by perſons, who take indiſcriminately from real, and from ſuppoſed, volcanic currents, even from mountains in which no volcano ever exiſted.

"To form a true idea of theſe lavas we ſhould attend to the following circumſtances ; 1. That the heat of moſt volcanoes (I exclude thoſe that for the moſt part produce only vitrified ſubſtances) ſeldom reaches 100 of Wedgwood ; the proof of which is, that almoſt all real lavas, whether cellular or compact, are vitrifiable at that degree. Since, therefore, they were not vitrified in the volcano, it is plain, that in it they did not attain that degree ; 90 or 95 degrees may then be aſſumed as the average heat of moſt volcanoes. 2. In this heat many ſtones of the argillaceous genus, as trapps, hornblendes, and argillites, undergo a change ; for they alter their colour, become porous, aſſume a porcelain grain, and conſequently begin to vitrify, as I have found on repeated trials ; but they never flow in this heat, nor conſequently form a lava ; but bitumen will flow in this heat, and even in one much inferior, and be decompoſed. If, therefore, the argillaceous ſtones be mixed with and drenched in bitumen, they will be ſoftened by it, and flow with it ; and where the air, erupting both from them and the decompoſing bitumen has moſt liberty to eſcape, it will tumify, burſt through the liquid maſs, and form cellular lava ; but, where it is more compreſſed, leſs of it will be diſengaged, and the lava will be compact, and reſemble, in ſome degree, the original ſtone of which it is formed. 3. Stones of the ſiliceous genus undergo no change in this heat, not even ſhorls or feldſpar ; and hence, though immerſed in the fiery torrent, they cannot with propriety be called lavas, as they are not even ſoftened by the mixture of bitumen, as ſtones of the argillaceous genus are.

"Between ſiliceous and argillaceous ſtones there are many gradations and various mixtures, which muſt occaſion correſponding varieties in the effects which heat and various other circumſtances may produce. It is ſufficient here to eſtabliſh the principles on which moſt of them may be explained. Compact lavas abound in heterogeneous ſubſtances which either have not been fuſed, or only partially fuſed or ſcorched, or decompoſed by heat, as feldſpar, ſhorls, garnets, zeolites, &c. Every volcano has ſome that are peculiar to it. Thus the lavas of Veſuvius abound in that called white garnet, and which I call Veſuvian, thoſe of Ætna abound in feldſpar, &c.

"Hence we muſt exclude from the rank of lavas all ſtones which do not appear, either from their external characters or local circumſtances, ever to have been ſoftened by heat ; and conſequently, all thoſe detached pieces which are ejected at the beginning of an eruption without fuſion, and many others which volcanic collectors enumerate among compact lavas, merely from having found them in the vicinity of volcanoes. Thus Mr. Dolomieu (Lipari, p. 85.) reckons among volcanic ſtones one, in the interior of which he diſtinctly perceived a leaf of ſea-weed. Few indeed are the ſtones contained in his catalogue which can be deemed really volcanic.

"All real lavas, except thoſe of the vitreous kind, affect the magnetic needle, unleſs the iron they contain be much oxygenated, as it often is in thoſe of a red colour ; but even theſe are frequently magnetic by reaſon of the ſhorls embodied in them.

"The component ingredients of lavas are various, according to the nature of the original ſtones, and the accidents they meet with in their liquified ſtate. Mr. Dolomieu found them to contain from 40 to 60 per ct. of ſilex, from 16 to 3 of magneſia, from 5 to 1 of calx, and from 2 to 25 of iron." Ponces, p. 184.

Though the above, and ſeveral other remarks of the ſame tendency, which will be noticed under the articles TRAPP-FORMATION and VOLCANO, have much contributed to invalidate the teſtimony of thoſe who contend for the exiſtence of compact lava, and the igneous origin of many other ſubſtances apparently Neptunian, yet volcaniſts continue to claſſify over and over again thoſe ſubſtances which they conſider as belonging to their domain ; and it is neceſſary to be acquainted as well with their mode of viewing the ſubject as with that of the oppoſite party. It is with this view that we give the following abſtract of the moſt complete arrangement of, ſo called, volcanic rocks hitherto offered to the world, namely, that of the celebrated Faujas de Saint-Fond, which occupies nearly a whole volume of his "Eſſai de Géologie," publiſhed at Paris in 1809. It is almoſt ſuperfluous to obſerve that this arrangement ſhould be conſulted *cum grano ſalis ;* as of courſe almoſt all the rocks belonging to the fletz-trapp formation of Werner are introduced into it, as well as other ſubſtances, which, although ejected, have probably not undergone any alteration by the agency of the fire, and are therefore to be conſidered as intruders into an arrangement of lavas.

CLASS I. *Lavas conſidered with regard to their form and external modifications.*

Div. 1. *Black, homogeneous, maſſive, compact lava.*—1. Fine-grained ; from Otaheite, Staffa, the neighbourhood of Rome, Darmſtadt, the Euganean mountains, Auvergne, &c. 2. *Var.* of a coarſe grain, from Meiſſner, the vicinity of Gottingen, Heſſe Caſſel, Rochemaure in Vivarais, &c. 3. *Var.* of a ſcaly texture ; from Stolpe in Meiſſen, the iſle of Bourbon, Mont Meſſin in Vivarais, &c.

Div. 2. *Homogeneous compact lava in priſms, with from three to nine ſides* (the latter rare).—1. Priſms without joints ; Staffa, Expailly in Vivarais. 2. *Var.* with priſms tranſverſely divided or jointed ; at the Pont de la Beaume in Vivarais, &c. 3. *Var.* with jointed priſms, joints concave at one ſide and convex at the other ; Giant's Cauſeway, Ireland, left bank of the Volane, &c. 4. *Var.* with priſms laterally compreſſed ; Rochemaure in Vivarais. 5. *Var.* with arched priſms ; Staffa, iſle of Bourbon.

Div. 3. *Priſmatic lava, with edges and planes ſo regular as to appear the reſult of cryſtallization.*—In pyramids of four ſides, flattened, &c. ; in Auvergne, &c.

Div. 4. *Tabular lava* —1. *Var.* in thick tables ; from Monts Meſſin, Coneron, &c. in Vivarais. 2. *Var.* in thin tables ; Rochemaure in Vivarais, iſle of France, iſle of Bourbon.

Div. 5. *Globular lava.*—1. *Var.* in ſolid balls ; from Teneriffe. 2. *Var.* in hollow balls ; iſle of Bourbon. 3. *Var.* in balls compoſed of concentric layers ; from Veſuvius, Caſtel-Gombeto near Vicenza, Montechio Precalcino, &c. Theſe lavas are the reſult of a particular kind of decompoſition, which takes place in extenſive beds of compact baſaltic lavas, in which they appear as if implanted. Some globular lavas owe their origin to the joints of baſaltic pillars, whoſe angles and edges decay, while the nucleus remains ſound, and appears to iſſue from out the priſm.

Div. 6. *Tear-ſhaped lava* (*laves en larmes*).—Small oblong maſſes, imitating more or leſs the form of tears. They occur from the ſize of a hazle-nut to that of an egg, often encloſing within their centre the fragment of a foreign body, ſuch as granite, olivine, &c. Found on Veſuvius, in the crater of Mont-Brûl, in Vivarais, Auvergne, &c.

Class II. *Porous lava.*

Div. 1. *Heavy porous lava.*—1. *Var.* with large oblong pores; from Veſuvius, Etna, Hecla, Vivarais, Auvergne, &c. 2. *Var.* with large irregular pores; in all the above places. 3. *Var.* with pores leſs large, and generally round; in a partly porous, partly compact lava; from the Meiſſner in Heſſia. 4. *Var.* with ſmall, round, and oblong pores; in a lava remarkable on account of its hollows or depreſſions, which exhibit a regular ſtructure, and, on being broken, convey the idea of parallelograms of different ſizes, arranged ſide by ſide, as well externally as on the internal ſurface of the lava: ſome of theſe parallelograms are more than an inch long, and the fourth part of an inch deep. The origin of this lava, which occurs in the iſle of Bourbon, is thus explained by M. Hubert:—A great eruption of the volcano of that iſland gave origin to a vaſt ſtream of lava, which in its progreſs came in contact with a plantation of palm trees. The trees were immediately ſet on fire; but being ſoon covered by the lava, combuſtion ceaſed, and the wood became converted into charcoal. Incandeſcence long time continued, afterwards produced in the fibrous wood, thus carbonized, contractions and clefts of a certain regularity. The lava next entering the clefts formed by contraction, and moulding itſelf over the nucleus of the coal, produced the hollows obſervable, as often as the coal is purpoſely detached, or deſtroyed by ſome accidental cauſe. 5. *Var.* of priſmatic triangular form, with oblong and irregular pores; from the neighbourhood of Rocheſauve, in Vivarais.

Div. 2. *Light porous lava.*—1. With round pores; from Vivarais, Auvergne, iſle of Bourbon, Tunis, &c. Desfontaines has gathered at Tunis ſpecimens of ſuch a lava, which the natives employ in the preparation of their woollen ſtuffs, in preference to the fullers' thiſtle uſed in other countries. 2. *Var.* with oblong pores; from Veſuvius, Etna, Hecla, from Vivarais, Auvergne, &c. 3. *Var.* with irregular curved or twiſted pores; from Veſuvius, the iſle of Bourbon, Teneriffe, Stromboli, Vulcano, Vivarais, &c. 4. *Var.* with decuſſated pores; from the iſle of Bourbon, Veſuvius, &c. 5. *Var.* with ſtreaked pores; from Veſuvius, Etna, iſle of Bourbon, and Mount Hecla.

The light ſtriated lavas, appearing in the ſhape of cables, ribbands, &c. alſo belong to this claſs. In general, the porous lavas are nothing but the reſult of the more or leſs active or continued developement of gaſes produced by the peculiar nature of the lavas, and by the more or leſs violent action of ſubterraneous fire.

Class III. *Scorified lavas.*

A particular modification of porous lavas, produced when, under certain circumſtances, the matter of which theſe conſiſt undergoes the firſt degrees of vitrification, and becomes covered with a kind of ſhining varniſh, which diſtinguiſhes them from ordinary porous lavas. Theſe ſcorified lavas are found, 1, twiſted; 2, cable-ſhaped; 3, ribband-ſhaped; 4, in bunches, with round or oblong grains; 5, ſtalactitical, ſhort elongated knobs, ſeparated or united. All theſe varieties of forms are found at Veſuvius, Etna, Hecla, in Teneriffe, the iſle of Bourbon, &c.

Class IV. *Lavas conſidered with regard to their component parts, or to the different rocks from which they originated.*

Div. 1. *Granitoid lava.*—Theſe lavas, which, according to Faujas' ſyſtem, muſt have been elaborated at a great depth in the bowels of the earth, owe their origin to rocks analogous to our granite, except that quartz does not enter into their compoſition; the ſubſtance formerly conſidered by Faujas and others as quartz, having proved to be feldſpar.

A. *Coarſe-grained granitoid lava.*—1. With baſe of a whitiſh-grey colour, compoſed of irregular whitiſh grains of feldſpar, of a quartzy appearance, but eaſily fuſed before the blowpipe: a great number of minute, thin, and hexagonal laminæ of black mica, diſſeminated among the grains of feldſpar, and large cryſtals of this ſubſtance, of a pearly white and parallelopipedic form, are imbedded in this quartzleſs granite. The grains of feldſpar have ſuffered a little by the fire, and the cryſtals are ſlightly calcined. Some of them are even diſſolved into capillary ſeparations, and paſs into a ſubſtance like pumice. This lava, which is ſtrongly attracted by the magnet, is found at Mont-d'Or; but a ſimilar variety occurs in the iſles of Ponza and Lipari; at Santa Fiora, in Tuſcany, &c. 2. *Var.* with baſe of whitiſh granular feldſpar, ſpotted with dots of black mica, and hornblende of the ſame colour, and in ſmall cryſtals with dull ſurface; from the Euganean hills, &c. 3. *Var.* with large laminæ of a ſhining bronze coloured mica, ſome of more than an inch in diameter, in a rough uneven purpliſh black maſs, which is melted without being glaſſy, and is pervaded by large pores. It is ſlightly attracted by the magnet. Found near Andernach. 4. *Var.* with baſe of reddiſh granular feldſpar ſtreaked like pumice, and of white ſlightly calcined feldſpar cryſtals, with ſome hexagonal laminæ of brown mica, minute reddiſh garnets, which are partly fuſed, and a black glaſſy ſubſtance appearing to be hornblende: it is faintly attracted by the magnet. From Santa Fiora, in Tuſcany. 5. *Var.* with baſe of white feldſpar, in irregular rather ſcaly grains, with a great quantity of needles of black hornblende, and altered garnets of a purpliſh hue. Very obedient to the magnet. From Teneriffe. 6. *Var.* of a white colour inclining to grey, compoſed of a multitude of very ſmall and cloſe grains of white feldſpar; and of much larger grains of ſhining ſcaly feldſpar, with rather pearly luſtre, ſome of which grains ſhow a tendency to cryſtallization. Blackiſh, dull dots, being common hornblende altered by the fire, are diſſeminated in the feldſpar. Faujas mentions a ſpecimen of this variety, from the Cantal, which is traverſed by a bar of black and white granite, formed of ſmall grains of very pure feldſpar, and of ſmall grains of black hornblende, unaltered by the action of the fire. 7. *Var.* with blueiſh-black baſe, having ſmall brilliant points proceeding from the ſcaly particles of a white ſtony ſubſtance, with dull fracture; purpliſh red, ſemi-tranſparent garnets, partly flawed, partly fuſed, are indiſtinctly imbedded both in the black and white ſubſtances. The former of theſe, which is compact, and fuſes before the blowpipe into a black glaſs, has all the characters of hornblende; the latter is compact feldſpar. From the Cape de Gatte, in Spain.

B. *Fine-grained granitoid lava.*—8. *Var.* formed by a mixture of ſmall, irregular, cloſe grains of hornblende, and ſmall grains and ſcales of white, rather pearly feldſpar. The hornblende being predominant in this maſs, it exhibits a black ſurface on being broken, or cut by a ſaw, in which caſe it reſembles baſalt; but when poliſhed, ſmall white dots and lines appear, which, though delicate, are ſtill ſufficiently viſible on the black ground of the maſs; found on the ſummit of mount Mezin, where, by the action of the atmoſphere, it undergoes a ſtriking alteration; for while the particles of feldſpar at the ſurface become corroded and diſappear, the hornblende remains unaltered and freſh, projecting over the reſt as black granular particles. Lavas ſimilar to this, ſome of them priſmatic, Mr. Faujas pretends to have ſeen in the neighbourhood of Caſſel, and near Gottingen. 9. *Var.* compoſed of white feldſpar in ſmall grains, rather mealy at the ſurface, and of a black ſubſtance diſſeminated as dots in the maſs: the latter appears to be altered hornblende. In this mixture are alſo imbedded large white feldſpar cryſtals with pearly luſtre. Occurs on the right bank of the Rhine, at the foot of the Seven Mountains, nearly oppoſite Goderberg. 10. *Var.* with white grains of feldſpar, harder, freſher, and of cloſer texture than thoſe of the preceding variety, mixed with black hornblende, diſpoſed in dots, lineaments, and even as ſmall priſmatic cryſtals, more abundant, and leſs altered, than the hornblende of No. 9. Alſo garnet cryſtals are diſſeminated in it, but cannot be ſeen without the aſſiſtance of a high magnifier. This variety is attracted by the magnet. It takes a good poliſh, and is uſed for building. It is, together with the preceding, found at the foot of the Seven Mountains, where it is quarried. Large feldſpar cryſtals have not been found in it. 11. *Var.* compoſed of ſmall irregular white cryſtals, diſpoſed in diſtinct lines appearing ſcaly, ſhining, and as rather calcined when viewed through a lens: their length is about $\frac{1}{4}$th, their width $\frac{1}{6}$th of an inch: they are interſected by other priſmatic indeterminable cryſtals of the ſame dimenſions, of an intenſe black colour, vitreous, almoſt metallic external luſtre, but rather dull on the ſurface of fracture. Alſo particles of iron mica, (for oligiſte of Haüy,) and of magnetic iron-ſtone, are found in this maſs. Faujas has analyzed theſe two ores of iron; according to him they are combined with titanium, and the white cryſtals belong to the ſpecies of the latter, called *Sphene* or *Titane ſilicco-calcaire.* This variety was found, in inſulated blocks, near the top of the Meiſſner, in Heſſia. 12. *Var.* differing from the preceding only by the *fer oligiſte* it contains being in large laminæ, marked with lines, the general diſpoſition of which produces ſmall hexahedral laminæ. The ſphene, which forms the baſe of this maſs, is harder, white, inclining to yellowiſh; it conſiſts of cryſtalline tranſlucid particles; the magnetic iron interſects the ſphene in all directions, while the iron-mica is only diſſeminated here and there; both theſe iron ores are, like the preceding, combined with titanium. This variety is found near the extinct volcano of Beaulieu, in the ci-devant Provence. Mr. Faujas remarks, that no ſimilar rock is known to occur, that may be conſidered as the original of this, and the preceding volcanic ſubſtances. He denominates them *granitic*, becauſe they have much the appearance of ſuch a compound.

C. *Schiſtoſe granitoid lava.*—13. *Var.* compoſed of minute, reddiſh-brown grains of feldſpar, much larger, angular grains of white feldſpar, and a great quantity of ſmall ſix-ſided laminæ of ſhining mica, diſpoſed in a ſimilar manner as in gneiſs. The white feldſpar is eaſily ſeparated into laminæ in the direction of parallel lines obſervable on it, and which are produced by the action of the fire. Sometimes ſome dots of hornblende are ſeen in the maſs; but they are of rare occurrence. This is found in Lipari under the pumice deſcribed by Dolomieu. 14. *Var.* with yellowiſh-grey, granular, dull feldſpar, intermixed with white vitreous grains of feldſpar, and much black hornblende in ſmall, ſlender cryſtals, diſpoſed in horizontal lines, repreſenting thin layers, and giving this ſubſtance a fiſſile appearance. From Vulcano.

Class V. *Porphyroid lava.*

Faujas' vulcanic porphyries are compoſed of a fuſible paſte or baſe, in which more or leſs regular cryſtals of feldſpar are imbedded, often accompanied by grains of quartz, hornblende, augite, &c. The baſe itſelf he conſiders analogous to the "trapps of the Swedes." He ſubdivides them as follows.

A. *Porphyroid lava with feldſpar cryſtals.*—1. *Var.* with black, hard, and heavy, though rather porous, baſe, and with white feldſpar cryſtals of looſe texture. Strongly attracted by the magnet. From mount Etna. 2. *Var.* with more compact baſe, of a deep violet brown colour, with a great quantity of ſmall greyiſh-white, rhomboidal, and parallelopipedic cryſtals, and alſo grains of feldſpar. It is very magnetic, and takes a good poliſh. Found by Dolomieu in the Iſle des Salenes, near the village Amalfa, where, according to this geologiſt, it appears in the form of ſteps of ſtairs. Faujas adds that a ſimilar rock is found in Auvergne, in thin tables, which are uſed in ſome villages for roofing. 3. *Var.* with purpliſh brown baſe, including white irregular feldſpar cryſtals, without luſtre. From Trizac, in the canton of Mauriac, Auvergne. 4. *Var.* with rather purpliſh baſe, abounding with more or leſs regular feldſpar cryſtals of a white colour. Though rather decompoſed, it affects the magnetic needle. From Mauriac and ſome other parts of Auvergne.

B. *Porphyroid lava with feldſpar and mica.*—5. *Var.* with rather purpliſh grey baſe, very white irregular feldſpar cryſtals, and ſmall ſometimes ſix-ſided laminæ of an intenſely black mica. It ſometimes contains ſmall cryſtals of ſilicco-calcareous titanium. From Leorens, part of the Cantal mountains. The baſe of this has quite a compact feldſpar appearance. 6. *Var.* with grey baſe, including white feldſpar cryſtals and black mica, but leſs abundant than in the preceding. From Mont d'Or; occurs alſo in the iſles of Ponza and Lipari, &c.

C. *Porphyroid lava with feldſpar and pyroxene.*—7. *Var.* of a deep grey baſe, with dots, lineaments and cryſtals of white feldſpar and black pyroxene, in ſmall cryſtals. Suſceptible of a good poliſh. From the extinct volcanoes of Campania, the neighbourhood of Rome, Santa Fiora, &c.

D. *Porphyroid lava with cryſtals of black pyroxene and ſmall grains of green pyroxene.*—8. *Var.* with deep grey, containing a great number of cryſtals of black pyroxene, and irregular dots of greeuiſh pyroxene. From Chimborazo, where it was found by Humboldt at the height of 1840 toiſes. Faujas ſo completely miſtakes Humboldt, that he imagines the ſtratum of this ſubſtance has 1840 toiſes in thickneſs! The ſame is found near Puzzuoli; and in the ancient lavas of Veſuvius. 9. *Var.* with the ſame baſe as the preceding, and, like it, ſuſceptible of taking a good poliſh, with angular grains, needles, and regular cryſtals of green pyroxene. Found among the ancient lavas of Veſuvius.

E. *Porphyroid lava with hornblende and feldſpar.*—10. *Var.* with purpliſh baſe, with a profuſion of lineaments and more or leſs regular cryſtals of black hornblende, irregular grains of white feldſpar, ſome of which have penetrated into the hornblende cryſtal. Found at Santa Fiora in Tuſcany.

F. *Porphyroid lava with hornblende only.*—11. *Var.* of a blackiſh-grey colour, with large cryſtals of very black and ſhining hornblende. From Mas de Puiſſanton, near Chaumerac, in Vivarais. 12. *Var.* of deep reddiſh-brown colour, with a profuſion of brilliant needles and cryſtals of hornblende. From the Peak of Teneriffe.

G. *Porphyroid lava with hornblende and olivine.*—13. *Var.* in which the hornblende, in irregular fragments, conſtitutes more than double the weight of the maſs, in which ſome pores are obſervable. The grains of olivine which it includes are irideſcent. From the Peak of Teneriffe.

H. *Porphyroid lava with leucite cryſtals.*—14. *Var.* with opaque white leucites, with rather pearly luſtre, the largeſt of which have from three to five lines in diameter; they exhibit, when pieces of the lava are cut and poliſhed, minute rents. The baſe in which they are imbedded is black, compact, hard, very obedient to the magnet, fuſible before the blowpipe into a black, opaque glaſs; it takes a fine poliſh. From Capo di Bove, Caprarola, and the neighbourhood of Naples. 15. *Var.* with large leucites of a dull white colour, ſome of them tranſparent, lamellar, and here and there fuſed and vitrified. The enveloping lava is of a greyiſh-black colour; it is dry, rough to the feel, full of irregular pores, and attracted by the magnet. From the ancient lavas of Veſuvius. 16. *Var.* with white, opaque, dull cryſtals, which, though they are ſo friable as to be eaſily reduced to powder by the preſſure of the nail, have ſtill preſerved their original form; they are large and cloſely grouped together. The lava which includes them is of a dull black colour, inclining to grey; it has loſt part of its hardneſs, but ſtill affects the magnet. In the midſt of theſe decompoſed cryſtals are ſeen black lineaments and grains of a ſubſtance which appears to be that of the lava itſelf, and which was perhaps forcibly introduced into the body of the cryſtals, through the rents that were produced when the maſs was ſtill in a fluid ſtate. Found in abundance in the vicinity of Viterbo. 17. *Var.* with white opaque leucites, having ſome black points in their centre, and with irregular cryſtals of black pyroxene diſſeminated in the lava. It is black, hard, ſuſceptible of a good poliſh, attracted by the magnet, and fuſible into a black brilliant glaſs. Found in large maſſes, and ſometimes in priſms, at Bolſena. A ſimilar variety occurs at Civita-Caſtellana, and another at Aquapendente, which latter, however, includes pyroxenes of a yellowiſh-green colour. 18. *Var.* with tranſparent, hard, leucite cryſtals, of a yellowiſh-white colour, accompanied with black hornblende. The including lava is black, compact, hard, and attracted by the magnet. Found at Borghetto, Bolſena, Aquapendente, and Albano. 19. *Var.* with very ſmall white opaque leucite cryſtals, cloſely grouped together, and accompanied by much larger, irregular cryſtals of black hornblende; in a black, hard, compact and very magnetic lava, from Tivoli and Aquapendente. 20. *Var.* with almoſt microſcopic white, tranſlucid leucite cryſtals, ſo cloſely grouped together as to appear to be in contact with each other, intermixed with irregular black hornblende cryſtals. Found abundantly at Bolſena, in the neighbourhood of Civita-Caſtellana and of Viterbo. 21. *Var.* with very ſmall, pellucid, white, leucite cryſtals, and irregular hornblende cryſtals, of a greeniſh colour. In a purpliſh, not very hard, lava, the iron of which has acquired a degree of oxydation, whence it ſhews no effect on the magnetic needle. From Viterbo. 22. *Var.* with large, white, pellucid leucite cryſtals, which are generally of a ſcaly nature and full of minute flaws, and ſometimes with ſmall lineaments of a very beautiful ſky-blue colour, of a cryſtalline appearance. This ſubſtance, comparable to blue ſapphire, or, more aptly, to lazulite, appears to be of contemporary formation with the reſt. The ſame ſubſtance in minute particles is diſcriminated alſo in the paſte of the lava, which is compact and of a blackiſh-grey colour. Beſides theſe, alſo black ſhining dots are obſervable in this lava; they have the appearance of having been fuſed, and may perhaps be grains of pyroxene, or black garnets. Some grains of arſenical pyrites are likewiſe obſervable in it. From Albano. Sometimes the leucite cryſtals, in the lavas of this diviſion, are accompanied by ſome mica in ſmall ſcales; and in the neighbourhood of Rome large nodules are found, ſometimes of the thickneſs of a man's fiſt, and entirely compoſed of black cryſtallized mica and leucite; the latter are cloſely enveloped by the former, and both appear to have acquired their cryſtalline form at the ſame period. This is not conſidered by Faujas as a true volcanic ſubſtance.

Class VI. *Variolitic lavas.*

The paſte is the ſame as that of the porphyritic lavas, but inſtead of cryſtals, it includes globules of feldſpar.

1. *Var.* with paſte of a greeniſh-grey colour, with numerous blackiſh-grey globules, of the ſize of a pea, and of a finer and harder texture than the baſe; both of them fuſible. When the paſte is decompoſed by the action of the atmoſphere, the round ſpots exhibit themſelves as projecting globules. From Teneriffe. 2. *Var.* with grey paſte, and very ſmall round ſpots of a darker grey colour. This variety, which attracts the magnet, is, like the preceding, compact, and takes a fine poliſh. It has a tendency to ſeparate into thin laminæ when ſtruck with a hammer. From Vedrine, in Auvergne. 3. *Var.* with grey paſte, inclining to greeniſh; ſpots like thoſe of No. 1, but four times ſmaller. Is ſtrongly attracted by the magnet. From Pui en Velai. 4. *Var.* with white orbicular ſpots on a grey ground; attracted by the magnet. From Pas-de-Compain, Auvergne. 5. *Var.* like No. 4, but with much ſmaller ſpots, grouped cloſer together, and leſs regularly orbicular. From Puy-Creux, Auvergne. 6. *Var.* of a blueiſh colour, with very ſmall pores, and numerous white orbicular ſpots of about two lines in diameter. From the crater of Mon-Brûl, in Vivarais, where it often occurs in large irregular balls, which ſeparate into concentric layers when ſtruck with a hammer.

Class VII. *Feldſpar lavas; or lavas with baſe of compact feldſpar.*

Faujas remarks, after Dolomieu, that there are ſometimes in the ſame lava two different kinds of feldſpar, one of which is compact and fuſible, and ſerves as baſe to the other, which is more or leſs regularly cryſtallized and refractory, ſo that the baſe may have been in complete fuſion, while the cryſtals remained in their original ſtate.

1. *Var.* Feldſpar lava of a black colour, opaque, of a very fine grain and conchoidal fracture; it fuſes into a white tranſlucid glaſs, and is ſtrongly attracted by the magnet. From Catajo in the Euganean mountains, and from Vulcano. 2. *Var.* of a light grey colour, inclining to fleſh red, of a fine grain, tranſlucid at the edges; fuſible before the blowpipe, and faintly attracted by the magnet. From one of the Ponza iſles. 3. *Var.* of a white colour, heavy, partly vitrified. From the Euganean mountains. 4. *Var.* of the ſame colour, but ſhining; rather glaſſy; compoſed of ſmall, rather ſtreaked, and ſometimes ſwelled ſcales; and, therefore, lighter than the preceding. Is not attracted by the magnet; but is fuſible before the blowpipe. From Milo, an iſland in the Archipelago. 5. *Var.* of greyiſh-white colour, here and there with a ſlight ſhade of red, with numerous ſhining ſcales of mica; feldſpar rather calcined. Is not attracted by the magnet; but fuſible into a ſemi-tranſparent glaſs. From the iſle of Ponza, and from Puy-de-Dôme, in Auvergne. 6. *Var.* white, with ſcales of brown ſhining mica, and pellucid grains of feldſpar, more cryſtalline than the baſe in which they are included. From Mont d'Or, in Auvergne; ſimilar varieties are found in the Euganean mountain, and another from Mont Mezin, in Velai.

Class VIII. *Amygdaloid lavas, with baſe of trapp.*

Theſe are conſidered, by Faujas, as having originally belonged to rocks, whoſe baſe is generally the ſame as that of the porphyries ; and whoſe globules and nodules of calcareous ſpar, zeolite, calcedony, &c. do not owe their exiſtence as ſuch, to infiltration, but are of a contemporaneous origin with the baſe. The volcanic fire, which operated on ſuch amygdaloid rocks, though it has rendered them ſoft and fluid, has but little changed their character ; but all, in the opinion of that ſtrenuous volcaniſt, bear clearly the ſtamp of igneous origin. They are ſubdivided as follows :

A. *Amygdaloid lava with calcareous globules.*—1. *Var.* with globules of tranſlucid calcareous ſpar of a yellowiſh colour, of the ſize of a pea ; in a black, compact maſs ; attracted by the magnet. From Vivarais ; alſo from Vicenza. 2. *Var.* with white, tranſlucid, ſpathoſe globules, ſome with a thin, ſhining, reddiſh-brown, others with a ſteel-grey coating of the ſame kind, in a ſimilar maſs, affecting a triangular-priſmatic form. From near Rocheſauve, in Vivarais. 3. *Var.* with white, compact, lenticular grains, tranſlucid on the edges, the largeſt of them of the ſize of a common lentil ; in a black compact maſs, of a very fine grain. From the iſle of Aſcenſion. 4. *Var.* with white, ſpherical globules ; ſometimes two, three, or four of them together ; ſometimes ſingle in cells that are partly empty : baſe like that of the preceding variety. From the valley of Ronca, in the Veroneſe territory. 5. *Var.* with ſimilar, very ſmall globules, grouped cloſely together, and taking up the whole of the cell ; in a reddiſh-brown, hard, compact maſs, attracted by the magnet. From the ſame place. 6. *Var.* with ſmall, perfectly orbicular, globules of equal ſize, in a deep-grey, compact, ſoft maſs, containing numerous grains of olivine, with oxydized ochrey ſurface. From Vivarais. 7. *Var.* with white, tranſlucid, ſhining, radiated globules of arragonite ; in a black, hard, compact lava ; obedient to the magnet. From the iſle of Aſcenſion. A ſimilar one, but with larger globules, from near Roche-Sauve, in Vivarais. 8. *Var.* with the ſame globules, but accompanied by grains and indeterminable cryſtals of black hornblende ; in a browniſh compact maſs. From near Baïs, in Vivarais. 9. *Var.* with radiated globules, and irregular grains of arragonite, intermixed with grains of olivine. From the iſle of Bourbon.

B. *Amygdaloid lava with globules of meſotype.*—1. *Var.* with ſolid globules of a white ſilky zeolite, compoſed of needles radiating from the centre ; in a black, compact, hard maſs, attracted by the magnet ; including alſo grains of black hornblende. Between Roche-Maure and Meyſſe, in Vivarais. A ſimilar variety from Staffa, and the iſle of Mull. 2. *Var.* with very ſmall ſolid globules, of a ſnow-white zeolite, and irregular, almoſt microſcopic grains of the ſame ſubſtance, ſo numerous as to conſtitute half of the whole maſs ; the baſe like that of the preceding variety. From the valley of Ronca, in the Veroneſe territory. A ſimilar one is found near Rome, in which grains of hornblende are lodged in the very ſubſtance of the zeolite. 3. *Var.* with numerous, white, pellucid, zeolitic grains, of about the ſize of a millet ſeed, and cloſely grouped together ; in a greyiſh-black compact lava. From Montecchio-Maggiore, near Vicenza. Similar varieties occur in the Lipari iſlands, at mount Veſuvius, &c.

C. *Amygdaloid lava with ſtilbite.*—1. With globules of white pearly ſtilbite, in a black compact baſe, attracted by the magnet. From Feroe. 2. *Var.* with ſimilar globules, ſurrounded by a cruſt of a green, rather friable, ſubſtance, very like the green earth of Verona ; in a greyiſh-green maſs, not attracted by the magnet. From Feroe. 3. *Var.* with white radiated ſtilbite, on cryſtals of calcareous ſpar ; in a black maſs. From Iceland. 4. *Var.* with white ſtilbite, in indeterminably-ſhaped nodules, in a friable, browniſh maſs. From Dumbarton.

D. *Amygdaloid lava with analcime.*—1. With irregular globules of tranſparent analcime, partly cryſtallized ; in a greyiſh-black lava, attracted by the magnet. From Mount Etna. 2. *Var.* with oblong globules of pellucid analcime ; in a black compact lava, ſtrongly attracted by the magnet. From one of the Cyclopic iſles. 3. *Var.* with globules of white compact analcime ; in a greyiſh-black lava, appearing rather altered. From Montecchio-Maggiore. 4. *Var.* with hollow nodules of white, dull, and opaque analcime, partly in the form of trapezoidal cryſtals ; in an altered lava, as it is called by our author. From Dumbarton, Scotland. 5. *Var.* with ſmall, inſulated, ſemi-tranſparent, greyiſh, dodecahedral cryſtals ; in a light grey lava reſembling tripoli, and penetrated in all parts by numerous, very ſmall, ſpherical grains of analcime, of a darker grey colour, and a little tranſlucent on the edges ; intermixed alſo with ſome ſmall cryſtals of calcareous ſpar.

E. *Amygdaloid lava, with ſarcolite,* (referred by Haüy to analcime.)—1. *Var.* with globules, and ſometimes irregular nodules, of a reddiſh ſtony ſubſtance, ſimilar to the ſarcolite of Thompſon ; in a greyiſh, hard, porous, but heavy lava ; the red globules accompanied by analcime, white radiated zeolite, cuboid cryſtals of calcareous ſpar. From Montecchio-Maggiore. 2. *Var.* with radiated zeolite, trapezoidal analcime, cuboid calcareous ſpar, and ſemi-tranſparent cryſtalline celeſtine, or ſulphat of ſtrontian, of a light blue colour, paſſing, in ſome ſpecimens, into white. In a ſimilar maſs, from the ſame place.

F. *Amygdaloid lava, with chabaſie.*—1. White chabaſie, in a porous, black, heavy maſs, with ſmall, blueiſh, elevated, rather mamillary ſpots, which are phoſphate of iron. From Val di Noto. A ſimilar ſubſtance is found at Clermont, in Auvergne. 2. *Var.* with ſmall primitive cryſtals of chabaſie, in the orbicular hollows of a black, hard, heavy, and compact maſs. From the Peak of Teneriffe. 3. *Var.* with ſmall globules, and very minute cryſtals of chabaſie, in a black heavy maſs, with ſhining black hornblende, and numerous grains of olivine, decompoſed into a yellowiſh earthy ſubſtance. From Teneriffe. 4. *Var.* with primitive cryſtals of chabaſie, lining the orbicular hollows of a cloſe black lava. From Iceland.

G. *Amygdaloid lava, with calcedony.*—Here M. Faujas mentions ſeven varieties of nodules of calcedony, ſome of them containing water, (known by the name of enhydros,) others ſolid ; found principally in the decompoſed lavas of Monte Tondo, Monte Galdo, San Floriano, Mont-Main, in the Vicentine territory. To theſe he adds, by way of appendix, ſome calcedonic and quartzy ſubſtances, which he conſiders as owing their origin to infiltration, and to which he refers the hyalite of Francfort on the Mayne. In another appendix the ſame author places the maſſes including the granular peridot or olivine, and which he would conſider of porphyritic origin, were the olivines ever found cryſtallized in them. He enumerates ſeveral varieties found in the baſalts and lavas of Vivarais, Caſſel, Iſle of Bourbon.

Class IX. *Volcanic breccias and tuffas.*

A. *Volcanic breccias formed of more or leſs rounded fragments of different kinds of lavas,* ſeized and enveloped by other lavas in a ſtate of fuſion.—1. *Var.* compoſed of angular and blunt fragments of black, hard, compact lava, of rather porous black lava, and of grains of white feldſpar ; the whole intimately united by a browniſh lava, with ſtreaked pores. Peak of St. Michael, in Velay ; as alſo near Roche Sauve, in Vivarais. 2. *Var.* with irregular fragments of ſcoriform ſemi-vitreous lavas of a ſhining black colour, cemented by a grey ſtriated lava, approaching hard pumice. From Vivarais, and the iſle of Lipari. 3. *Var.* formed of numerous angular fragments of black porous lava, and ſome white opaque feldſpar, cemented together by grey pumice with ſmall pores: from Lipari and Iſchia. 4. *Var.* with fragments of white, ſometimes yellow and browniſh lime-ſtone, in a grey hard lava, mixed with white, tranſparent, flawed cryſtals and grains of feldſpar, ſome laminæ of black hornblende, ſilvery mica, and grains of green augite; from the vicinity of Albano, and other parts of the Roman territory. 5. *Var.* compoſed of large fragments of white marble, fine-grained yellowiſh marble, and another hard ſtony ſubſtance formed of lime and ſilex; in a grey lava, including much black pyroxene; from the vicinity of Rome, and from near Veſuvius. 6. *Var.* compoſed of fragments of white and grey marble, and rounded pieces of black hornblende; others of black ſcaly mica; in a grey lava, mixed with particles of ſilvery mica, and numerous fragments of deep green pyroxene. From Iſchia. 7. *Var.* with large nodules of olivine, of different colours; fragments of black compact lava, of porous, almoſt ſcoriated lava, of the ſame colour, cemented by a grey maſs formed of more or leſs comminuted detritus of ſeveral kinds of lava. From the Iſle of Bourbon, of Aſcenſion, &c.

B. *Volcanic breccias formed by the ſudden contact of fire and of water greatly heated.*—1. Breccia formed of fragments of brown porphyry, porphyry with red baſe, and cryſtals of white feldſpar; of fragments of white marble, marked at their points of contact with the lava, with black lineaments that appear produced by an aqueous ſolution which intimately united all parts of this breccia, the baſe of which is a grey lava, mixed with melted grains of black pyroxene; it is attracted by the magnet. From the foot of Mount Etna. 2. *Var.* including angular fragments of black lava, with conchoidal fracture; of grey feldſpar lava, with rough ſurface (both attracted by the magnet); of glaſſy blueiſh-green lava, fragments of aſh-grey pumice, fragments of a whitiſh, ſemi-tranſparent, volcanic glaſs, and a colourleſs glaſs; the whole cemented by a blueiſh-grey, ſoftiſh, coarſe-grained lava. From the Lipari iſlands. 3. *Var.* compoſed of fragments of black, rather porous, baſalt, including grains of olivine, of large fragments of a yellowiſh quartzy ſand-ſtone with red ſtripes, of fragments of grey or red indurated marle, and geodes of brown iron-ſtone; the whole cemented together by a grey lava, compoſed of the more or leſs comminuted grains of the ſubſtances that form the breccia, and of ſome black pyroxene. From the Habichtſwald. 4. *Var.* compoſed of various fragments of black baſaltic lava, intimately connected by white and ſhining calcareous ſpar, ſufficiently hard to allow the breccia to be cut and poliſhed; ſometimes the compact lava adopts the reddiſh colour of ochre. From Rochemaure, Vivarais; alſo from Monte-Bolca. 5. *Var.* formed of more or leſs large fragments of intenſely black, ſhining, volcanic glaſs, cemented by white calcareous ſpar, ſuſceptible of a good poliſh. From Val di Noto. 6. *Var.* compoſed of very ſmall fragments of a compact, greeniſh-black, decompoſed lava, ſome of which include grains of black pyroxene; in a hard ſiliceo-calcareous paſte, which is but little ſoluble in nitric acid.

C. *Vulcanic tuffas, properly ſo called,* formed by the detritus of different ſpecies of granular, pulverulent, or earthy lavas. They appear to owe their origin to various circumſtances. Firſt, they may, according to Faujas, be conſidered as the reſult of the ſudden contact of water with volcanic fire; when, at the time of great ſubterraneous convulſions, a communication is ſuddenly opened between the ſea and the igneous gulf. Secondly, the projected pulverulent lavas, which are ſometimes carried to a great diſtance, ſuch as thoſe which buried Herculaneum and Pompeï, or thoſe which accumulate at the bottom of the ſea in the vicinity of volcanoes, and may, in the progreſs of time, produce depoſitions, and even more or leſs regular ſtrata, of tuffa. Laſtly, under ſome circumſtances, the tuffas that were already depoſited in the ſea, may have been again deplaced by currents, and mixed with ſhells and other marine productions, and ſometimes even with land productions, ſwept into the ſea by rivers, &c. the current may, at different intervals, have depoſited theſe tuffas, as more or leſs regular layers.

1. Volcanic tuffa, compoſed of white and grey, very light pumice, in ſmall fragments, adhering to each other. From Pleyth, near Andernach, where it covers the quarries of traſs. 2. *Var.* with baſe of pumice reduced to ſo fine a powder, as to appear like a clayey ſubſtance, ſerving as a cement to numerous grains of a very light pumice, but leſs rough to the touch than that of the baſe, which, moreover, includes ſmall nodules of real porous lava, of a brown colour, and ſometimes colourleſs. From the ſame place, where it forms a kind of traſs. 3. *Var.* formed of pumice in grains, and ſmall angular fragments of black baſaltic lava, ſcaly particles of a ſomewhat micaceous ſchiſtus, cemented by a paſte of pumice reduced to powder. From the ſame place; where it forms another variety of traſs, being of greater ſolidity, and forming beds of upwards of fifty feet thickneſs, in which ſometimes charred wood is found. 4. *Var.* formed of very ſmall grains of lava, which is partly ſcoriated, of ſome grains of black pyroxene, and other grains of rounded yellowiſh olivine, cemented by grey and black pulverulent lava, reſembling ſand-ſtone. Is ſometimes found in beds at Carlſberg, in Heſſia. A ſimilar tuffa, of a dark grey colour, with white points, is found on an elevated part of the Cantal, in Auvergne. 5. *Var.* of a purpliſh-grey colour, and reſembling, at firſt ſight, a ſand-ſtone, but in reality compoſed of the detritus of a purpliſh lava, of a leſs altered compact lava, and ſome grains of black pyroxene. Near Rocheſauve, in Vivarais, where it forms thick beds, reſting on other tuffas, and overlaid by baſalt. 6. *Var.* gold yellow, dotted with white, grey, and black, compoſed of ſmall fragments of baſalt, yellowiſh-brown friable lava, ſome grains of olivine, and ſmall particles of black pyroxene; alſo yellow ochrey nodules are found in it. This tuffa forms conſiderable beds, one above the other, at Rocheſauve, in Vivarais. 7. *Var.* of a purpliſh-brown colour, with yellow ochrey, white and blackiſh dots, compoſed of ſmall angular fragments of black compact lava, which has loſt ſome of its hardneſs; of ſmall fragments of a white marle, mixed with ſome iron; of particles of porous altered lavas of an ochrey-yellow colour; of grains of ſhining black pyroxene, and ſome olivine in grains. It is attracted by the magnet. Found at the preceding place, where it forms conſiderable ſtrata, overlaid by vaſt baſaltic cauſeways. Alſo, in this tuffa large nodules of ochre are found. The tuffas of the vicinity of Roche-maure, in Vivarais, are ſimilar to this: as likewiſe thoſe of the neighbourhood of Rome, of Naples, Campania, of the Euganean mountains, of ſeveral parts of the Vicentine territory, &c.

M. Faujas enumerates, at the end of this ſection, the various animal and vegetable ſubſtances, ſhells, madrepores, and carbonized ſpecies of wood, that have been found imbedded in volcanic tuffas. A ſection is alſo ſet apart to volcanic pitch-ſtones, divided into three claſſes, *viz.* wood, converted into pechſtein, by volcanic fire; flint, which has undergone the ſame change; and porphyries converted into what Werner calls pitchſtone porphyry. The places aſſigned to the firſt of theſe varieties are, Aſſerſtein, near Frankfort, and Upper Hungary; the locality of the ſecond is principally Auvergne; which is alſo that of the ſpecimens of volcanic pitchſtone porphyry, here enumerated. To the laſt of theſe ſubſtances Faujas refers moſt of ſuch *laves réſinites*, or *réſiniformes* of Dolomieu, as contain cryſtals of feldſpar, and ſeveral of which are found at Vulcano. Theſe are ſaid to form a tranſition into

Class X. *Enamels (émaux), obſidians, and other volcanic glaſſes.*—The prototypes of theſe are the different varieties of trapp, compact feldſpar, and porphyry, which, according as they are more or leſs fuſible by volcanic fire, are, under circumſtances favourable to vitrification, converted into the ſeveral kinds of glaſſes that are found among volcanic productions.

A. *Enamels.*—1. Grey, with greyiſh-white, or greeniſh zones, opaque; ſome pores are viſible in the paſte, and, with the help of a lens, alſo cryſtals of feldſpar, or traces of them. From the iſle of Aſcenſion. 2. *Var.* of dark-grey colour, beſprinkled all over with ſmall round ſpots of a much lighter grey, and produced by ſmall globules in the ſubſtance of the enamel, which, in ſome places, diſplays an intenſe, vivid-black colour. This ſubſtance, which is from the iſland of Vulcano, bears diſtinctly the characters of a variolitic lava converted into enamel. 3. *Var.* of a blackiſh-grey colour, hard, opaque, in which ſome dots of fuſed black pyroxene are ſtill viſible. From the iſle of Ponza. 4. *Var.* of an intenſe black colour, approaching obſidian, but more opaque, and of a rather greaſy aſpect. From the Peak of Teneriffe. This enamel is ſometimes covered with a ruſt-coloured cruſt. In ſome ſpecimens ſcarcely any foreign body is obſervable, except ſome traces of white feldſpar; in others the maſs is rather leſs intenſely black and more marked with ſpots of white feldſpar, melted together with the enamel without having entirely loſt their original tint.

B.—*Real obſidian, or volcanic glaſs.*—1. Obſidian of a black colour, of conchoidal fracture, diviſible into ſharp fragments, of deep black colour, and tranſlucid on the edges; thinner fragments almoſt completely tranſparent, with ſcarcely any traces of a fuliginous tint. It is fuſible before the blowpipe into a very white, ſhining, tranſlucid glaſs, with minute ſuperficial veſicles. From Mount Hecla, Teneriffe, Aſcenſion, Vulcano, Lipari, Ponza, &c. 2. *Var.* of a globular form, black, opaque, but ſometimes tranſparent, and faintly turbid or ſmoky. From Cap de Gates. Faujas refers this ſubſtance (which has been called luchs-ſapphire by ſome writers) to the homogeneous volcanic glaſſes, becauſe it eaſily melts before the blowpipe into a white enamel, and becauſe the globules are ſometimes found imbedded in a greyiſh enamel, approaching to lamellar pumice. Theſe globules are not always ſpherical. Their ſize is from that of a ſmall pea to that of a large hazlenut. They are very light, though not porous; their external luſtre is unctuous. 3. *Var.* forming a very fine black glaſs, with well defined, conchoidal fracture; and fragments nearly tranſparent on the edges, and of a weak olive-brown colour. In ſome parts white points and ſome ſmall hollows are ſeen, which latter are lined with a white fuſed, rather vitreous, ſubſtance, which appears to owe its origin to ſuch grains of feldſpar as did not experience a ſufficient degree of fuſion to amalgamate with the obſidian. From Cerro de las Marejas, in Mexico. 4. *Var.* with intenſely black ground, and well defined fracture, yielding ſharp-edged fragments; the whole of the brilliant maſs is filled with ſmall, white, opaque, globular, and oblong ſpots, cloſely grouped together, and appearing like melted enamel, but rather unctuous. From the Lipari iſlands. 5. *Var.* of a black colour, inclining to olive-green, diſpoſed in more or leſs elongated, rather flexible, capillary filaments, often terminated by very ſmall, round, or oblong globules; fuſible before the blowpipe into globules of a greeniſh-black. From the iſle of Bourbon. Lavas with ſmall filiform particles of volcanic glaſs have alſo occurred in the iſland Vulcano. Theſe are by ſome mineralogiſts looked upon as filiform cryſtals of augite or pyroxene; but M. Faujas ſays he has ſubjected them to cloſer examination, and found them to be volcanic glaſs.

C. *Pumice ſtones.*—The true pumice, ſays Faujas, which we ſhould be careful not to confound with the lighteſt lavas, keeps the midway between the volcanic glaſſes and the enamels: it generally derives its origin from a peculiar kind of vitrification of compact feldſpar, and ſome porphyritic rocks. Thoſe of Lipari and Vulcano are the only known volcanoes that have produced pumice in conſiderable quantity: the iſle of Lipari, in particular, is the vaſt magazine that furniſhes almoſt the whole of the immenſe ſtores of this ſubſtance, conſumed for the purpoſes of different arts, in almoſt all parts of Europe. In ſmall quantity and in inſulated fragments it occurs in the neighbourhood of ſeveral other volcanoes.

1. Pumice of a white colour, porous, light, rough to the touch, and fuſible. From Campo-Bianco, the Lipari iſles, Valle-del-Aqua, near Otto-Jano, &c. 2. *Var.* of a ſilky appearance, fibrous, and with capillary lineaments. From the ſame place. 3. *Var.* of a dark grey or black, ſometimes greyiſh-white colour, with twiſted pores; fibrous, including, among its fibres, more or leſs indeterminable cryſtals of white feldſpar, which, in ſome of the ſpecimens, are only ſeen on the rifts. From Iſchia, Procida, from the neighbourhood of Naples. At Lipari, the varieties of black pumice are found in the hillock of the tomb of the Naſos. 4. *Var.* of a whitiſh colour, ſcaly, light, ſilvery, and ſemi-tranſparent. From Lipari. 5. *Var.* the ſame, but heavy. *Ibid.* 6. *Var.* of a grey colour, light, fibrous, with blackiſh, ſhining, ſometimes cryſtallized, mica. In a pumice from Herculaneum, from the neighbourhood of Naples, from Iſchia, Procida, &c. 7. Light, porous, or fibrous variety, with more or leſs angular nodules, and grains of black volcanic glaſs. From Lipari, Stromboli, Capo di Monte, at Scutello, in the neighbourhood of Naples; from Teneriffe, &c. 8. *Var.* the ſame, but whiter, with ſmall thin fragments of a ſilvery-grey ſhiſtus. In the tuffa from Pleyth and other places in the vicinity of Andernach. 9. *Var.* with very ſmall angular and irregular fragments of a vitreous, ſtony ſubſtance, of a ſky-blue colour (now called Latialite, or Haüyne). Among the varieties of pumice from Pleyth, &c. 10. *Var.* of a greyiſh-white colour, light, with nodules of obſidian of various ſizes. From Teneriffe and Lipari. 11. *Var.* of a dark grey, ſometimes rather browniſh colour, heavier than the preceding variety; with veſicles, all of which are elongated in one and the ſame direction: gives out ſome ſparks when ſtruck with ſteel. From Lipari. 12. *Var.* of a ſilvery-white, compoſed of ſmall lamellæ, or ſcales. Found among the other varieties at Lipari: it is rather lighter than the common white pumice.

Class XI. *Sulphur, and various ſaline ſubſtances, found ſublimated in volcanoes and ſolfataras.*

The ſalts are: Glauber ſalt, nitre, alum, Epſom ſalt, mineral alkali, rock ſalt, effloreſcent, in filaments and cubes, ſal ammoniac, in rhombic, or dodecahedral cryſtals, generally of a topaz-yellow colour. Alſo gypſum, and calcareous ſpar; muriate of copper, in ſmall deliqueſcent cryſtals; red and yellow orpiment.

Class XII. *Volcanic iron, viz* titaniferous iron, as ſand, and in ſmall octahedral cryſtals, from various places; ſpecular iron from ſeveral volcanoes in Italy and France; phoſphate of iron, as powder in porous lavas from Capo di Bove, Etna, Val di Noto: or in ſmall laminæ, from Bouiche, in the department of Allier, &c.; iron pyrites, in fine grains; oxyds of iron; muriate of iron, of a yellow colour, from Veſuvius and Etna; and iron-vitriol, found in volcanic grottos, in the iſland of Vulcano.

Several intereſting obſervations on the nature of lava, and the various phenomena it preſents under different circumſtances, are given by ſir William Hamilton, father della Torre, Bolis, Tata, Breiſlach, Buch, and others, which will be more particularly noticed under the article Volcano.

The purpoſes for which the lava of Veſuvius, Etna, and other volcanoes is employed, are particularly thoſe of building and paving. Alſo the ancients made uſe of it for theſe purpoſes, as appears from the preſence of Veſuvian lava in the architectural remains and pavements found in Herculaneum and Pompeï. That of Etna appears to be ſtill more generally uſed for building, ſince, according to Ferrari, there is not a houſe in its neighbourhood that is not conſtructed of it. The rapid progreſs in the rebuilding of Catania was, in a great meaſure, owing to the facility with which the building materials were procured. Alſo mill-ſtones are made of the lava of Etna, many of which are exported to Calabria and Malta; and it has even been manufactured into cannon balls.

LAUACA, in *Geography*, a ſmall iſland near the S. coaſt of Sardinia. N. lat. 39° 4′. E. long. 8° 36′.

LAVACRUM, in *Botany*, a name given by ſome authors to the common wild teaſel, or *dipſacus ſylveſtris major*, Ger. Emac. Ind. 2.

LAUADEROS. See Lavatory.

LAVAGNA, in *Geography*, a ſea-port town of Genoa, at the mouth of a river of the ſame name, which riſes in the Apennines; 12 miles W.N.W. of Brugnato.

LAVAL, a city of France, and capital of the department of the Mayenne, ſituated on the river Mayenne. The number of inhabitants is eſtimated at 14,154; the eaſtern diviſion containing 6658, and the canton 15,175, on a territory of 145 kiliometres, in 9 communes; and the weſtern diviſion comprehending 7496, and its canton 15,000, on a territory of 122½ kiliometres, in 6 communes. In the town and its environs are manufactures of linen, which yield a conſiderable commerce. N. lat. 48° 5′. W. long. 0° 41′.

LAVAMUND, a town of the duchy of Carinthia, on the Drave; the ſee of a biſhop, ſuffragan of the archbiſhop of Salzburg; 24 miles E. of Clagenfurt. N. lat. 46° 44′. E. long. 14 37.

LAVANDULA, in *Botany*, Lavender; ſo called from the Latin word *lavo*, to waſh or beſprinkle, alluding to its ancient uſe in baths or fomentations, or to that of its diſtilled water in more modern times. Linn. Gen. 290. Schreb. 386. Willd. Sp. Pl. v. 3. 60. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 382. Sm. Prodr. Fl. Græc. Sibth. v. 1. 399. Juſſ. 113. Tourn. t. 93. Lamarck Illuſtr. t. 504. Gærtn. t. 66. (Stæchas; Tourn. t. 95.)—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, ovate, obſcurely toothed at the orifice, ſhort, permanent, with a bractea at its baſe. *Cor.* of one petal, ringent, reverſed; tube cylindrical, longer than the calyx; limb ſpreading; its larger lip turned upwards, cloven, ſpreading; the other directed downwards, in three roundiſh, nearly equal, ſegments. *Stam.* Filaments four, within the tube of the corolla, ſhort, pointing downwards, two of them ſhorter than the reſt; anthers ſmall. *Piſt.* Germen four-cleſt; ſtyle thread-ſhaped, the length of the tube; ſtigma of two obtuſe cohering lobes. *Peric.* none, except the calyx, which protects the ſeeds, its mouth being cloſed. *Seeds* four, obovate.

Eſſ. Ch. Calyx ovate, obſcurely toothed, attended by a bractea. Corolla reverſed. Stamens encloſed in the tube.

Obſ. The *Stæchas* of Tournefort differs from his *Lavandula*, in having the flowers ranged in many rows on the ſpike, and the whole crowned with an ornamental tuſt of floral leaves.

Six ſpecies are deſcribed in the lateſt edition of Linnæus, eight in Willdenow, all of them admitted into the new Hortus Kewenſis, but the laſt in the liſt erroneouſly. The reſt are for the moſt part known and eſteemed in every garden or green-houſe. All are ſhrubby, with blue or purpliſh, fragrant, ſpiked flowers, and their foliage is likewiſe aromatic, generally of a grey or hoary-green, narrow, either ſimple or compound. The ſpike is ſupported on a longiſh, naked, ſquare ſtalk.

1. L. *Spica*. Common Lavender, or Spike. Linn Sp. Pl. 800. Woodv. Med. Bot. t. 55. (Lavandula; Ger. em. 583, 584. f. 1—3. Rivin. Monop. Irr. t. 54. f. 1, 2.)—Leaves linear-lanceolate. Spike interrupted, naked at the ſummit.—Native of the ſouth of Europe, hardy with us, and cultivated for the ſake of its ſcent when dried. To be "laid up in lavender" is become proverbial for any thing ſtored up with peculiar care. The eſſential oil and diſtilled water are ſo generally uſed in perfumery, as to be no unimportant articles of commerce. The compound ſpirituous tincture, or lavender drops, is a popular cordial, very commodious for thoſe who wiſh to indulge in a dram, under the appearance of an elegant medicine. This plant varies in the breadth of its *leaves*, from linear to lanceolate, inclining to obovate; hence the old writers deſcribe and figure two kinds. The *flowers* are occaſionally white, which alſo they have not omitted to notice.

2. L. *Stæchas*. French Lavender. Linn. Sp. Pl. 800. (Stæchas arabica; Rivin. Monop. Irr. t. 55. St. ſive Spica hortulana; Ger. em. 585.)—Leaves linear, revolute, hoary. Spike cloſe, crowned with a coloured leafy tuſt. Bracteas ſomewhat three-lobed.—Native of Spain, Greece, the ſouth of France, and the north of Africa. It will not bear our winters without the ſhelter of a green-houſe. The *leaves* are much ſmaller than in the former, more ſtrongly revolute. *Spikes* uninterrupted, ſhort, and thick, on but ſhortiſh ſtalks, their bracteas more or leſs diſtinctly three-lobed, purpliſh and woolly; thoſe which crown the top of the ſpike, greatly dilated, wavy, undivided, of a beautiful purple, much paler than the flowers; rarely wanting.

3. L. *viridis*. Madeira Lavender. L'Herit. Sert. Angl. 19. Ait. Hort. Kew. n. 3. Hoffm. and Link Luſit. v. 1. 91. t. 4.—Leaves linear, revolute, rugoſe, villous. Spike cloſe, crowned with a leafy tuft. Bracteas undivided.—Native of Madeira, from whence it was ſent to Kew by Mr. Maſſon in 1777. It differs from the laſt in its rugoſe, green and villous, not hoary, *leaves*, its undivided *bracteas*, and its green, not purple, crown of the *ſpike*.

4. L. *dentata*. Tooth-leaved Lavender. Linn. Sp. Pl. 800. Curt. Mag. 400. t. 401. (Stæchas folio ſerrato; Ger. em. 586.)—Leaves linear, finely pinnatifid, pectinate. Spike cloſe, with a leafy crown. Native of Spain, the north of Africa, and ſome parts of the Levant, not of Greece.—The very neatly-toothed *leaves* diſtinguiſh this ſpecies. Its *ſpikes* ſtand on long ſtalks, and are crowded, pale, with all the *bracteas* large, coloured, and ſomewhat membranous, a

few at the top being rather the largeſt, and deſtitute of flowers, as in the two laſt. The *corolla* is often white. This is one of the ſpecies that has been longeſt cultivated in England, having been preſerved in the dwelling-houſe before green-houſes or ſtoves were invented.

5. L. *pinnata*. Pinnated Lavender. Linn. fil. Diſſ. 9. t. 1. Am. Acad. v. 10. 52. t. 2. Curt. Mag. 401. t. 400. Jacq. Miſc. v 2. 318. Ic. Rar. t. 106.—Leaves deeply pinnatifid; their ſegments wedge-ſhaped, obtuſe, nearly entire. Spike linear, ſomewhat branched.—Native of Madeira, from whence Mr. Maſſon ſent it in 1777. The *leaves* are finely hoary, with little ſcent, elegantly pinnatifid, and diſtinguiſhed by their obtuſe wedge-like ſegments. The *ſpikes* ſtand on very long ſtalks, and are much more ſlender than any of the former, often compound. The *bracteas* are imbricated, uniform, ovato-lanceolate, pointed, coriaceous, not membranous, ſlightly coloured, and there is no leafy crown at the ſummit. The *corolla* is of a delicate blueiſh-purple, like the Common Lavender, but larger and more ſhowy.

6. L. *multifida*. Cut-leaved Canary Lavender. Linn. Sp. Pl. 800. (L. folio multifido; Rivin. Monop. Irr. t. 54. f. 3. Stæchas multifida; Ger. em. 585.)—Leaves doubly pinnatifid, hoary. Spike ovate, moſtly ſimple. Bracteas woolly, elliptical, with diſtant ribs.—Native of Spain, Barbary, and the Canary iſlands. One of the ſpecies longeſt cultivated in England, though it requires protection in winter. The Hortus Kewenſis marks this plant as biennial, and we have a French ſpecimen marked annual. It has certainly more of an herbaceous than ſhrubby appearance. The *leaves* are hoary, doubly and very deeply pinnatifid, with decurrent ſegments, whoſe extremities are acute, and in ſome meaſure elliptical. *Spikes* rather ovate and thick, very rarely, if ever, producing a ſmall branch or two from the bottom. *Bracteas* membranous, broadly elliptical, beſprinkled with wool, furniſhed with three ſtrong ribs, equally diſtant from each other, and from the edge. There are no barren leafy bracteas at the top.

7. L. *abrotanides*. Southernwood-leaved Canary Lavender. Lamarck Dict. v. 3. 429. Willd. n. 7. (L. folio longiori, tenuiùs et elegantius diſſecto; Tourn. Inſt. 198. Comm. Rar. t. 27.)—Leaves doubly pinnatifid, with linear ſegments, nearly ſmooth. Spike linear, moſtly branched and interrupted. Bracteas ſmoothiſh, ovate, with approximated ribs.—Native of the Canaries, long known in gardens. The *ſtem* is ſhrubby. *Leaves* with finer, more linear, and greener ſegments than in the laſt. The narrowneſs and branching nature of the *ſpikes* more accord with L. *pinnata* than with *multifida*, with which latter this ſpecies has long been confounded. The *bracteas* alſo moſt reſemble thoſe of *pinnata*, but are more membranous, and far leſs hoary. Their ribs generally three, ſometimes five, are always cloſer together than in *multifida*.

The eighth ſpecies of Willdenow, L. *carnoſa*, Linn. fil. Diſſ. 9 t. 2. Am. Acad. v. 10. 52. t. 3. (Katu-Kurka; Rheede Hort. Mal. v. 10. 179. t. 90), found by Koenig on dry walls and rocks at Sadraſs in the Eaſt Indies, and ſent to Kew in 1788 by ſir Joſeph Banks, where it is kept in the ſtove, being a tender biennial, is moſt certainly not a *Lavandula*, but a *Plectranthus*, as its habit, and the large deflexed upper ſegment of its calyx, both evince. See Plectranthus.

Lavandula, in *Gardening*, compriſes plants of the ſhrubby evergreen kind, of which the ſpecies cultivated are, the common lavender (L. ſpica); the French lavender (L. ſtæchas); the tooth-leaved lavender (L. dentata); and the Canary lavender (L. multifida).

The firſt ſort has varieties with narrow leaves with blue flowers, and with white flowers with broad leaves, and dwarf lavender.

It may be remarked that this ſpecies is the common lavender; but the narrow-leaved variety with blue flowers is the ſort cultivated for its flowers for medicinal purpoſes.

And that the broad-leaved ſort has much ſhorter and broader leaves, and the branches are ſhorter, more compact, and fuller of leaves; it continues ſeveral years without producing flowers; and when it does, the leaves on the flowering-ſtalks approach nearer to thoſe of the common lavender, but are ſtill broader; the ſtalks grow taller, the ſpikes are looſer and larger, the flowers ſmaller, and appear a little later in the ſeaſon.

The ſecond kind has varieties with white flowers; and with purple flowers.

The fourth ſpecies has a variety which riſes with an upright, branching, ſquare ſtalk, four feet high; the leaves longer, and cut into narrower ſegments than the Spaniſh plant; they are of a lighter green, and almoſt ſmooth; the naked flower-ſtalk is alſo much longer, and terminated with a cluſter of ſpikes of blue flowers; at two or three inches below theſe are two ſmall ſpikes, one on each ſide; the flowers are ſmaller than thoſe of the firſt ſort.

Method of Culture.—All the ſorts are readily increaſed, by planting ſlips or cuttings of their young ſhoots in the ſpring. With the firſt two ſorts, a quantity of ſlips or cuttings ſhould be taken off in the early ſpring, as March or April, from three or four, to ſix inches long, ſtripping off the under leaves, then planting them in a ſhady border, four inches aſunder, giving a good watering, and repeating it occaſionally in dry weather. When the plants are well rooted in ſummer, they ſhould be tranſplanted into the places where they are to grow early in autumn, as September or October, with balls of earth about their roots.

And where the firſt ſort is intended to produce flowers for economical purpoſes, it ſhould be planted in rows, two or three feet aſunder, and about the ſame diſtance in the rows, or in a ſingle row one or two feet aſunder, along the edges or diviſions of garden-grounds, in a ſort of edging or dwarf hedge; in either of which modes the plants grow freely, continuing in root, ſtem, and branches ſeveral years, and produce abundance of ſpikes of flowers annually for gathering in the latter end of ſummer; the culture afterwards is principally to cut down any remaining decayed flower-ſtalks in autumn, pruning or cutting away any diſorderly out-growing branches at top and ſides, and digging the ground occaſionally in ſpring or autumn along the rows of plants.

In regard to the ſecond ſort, it may alſo often be raiſed from ſeeds, which ſhould be ſown in a bed of light earth in the early ſpring, and raked in evenly with a light hand. The plants riſe in about a month, when, if there be dry weather, water ſhould be given; and after they are three inches high, they ſhould be pricked out in beds, half a foot apart, watering them as they require, until freſh rooted. They ſhould ſtand here till the following ſpring, and then be thinned out, and planted where they are to remain.

The third and fourth ſorts may be increaſed by ſlips and cuttings, planted in pots, in the early ſpring months, and placed under frames, due water, and ſhade from the mid-day ſun, being given till they are rooted; when a little advanced in growth, tranſplanted into ſeparate ſmall pots, and managed as other green-houſe exotic plants.

The two firſt ſorts are uſeful for their fine ſpikes or flowers, as well as ornamental in aſſemblage with other ſhrubby plants, in the borders and clumps of pleaſure-grounds; and the two laſt ſorts in the green-houſe collection with other plants. Thoſe deſigned for ſhrubberies or other ſimilar places, being previouſly raiſed to ſome tolerable buſhy growth, and a foot high or more, ſhould be planted either in the early autumn, or in the ſpring, diſpoſing them ſingly at proper diſtances in the fronts of the clumps, borders, &c. See LAVENDER.

LAVANDULA, *Lavender*, in the *Materia Medica*. The common lavender, or lavandula ſpica, was formerly conſidered, ſays Woodville, as a ſpecies of Nardus, and appears to be the pſeudo-nardus of Matthiolus and Pliny. This plant, which grows ſpontaneouſly in many of the ſouthern parts of Europe, appears from Turner to have been cultivated in England previouſly to the year 1568. The fragrant ſmell of the flowers is well known, and to moſt perſons is agreeable; to the taſte they are bitteriſh, warm, and ſomewhat pungent; the leaves are weaker, and leſs grateful.

The flowers and ſummits of the narrow-leaved or common lavender are, in a very eminent degree, cephalic and nervine. They are often employed as a perfume, and medicinally as mild ſtimulants and corroborants, in palſies, vertigoes, lethargies, and tremors of the limbs, both internally and externally.

The flowers are ſometimes uſed in the form of a conſerve, into which they are reduced by beating them, while freſh, with thrice their weight of double refined ſugar. Water extracts by infuſion nearly all the virtue both of the leaves and flowers: in diſtillation with water, the leaves yield a ſmall portion of eſſential oil; but the flowers, in their moſt perfect mature ſtate, about one ounce from ſixty. Woodville obſerves, that in order to obtain the largeſt quantity of eſſential oil from theſe and moſt other flowers of this kind, they ſhould be allowed to grow to their full maturity, and be dried for ſome time. This oil is of a bright yellow colour, a very pungent taſte, and poſſeſſes, if carefully diſtilled, the fragrance of the lavender in perfection: it is given internally from one drop to five, and employed in external applications for ſtimulating paralytic limbs, and for deſtroying cutaneous inſects. It is alſo ſaid, that if ſpongy paper be dipped in this oil, and applied to the parts, it immediately kills the pediculi inguinales. Rectified ſpirit extracts the virtue of lavender more completely than water. The ſimple ſpirit of lavender, prepared by pouring a gallon of proof ſpirit on two pounds of the freſh gathered flowers, adding water ſufficient to prevent empyreuma, macerating for 24 hours, and diſtilling a gallon by a gentle fire, is richly impregnated with the fragrance of the flowers. More compounded ſpirits, in which other aromatics are joined to the lavender, have been diſtinguiſhed by the name of Engliſh or palſy drops: the college of London (1809) directs three pints of the ſimple ſpirit of lavender, and one pint of ſpirits of roſemary, to be digeſted on half an ounce of cinnamon, half an ounce of nutmegs, both bruiſed, and an ounce of red ſanders wood ſliced as a colouring ingredient, macerating for 14 days, and then ſtraining; the college of Edinburgh, to the ſame quantity of both ſpirits, orders one ounce of cinnamon, two drams of cloves, half an ounce of nutmegs, and three drams of red ſanders. Theſe preparations are taken internally on ſugar or in any convenient vehicle, from ten to one hundred drops, and uſed externally in embrocations, &c.

The medicinal virtue of lavender reſides in the eſſential oil, which is ſuppoſed to be a gentle corroborant and ſtimulant of the aromatic kind; and is recommended in nervous debilities and various affections proceeding from a want of energy in the animal functions. According to Dr. Cullen (Mat. Med. vol. ii.) it is, "whether externally applied or given internally, a powerful ſtimulant to the nervous ſyſtem; and among the others of this order, named cephalics, the lavender has a very good and perhaps the beſt title to it." And he further ſays, "it appears to me probable, that it will ſeldom go farther than exciting the energy of the brain to a fuller impulſe of the nervous power into the nerves of the animal functions, and ſeldom into thoſe of the vital. It was, however, with great propriety, that profeſſor Murray diſſuaded its uſe where there is any danger from a ſtimulus applied to the ſanguiferous ſyſtem. It is however ſtill probable, that lavender commonly ſtimulates the nervous ſyſtem only, and therefore may be more ſafe in palſy than the warmer aromatics, eſpecially if the lavender be not given in a ſpirituous menſtruum, or along with heating aromatics, which however is commonly done in the caſe of the ſpiritus lavendulæ compoſitus." The officinal preparations of lavender are the eſſential oil, a ſimple ſpirit, and a compound tincture, already mentioned.

The broad-leaved lavender, a variety of the former, to which foreign writers have given the name of ſpike, is ſtronger both in ſmell and taſte than the other, and yields in diſtillation almoſt thrice as much eſſential oil; but the flavour of the oil and of the plant itſelf is much leſs grateful: the oil is likewiſe of a much darker colour, inclining to green. This oil, mixed with ¾ths of rectified ſpirit, or oil of turpentine, was the "Oleum ſpicæ," formerly highly celebrated as an application to indolent tumours, old ſprains, diſeaſed joints, &c. See *Oil of* SPIKE.

LAVANGE, in *Geography*, one of the Virgin iſlands in the Weſt Indies; three miles S.E. from the iſland of St. Thomas.

LAVANSAARI, an iſland of Ruſſia, on the coaſt of Livonia, 80 miles from the capital, four miles and a half long, and two broad, ſurrounded on the N.W. ſide by iſlets and ſhallows, having three tolerable harbours, and occupied by about 40 families. Some patches of ſoil are cultivated, and in the middle of the iſland is a ſmall lake.

LAVANT SEE, a lake of Stiria; nine miles E. of Neumarck.

LAVARA, in *Ancient Geography*, a town of Hiſpania, in the interior of Luſitania. Ptolemy.

LAVARDAC, in *Geography*, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Nérac. The place contains 928, and the canton 9482 inhabitants, on a territory of 182½ kiliometres, in 13 communes.

LAVARETUS, in *Ichthyology*, the name of a ſmall fiſh called by ſome the *gang-fiſh*, and the *rhingau*, and by Maregrave the *curimata*. It ſeems of a middle nature, between the trout and herring kind, and is caught in vaſt quantities, in the months of March and April, in ſeveral of the lakes in Germany, and is pickled, and ſent to different parts of the world. It ſeldom grows to more than four inches long.

LAVARETUS. See SALMO *Lavaretus*.

LAVATER, JOHN GASPARD CHRISTIAN, in *Biography*, was born at Zurich in 1741. He was intended for the Proteſtant miniſtry, and entered upon holy orders in 1761. He acquired an early reputation by the eloquence of his pulpit diſcourſes, and the zeal and benevolence with which he fulfilled the duties of his functions. He felt an early propenſity to read the human countenance, and frequently exerciſed the pencil in ſketching ſuch features as had made a particular impreſſion on him, which he ſtudied with great attention. Accident led him to the ſtudy of phyſiognomy; ſtanding at a window with Dr. Zimmerman, he was led to make ſome remarks on the ſingular countenance of a ſoldier that was paſſing by, which induced the phyſician to urge him to purſue and methodize his ideas. He accordingly began the purſuit, and in proceſs of time, with the natural progreſs of an enthuſiaſtical mind, acquired not only a fondneſs for the ſtudy, but a full conviction of the reality of the phyſiognomical ſcience, and of his own great diſcoveries in it. In 1776, he publiſhed the firſt fruits of his labours in a quarto volume, entitled "Fragments." He took in them a wide range of inquiry, and carried his ideas of phyſiognomy beyond the obſervation of thoſe parts of the countenance which exhibit to a common eye the impreſſions of mental qualities and affections, and maintained, as a leading poſition, "that the powers and faculties of the mind have repreſentative ſigns in the ſolid parts of the countenance." Two more volumes appeared in ſucceſſion, which preſented a moſt extraordinary aſſemblage of curious obſervations, ſubtle and refined reaſoning, delicate feeling, and philanthropical and pious ſentiment, together with a large admixture of paradox, myſticiſm, whim, and extravagance. The whole is illuſtrated with a great number of engravings; many of which are highly finiſhed and ſingularly expreſſive. The work was ſoon tranſlated into the French and Engliſh languages, and for a time became the favourite topic of literary diſcuſſion. The work now is rarely referred to except for the plates; the ſcience itſelf is gone into utter neglect. Lavater is well known for a work entitled "Aphoriſms on Man," of which an Engliſh tranſlation was publiſhed in 18mo. in the year 1788. He was a zealous Chriſtian, and tranſlated into the German language "Bonnet's Enquiry into the Evidences of Chriſtianity." His popularity as a preacher and paſtor was extremely great at Zurich, where the people exhibited to him tokens of the higheſt reſpect and the moſt affectionate veneration, and he was applied to by perſons of all ranks as the arbiter of controverſies among them. His moral character was exemplary, and his ardent zeal for doing good was ſcarcely at any time ſurpaſſed. No man was ever a more determined oppoſer to tyranny and intolerance in every ſhape; he had the true Swiſs zeal for liberty. This noble ſpirit rendered him a friend to the French revolution at the outſet, but when the republican rulers began to diſplay a ſyſtem of rapine and extortion, and to extend this even to Switzerland, he was the boldeſt of their antagoniſts. When Zurich was ſtormed in 1797, he ruſhed into the ſtreets, and received a ſevere wound in the breaſt from a Swiſs ſoldier, on whom he had conferred important benefits. From the effects of this he never entirely recovered; but the activity of his mind was unſubdued till a ſhort time before his death, which happened on the 2d of January 1801, when he was in the ſixtieth year of his age. A warm deſire to promote the honour of God, and the good of his fellow creatures, was the principal feature in his character, and the leading motive of all he did. Next to theſe were an indefatigable placability, and an inexhauſtible love for his enemies. Monthly Mag. Ann. Regiſter.

LAVATERA, in *Botany*, ſo named by Tournefort, in the Memoirs of the Academy of Paris for 1706, after Dr. Lavater, a phyſician of Zurich, who is ſaid to have written nothing on the ſubject of botany, nor have we any information concerning him. Linn. Gen. 354. Schreb. 465. Willd. Sp. Pl. v. 3. 793. Mart. Mill Dict. v. 3. Sm. Fl. Brit. 742. Juſſ. 272. Cavan. Diſſ. 86. Lamarck. Illuſtr. t. 582. Gærtn. t. 136.—Claſs and order, *Monadelphia Polyandria.* Nat. Ord. *Columniferæ*, Linn. *Malvaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth double; the outer of one leaf, three-cleft, obtuſe, ſhorteſt, permanent; inner of one leaf, cut half way down into five ſegments, ſharper and more erect, likewiſe permanent. *Cor.* Petals five, inverſely heart-ſhaped, flat, ſpreading, their lower parts attached to the tube of the filaments. *Stam.* Filaments numerous, united below into a tube, ſeparating looſely at its top and ſides, anthers kidney-ſhaped. *Piſt.* Germen ſuperior, orbicular depreſſed; ſtyle cylindrical, ſhort; ſtigmas ſeveral, from ſeven to fourteen, briſtle-ſhaped, as long as the ſtyle. *Peric.* Capſules numerous, equal in number to the ſtigmas, of two valves, opening inwards, ranged in a depreſſed circle round the columnar receptacle, at length deciduous. *Seeds* ſolitary, kidney-ſhaped.

Eſſ. Ch. Calyx double; the outer three-cleft. Capſules numerous, ranged in a circle, ſingle-ſeeded.

One of the moſt handſome of the malvaceous order, at leaſt of thoſe found in Europe, to which quarter of the world, and the north of Africa, the whole genus is confined; for the Linnæan *L. americana* is no other than *Sida abutiloides* of Jacquin, and Willdenow, n. 48. Eight ſpecies, excluſive of this, are detailed in Syſt. Veg. ed. 14; Willdenow has twelve, ſeven of which are ſhrubby, five herbaceous and moſtly annual.

In the firſt ſection are

L. *arborea.* Sea Tree-Mallow. Linn. Sp. Pl. 972. Cavan. Diſſ. t. 139. f. 2. Engl. Bot. t. 1841.—Stem arboreſcent. Leaves downy, plaited, with ſeven angles. Flower-ſtalks axillary, cluſtered, ſingle-flowered.—Found upon rocky cliffs on the ſouth-weſt coaſt of England and eaſt coaſt of Scotland, as well as in other parts of Europe, flowering in July and Auguſt. It is naturally biennial, though of a ſhrubby habit and above ſix feet high, for it bloſſoms but once, though it will, in a garden, ſometimes ſurvive many winters before that event takes place. The *ſtem* is round and thick, branching at the top chiefly, where it forms a leafy head. The *leaves* are alternate, ſtalked, pliable and downy, of ſeven ſhallow crenate lobes. *Flowers* numerous, axillary, purple, very like thoſe of the common *Malva ſyveſtris*, but rather more handſome.

L. *triloba.* Three-lobed Tree-Mallow. Linn. Sp. Pl. 972. Jacq. Hort. Vind. v. 1. 30. t. 74.—Stem ſhrubby. Leaves rounded, crenate, ſomewhat heart-ſhaped, ſlightly three-lobed. Stipulas heart-ſhaped. Flower-ſtalks aggregate, ſingle-flowered.—Found on the coaſts of Spain and France. With us it is a greenhouſe plant, not eaſily kept nor much valued, being far more beautiful on its native rocks, where the light hoary green of its copious *foliage*, is prettily contraſted with the large, very delicate, roſe-coloured *flowers*. The broad *ſtipulas* are remarkable.

L. *maritima.* Soft Single-flowered Tree-Mallow. Gouan. Illuſtr. 46. t. 21. f. 2. (Althæa frutex Cluſii; Ger. em. 933.)—Stem ſhrubby. Leaves rounded, crenate, bluntly angular, ſoft and downy. Stalks axillary, ſolitary, ſingle-flowered.—Native of Spain and the ſouth of France. Linnæus did not diſtinguiſh its ſynonyms from the laſt, though it differs abundantly in the much greater ſoftneſs of the *leaves*, want of *ſtipulas*, and the ſolitary *flower-ſtalks*. The *flowers* are large and elegant, of a light purple with dark claws. We have ſeen this ſpecies bloſſoming in Mr. Angerſtein's fine conſervatory at Blackheath, but it finds no place in the 1ſt edition of *Hort. Kew.* or the 5th of *Hort. Cant.*

Of the ſecond ſection are

L. *thuringiaca.* Great-flowered Lavatera. Linn. Sp. Pl. 973. Jacq. Auſtr. t. 311. Curt. Mag. t. 517.—Stem herbaceous, downy. Leaves ſomewhat downy; the lower ones angular; the upper three-lobed. Flower-ſtalks axillary, ſingle-flowered.—Native of Hungary, Tartary, Germany, &c. about hedges; a hardy perennial in our gardens, flowering from July to September, and propagated either by root or by ſeed; yet as Curtis obſerves "it is rarely met with in any of our collections;" poſſibly becauſe the *trimeſtris* is preferred. The *ſtems* are few, erect, three or four feet high, clothed with ſhort ſoft hairs. *Leaves* ſtalked, dependent, but ſlightly downy. *Flowers* on long ſolitary ſtalks, with large, pink, veiny petals, inverſely heart-ſhaped, their ſinuſes "puckered" as Curtis ſays; but this is not repreſented by Jacquin in his wild plant, and is perhaps an indication of luxuriance only.

L. *cretica*. Small-flowered Lavatera. Linn. Sp. Pl. 973. Jacq. Hort. Vind. v. 1. 15. t. 41.—Stem herbaceous, rather hairy. Leaves acutely five-lobed. Flower-ſtalks axillary, aggregate.—Native of Crete, cultivated by Miller in 1768, and we believe ſtill preſerved in Chelſea garden, coming up ſpontaneouſly from ſeed, the root being annual. There is nothing to recommend it to general admiration, the *flowers* being far leſs ornamental than the wild *Malva ſylveſtris*, which the plant reſembles in herbage. We have a ſpecimen from the Goettingen garden named *Lavatera ſylveſtris* of Link.

L. *trimeſtris*. Spaniſh Annual Lavatera. Linn. Sp. Pl. 974. Jacq. Hort. Vind. v. 1. 29. t. 72. Curt. Mag. t. 109.—Stem herbaceous, rough with deflexed hairs. Leaves ſmoothiſh, heart-ſhaped, angular; the lower ones rounded. Flower-ſtalks ſolitary, ſhorter than the leaves.—Native of Spain, France, and the Levant, a hardy annual in our gardens, where it is raiſed without trouble, producing abundance of large, pink or white, very ſhowy bloſſoms, all ſummer long. The *ſtem* is branched, two feet high, rough in the upper part eſpecially, with ſimple deflexed hairs. The *leaves* are nearly ſmooth on the upper ſide, more or leſs downy beneath, all heart-ſhaped; the upper ones moſt angular, the lower more rounded, but ſtill rather lobed. *Flower-ſtalks* hairy, ſhorter than the leaves.

L. *punctata*. Dotted-ſtalked Lavatera. Allion. Auctuar. 26. Willd. n. 11. (Malva folio vario; Bauh. Prodr. 137. t. 137.)—Stem herbaceous, rough with ſtarry points. Leaves downy; the lower ones rounded, the upper haſtate. Flower-ſtalks ſolitary, elongated.—Native of the country about Nice, according to Allioni, who firſt, among modern botaniſts, determined this very diſtinct ſpecies, but did not advert to Bauhin's ſynonym, which Linnæus had referred to the preceding, but which, from the excellent figure and deſcription, we have no heſitation in applying to this. *L. punctata* is an annual, diſtinguiſhed from the laſt by its ſtarry pubeſcence, much more downy *foliage*, and much ſmaller purple *flowers*, on longer and more ſlender ſtalks. The *leaves* alſo grow on long footſtalks, and differ greatly in ſhape, the lower ones being heart-ſhaped, ſhort and rounded, ſlightly lobed; ſome higher up deeply and ſharply five-lobed; but moſt of the upper ones haſtate; all are crenate. The *calyx* is ſoft and downy.

LAVATERA, in *Gardening*, comprehends plants of the herbaceous perennial kinds, of which the ſpecies moſt generally cultivated are the Cretan lavatera (L. cretica); the common annual lavatera (L. trimeſtris); the great-flowered lavatera (L. thuringiaca); the tree lavatera or mallow (L. arborea); the downy-leaved lavatera (L. olbia); the three-lobed lavatera (L. triloba); and the Portugueſe lavatera (L. luſitanica.)

The firſt ſort varies with red flowers, with white flowers, and with purple flowers.

The ſecond kind has likewiſe ſeveral varieties.

Method of Culture.—The firſt two, or annual ſorts, are readily increaſed, by ſowing the ſeeds in a light ſoil in the places where the plants are to remain, or in pots, in the ſpring ſeaſon, as about the latter end of March, in patches of four or five in each, giving them water occaſionally when the weather is dry. When the plants have attained a little growth, they ſhould be thinned out to one or two of the ſtrongeſt plants. When any are to be removed to other places, it ſhould be done at this period, and with a little earth about the roots, due water and ſhade being given; but they ſeldom ſucceed well by tranſplanting.

All the other ſhrubby perennial ſorts may likewiſe be increaſed by ſowing the ſeeds, and managing the plants in the ſame manner. Moſt of theſe ſorts will not laſt more than two years in this climate, unleſs the ſoil be dry, when they continue three or four.

They in general require a warm dry ſituation, or to have their roots covered by old tan, or the protection of the greenhouſe during the ſeverity of the winter ſeaſon.

Theſe plants are highly ornamental in different parts of pleaſure-grounds. The annual ſorts have great beauty, in their flowers being large, numerous, and conſpicuous, and are proper where large ſhowy-flowering plants are required. The perennial kinds are alſo ſuitable for large borders and ſhrubbery compartments, having large, ſtraight, upright, durable ſtems, terminated by branchy buſhy heads, and very large ſoft foliage; that form a variety in aſſemblage with other plants, though their flowers are often hidden by their large leaves.

LAVATION, in *Antiquity*, a feaſt of the Romans, in honour of the mother of the gods, inſtituted in memory of the day when the worſhip of Cybele was transferred from Phrygia to Rome, and celebrated on the twenty-fifth of March.

LAVATORY, or LAVADERO, a name given to certain places in Chili and Peru, where gold is got out of earth by waſhing.

M. Frezier gives us the following deſcription of the lavatories of Chili: they dig deep into the earth, in ſuch places as they have reaſon to expect gold in; and, in order to facilitate this digging, they turn a ſtream of water upon the ſpot, looſening the earth as much as poſſible all the time, that the current may have the greater effect, and tear up the earth more ſtrongly. When they are got to the earth they want, they turn off the ſtream, and dig dry.

The earth that they now get is carried on mules, and diſcharged into a baſon, made ſomewhat in the manner of a ſmith's bellows, into which a little rivulet of water runs with a great deal of rapidity, diſſolving the parts of the earth, and carrying every thing away with it, excepting the particles of gold, which, by their great weight, precipitate to the bottom of the baſon, and mix with a fine black ſand, where they are almoſt as much hidden as they were before in the earth. See *Hiſtory of* GOLD.

Sometimes they find very conſiderable pieces in lavatories, particularly ſome pieces of 24 ounces each. There are ſeveral lavatories where they find theſe pepitas, or pieces of virgin gold, of a prodigious ſize. Among others, they tell of one that weighed 512 ounces, bought by the count de la Moncloa, viceroy of Peru.

Nine or ten leagues to the eaſt of Coquimbo are the lavatories of Andacoll; the gold of which is 23 carats fine. Their work here always turns to great profit, excepting when the water fails them. The natives maintain that the earth is creative *(creatrix)*; that is, it produces gold continually; becauſe, after having been waſhed ſixty or eighty years, they find it impregnated afreſh, and draw almoſt as much out of it as at firſt.

LAVATRIS, in *Ancient Geography*, a place of Great Britain, mentioned in Antonine's 5th Iter, ſituated between Cataractoni or Cataract, and Verteris or Bough, and ſuppoſed to be Bowes in Yorkſhire.

LAVAUR, in *Geography*, a town of France, and chief place of a diſtrict, in the department of the Tarn, before the revolution the ſee of a biſhop; 18 miles N.E. of Toulouſe.

houſe. The place contains 6237, and the canton 14,730 inhabitants, on a territory of 252½ kiliometres, in 22 communes. N. lat. 43° 41′. E. long. 1° 53′.

LAUBACH, a town of Germany, in the principality of Solms Laubach; 40 miles N.E. of Mentz. N. lat. 50° 32′. E. long. 8° 59′.

LAUBAN, or LUBAN, a town of Luſatia, on the river Queiſs, ſurrounded by a wall and ſome baſtions. The trade of the place in cloth and linen is conſiderable; 13 miles E.S.E. of Gorlitz.

LAUCHA, a town of Saxony, in Thuringia, on the Unſtrutt; 32 miles N.E of Erfurt. N. lat. 51° 14′. E. long. 11° 47′.

LAUCHHEIM, a town of Germany, belonging to the Teutonic knights; 10 miles W. of Nordlingen. N. lat. 48° 50′. E. long. 10° 14′.

LAUCHSTADT, a town of Saxony, in the territory of Merſeburg; 4 miles W. of Merſeburg. N. lat. 51° 26′. E. long. 12° 1′.

LAUCKISSKEN, a town of Pruſſia, in the circle of Samland; 25 miles E.N.E of Konigſberg.

LAUD, WILLIAM, in *Biography*, archbiſhop of Canterbury, the ſon of a clothier of Reading, in Berkſhire, was born in October 1572, and having received his grammar learning at the ſchool of that town, he was ſent to the univerſity of Oxford in 1589, where he was entered of St. John's college. Of this college he was admitted a fellow, and at the proper periods he took his degrees. In early life he was eſteemed by all who knew him as a very forward, confident, zealous perſon. He was ordained deacon in 1600, and in the following year he took prieſt's orders, and read a divinity lecture in the college. It was about this time that he maintained the conſtant and perpetual viſibility of the church of Chriſt, derived from the apoſtles to the church of Rome, and continued in that church till the reformation. In 1603, he was choſen proctor of the univerſity, and in the ſame year he was appointed chaplain to Charles Blount, earl of Devonſhire. In 1604, he took his degree of bachelor of divinity, and in the exerciſe which he performed on this occaſion he maintained the neceſſity of baptiſm; and that there could be no true church without dioceſan biſhops. From the drift of his diſcourſe he was ſuppoſed to be ſtrongly inclined to popery. Dr. Abbot had already been his antagoniſt, and on this occaſion he made no ſcruple of charging him with being a Papiſt in the moſt public manner, ſo that it was ſcarcely ſafe to be conſidered his friend and companion. In the year 1605, Mr. Laud married the earl of Devonſhire, his patron, to Penelope, the late wife of lord Rich, who had been divorced from him for adultery. In juſtification of himſelf, he contended that the innocent and guilty might lawfully marry again, after a divorce had been obtained. The part which he took in this affair expoſed him to much cenſure from the public, gave great offence to the ſovereign, and made ſo deep an impreſſion on the mind of Laud, that he ever afterwards obſerved the anniverſary of the marriage as a day of faſting and humiliation. His firſt preferment in the church was to the vicarage of Stamford, in Northamptonſhire, in the year 1607, which led to other ſituations of more value and importance. In 1611, he was elected preſident of St. John's college, and very ſoon after was appointed one of his majeſty's chaplains. He had now great hopes of riſing with rapidity to the higheſt honours, but his expectations were ſo completely diſappointed, that in the year 1614 he had determined to withdraw from the court. By the perſuaſion of Dr. Neile, biſhop of Lincoln, he was induced to remain there another year; to keep up his ſpirits the prelate gave him a prebend in the church of Lincoln, and, in the following year, the archdeaconry of Huntingdon. In 1616, the king preſented Dr. Laud to the deanery of Glouceſter, and at the ſame time required him to reform and ſet in order whatever was amiſs in that cathedral. He was diligent in obeying the royal mandate, and made great alterations in the church, which being effected, he recommended, that the members of that church ſhould make their humble reverence to God not only at their firſt entrance into the choir, but at their approaches to the holy table, which he had removed from the middle of the church to the eaſt end of the choir. Theſe changes gave great offence to many perſons on account of their ſuperſtitious tendency, particularly to Dr. Miles Smith, biſhop of Glouceſter, who from that moment would never enter the church again ſo long as he lived. Laud now began to take an active part againſt the Puritans; and he was alſo very deſirous to bring the church of Scotland to an uniformity with that of England: with this view he attended the king in a journey to Scotland, but nothing was gained by the expenſive tour, excepting that the king ſaw his commands neglected, and his authority contemned. Upon his return he was made a prebend of Weſtminſter, and in the following year he was nominated to the biſhopric of St. David's, chiefly through the intereſt of the lord-keeper Williams, at the inſtigation of the favourite Buckingham, to whom Laud had recommended himſelf. In the year 1622, biſhop Laud held a conference with Fiſher, a Jeſuit, before the marquis of Buckingham and his mother, in order to confirm them both in the Proteſtant religion, with reſpect to which they were then wavering. From this time a cloſe intimacy ſubſiſted between Laud and Buckingham, who made the biſhop his confeſſor and counſellor; and when he went with prince Charles into Spain, left him as his agent at court, with whom he maintained a frequent correſpondence. In the courſe of this, he inſinuated ſome heavy charges againſt his friend, the lord-keeper Williams. This circumſtance occaſioned a ſettled enmity between the two biſhops, Williams accuſing Laud of the deepeſt ingratitude on that account. Laud correſponded with the duke of Buckingham during his journey to France, to bring about a marriage between the princeſs Henrietta-Maria and king Charles I. Supported by Buckingham's favour, to whom he is charged with having rendered himſelf too ſubſervient, biſhop Laud gained the confidence of the new king, and it was ſaid that theſe two men ſtopped up both the king's ears from any other doctrines in church or ſtate, but what was infuſed by them. Laud was deſired by king Charles to make out a liſt of the eminent divines with their principles and qualifications, that from this liſt he might ſelect his chaplains, and others for promotion in the church. Laud quickly gave in his liſt, of whom his friends had the mark O againſt their names, for "orthodox," but thoſe whom he did not delight to honour, he branded with a P, ſignifying, that they were Puritans, and, as ſuch, ought not to be truſted with any power whatever. At the coronation in 1626, Laud officiated as dean of Weſtminſter, by the king's appointment, in the room of biſhop Williams, who was in diſgrace. In the ſame year he was tranſlated from St. David's to the biſhopric of Bath and Wells, and was alſo appointed dean of the chapel royal. In 1627 he was ſworn a member of the privy council, and, in 1628, tranſlated to the ſee of London. By the advice of Laud all eccleſiaſtical preferments were given away, and the whole country was almoſt entirely governed. Upon the aſſaſſination of the duke of Buckingham he prevailed on the king to ſend to the judges for their opinion, “whether, by law, Felton might not be racked:” they returned a decided opinion, “that he could not be racked by the laws of England.” Biſhop Laud was the moſt active and leading member of the high-commiſſion court, the arbitrary and ſevere proceedings of which were juſtly odious to the nation. For an inſtance of the extreme rigour and cruelty of their proceedings, we refer to the article LEIGHTON, a learned Scotch prelate, who was ſentenced to ſtand in the pillory, and to have his ears cut off, and his noſe ſlit, and then to be impriſoned for life, on account of a book which he had written. No ſooner was the ſavage ſentence paſſed, than biſhop Laud pulled off his cap, and gave God thanks for it. In the year 1630, biſhop Laud was elected chancellor of the univerſity of Oxford, to which he was a great benefactor. He adorned it with many noble buildings, and enriched it with books and curious MSS. in almoſt all the known languages of the world, procured at an immenſe expence. In 1631, biſhop Laud undertook to repair and beautify St. Paul's cathedral, which he accompliſhed in a very magnificent ſtyle; but to raiſe the money which was expended, he reſorted to ſo many oppreſſive and unjuſtifiable methods, that it became the common proverb, that St. Paul's was repaired with the ſins of the people. Laud ſhewed great zeal in obtaining the utmoſt deference to all the external rites and ceremonies of the church, and he cauſed the ſeveral churches, in which he took an intereſt, to be adorned with all kinds of pictures, images, and altar-pieces, all which circumſtances led the people to ſuſpect, that he was too much inclined to the papal religion, if he were not already a Papiſt in his heart. This ſuſpicion was ſtill ſtrengthened by his declaration, that in the diſpoſal of all eccleſiaſtical preferments, he ſhould give a moſt decided preference to ſingle men, ſuppoſing the abilities of the ſingle and married to be otherwiſe equal. In 1633, he attended the king in a journey to Scotland, and was preſent at his coronation for that country, which ceremony was performed in the abbey church of Holyrood-houſe. While in Scotland, he took every opportunity of urging the clergy to conformity with the church of England, but in this he was completely unſucceſsful. Almoſt immediately after his return, Abbot, the archbiſhop of Canterbury, died, and Laud was inſtantly appointed his ſucceſſor. He was, almoſt at the ſame moment, offered a cardinal's hat, which he declined, but upon what grounds he refuſed the honour is not known, though various motives have been aſſigned. He now carried matters very high, drove many of the French and Dutch Proteſtants, to whoſe anceſtors Edward VI. had given an aſylum, out of the kingdom; and either impriſoned or ſilenced many worthy clergymen, who refuſed to read the king's declaration for allowing lawful ſports on Sundays after divine ſervice. He was ſtill more ſevere againſt thoſe who were any ways ſuſpected of puritanical principles. Some of them, by an exertion of arbitrary power, were fined, impriſoned, and even whipped, and kept to hard labour. Laud was, in 1635, nominated to other high offices, among which was the office of a commiſſioner of the treaſury. He now procured the lord treaſurer's ſtaff for his friend Dr. Juxon, the biſhop of London, which gave great offence to the people. (See JUXON.) We cannot give any thing like a detail of the many proſecutions in which the archbiſhop was almoſt conſtantly engaged, they will be found in other articles of this work. (See BASTWICK, PRYNNE, &c.) It is ſufficient to ſay in this place, that theſe proſecutions were cruel, illegal, and tyrannical; but they were not borne by the people without deep, though ſilent, complaints. Never was man more hated, or more deſervedly ſo: there ſtill exiſted in the country the printing preſs, by means of which his proceedings and character, and the arbitrary meaſures of the court, were expoſed to the whole nation, in a ſecret manner. He accordingly procured a decree to be made in the ſtar-chamber, which ordained, that the number of printers ſhould be limited; and thoſe who were allowed to follow the profeſſion, ſhould not be allowed to print any books of divinity, law, phyſic, philoſophy, or poetry, till they had been licenſed by the archbiſhop of Canterbury, or the biſhop of London for the time being, upon pain of very grievous penalties. Theſe proceedings, though they might be uſeful to the court for a ſhort time, created ſo many enemies to the exiſting ſtate of things, that there was great danger of ſome ſudden convulſion. Many of the beſt men in the country, to avoid perſecution, retired to America for an aſylum, and a multitude of others would have followed their example, had not the archbiſhop obtained an edict to prevent any one from leaving the kingdom without a licence for that purpoſe. This was a degree of ſeverity ſcarcely paralleled in the Chriſtian world, but it anſwered no good end, for the people took a general diſguſt, and almoſt the whole of England was filled with Puritans. Laud did not confine his arbitrary meaſures to England, but was equally violent in his plans with regard to Scotland, ſo that he drew upon his head the hatred of that kingdom, and provoked the reſiſtance which led to the renewal of the ſolemn league and covenant, ſubſcribed by king James, and the whole nation in the year 1590. The attempt made in 1637, to force on the Scotch the new liturgy, was the firſt ſtep which called forth the open oppoſition of all ranks. The king at firſt raiſed a powerful army to reduce the covenanters to ſubmiſſion, but when he had marched to the borders of Scotland, he found the preparations made to receive him ſo ſerious, and he knew that his Proteſtant nobility and ſoldiers were not zealouſly affected in his cauſe, that he found himſelf compelled to ſeek for a general pacification. It was ſoon diſcovered that the idea of war was not abandoned, but only deferred, and that the Engliſh court were reſolved to ſubdue the ſpirit of the people in Scotland. Laud and Strafford were the adviſers of this reſolution, and to raiſe ſupplies, application was made to the Engliſh parliament, which, after an interval of twelve years, was ſummoned to meet at Weſtminſter for that purpoſe. The commons not only refuſed to comply with the deſires of the crown, but appointed committees to conſider the grievances under which they laboured. The king wiſhed them to commence with a ſubſidy bill, which they refuſed; he at length diſſolved the parliament, in great anger, before a ſingle act was paſſed. All the engines of arbitrary power were ſet to work to raiſe money for the war, and thoſe who refuſed to comply with the demands made upon them were fined and impriſoned. The greater part of the odium of theſe oppreſſions fell upon the archbiſhop, of whom the populace expreſſed their deteſtation in the moſt open way that they dared. On one occaſion, *viz.* on May 9th, 1640, a paper was poſted up, exhorting the London apprentices to attack the palace at Lambeth, but the archbiſhop having had timely notice of their intentions, fruſtrated their deſigns, and diſperſed the multitude, amounting to the number of 500 perſons. One of them was taken in the act of breaking the windows, and was cruelly put to death as a traitor, but this extreme ſeverity only ſerved to inflame the mob ſtill more againſt the archbiſhop. Another circumſtance which contributed to encreaſe the number of the archbiſhop's enemies, was his continuing the convocation of the clergy after the diſſolution of the parliament, by which he obtained ſeveral ſubſidies granted by the clergy, which the Commons had refuſed till their grievances were redreſſed. At length the neceſſities of the ſtate obliged the king to call a new parliament, and, as ſoon as it met, the canons and conſtitutions of the late convocation came before the houſe of commons. Theſe, being diſcuſſed, were declared "to contain many matters contrary to the king's prerogative, to the fundamental laws and ſtatutes of the realm, to the rights of parliament, to the property and liberty of the ſubject, and matters tending to ſedition, and of dangerous conſequence." In the courſe of the debates the archbiſhop's character was warmly attacked, and in ſome of the ſpeeches he was charged with the treaſonable deſign of ſubverting the religion and laws of the country. On the next day articles againſt the archbiſhop, preſented by the Scotch commiſſioners, were read in the houſe of lords, and then reported to the houſe of commons, in a conference between the two houſes. The reſentment of parliament broke out into a flame, and a motion was made and carried that he had been guilty of high treaſon. Upon this, Denzil Hollis, ſon of the earl of Clare, was immediately ſent up to the bar of the houſe of lords, to impeach him in the name of the Commons of England, to inform their lordſhips, that, in convenient time, they would bring up the particulars of their charge, and to requeſt, that in the mean time he might be committed to ſafe cuſtody. His grace being now commanded to withdraw, he requeſted leave to ſay "that he was heartily ſorry for the offence taken againſt him, but humbly deſired their lordſhips to look upon the whole courſe of his life, which was ſuch, that he was very ſure not one man in the houſe of commons did believe, in his heart, that he was a traitor." He was now committed to the cuſtody of the gentleman uſher of the black rod; and on the 26th of February, fourteen articles were brought up from the Commons by ſir Henry Vane, the younger. He was then committed to the Tower, and in his paſſage thither he had to undergo the loud and deep curſes of an enraged populace. One of the firſt ſteps taken againſt him was levying upon his property a fine of twenty thouſand pounds, for his proceedings in the convocation held in 1640. In June 1641, he reſigned the chancellorſhip of the univerſity of Oxford, and in the following October, the houſe of lords ſequeſtered his archiepiſcopal juriſdiction. His confinement in the Tower was very ſevere, and he began to feel in his own perſon ſuch ſufferings as muſt bring to his recollection what he, in the day of his power, had inflicted upon others. After an impriſonment of nearly three years, he was brought to trial upon the fourteen articles already mentioned, and upon ten additional ones, which were now, for the firſt time, brought forward. Many of the charges were ill ſupported, and much of the evidence was trifling and irrelevant. It ſufficiently appeared, however, that he had laboured to extend the royal prerogative and the eccleſiaſtical power, to a degree that was utterly inconſiſtent with the liberties of the people; that he had been zealous in enforcing the illegal claim of ſhip-money; that he had committed perſons to priſon, and puniſhed them without law; and that he had been guilty of many arbitrary, illegal, and cruel actions. Archbiſhop Laud defended himſelf with uncommon ſpirit, eloquence, and acuteneſs, and with extraordinary preſence of mind. His counſel in their defence endeavoured to ſhew, that if the charges were true, they did not amount to treaſon by any eſtabliſhed law of the kingdom. This juſtification had its weight, and the lords, who were ſtaggered with the plea, deferred giving judgment, till the Commons thought fit to bring in a bill of attainder, which was, after much delay, paſſed. To ſtop the conſequence of this, the archbiſhop preſented the king's pardon under the great ſeal, but it was over-ruled by both houſes. By this bill the archbiſhop was condemned to ſuffer death, as in caſes of high treaſon, and all the favour he could obtain was to have his ſentence altered from hanging to decapitation. He met his death with great firmneſs on Tower hill, on the 10th of January, being then in the ſeventy-ſecond year of his age. Mr. Hume, in ſpeaking of the learning and morals of archbiſhop Laud, ſays "he was virtuous, if ſeverity of manners, and abſtinence from pleaſure, could deſerve that name. He was learned, if polemical knowledge could entitle him to that praiſe." In his government of the church, it has been juſtly obſerved, he diſplayed a total want of charity towards thoſe who made the leaſt oppoſition to the doctrines and ceremonies eſtabliſhed by authority; and under his countenance, the ſtar-chamber wore all the horrors, and exerciſed all the cruelties, of an inquiſition. In ſtate affairs his counſels were high and arbitrary, and he was very active in promoting thoſe meaſures which ultimately proved his own ruin, and that of the king. He was in ſome caſes generous and munificent: beſides what he did for Oxford in her buildings and library, he founded an Arabic lecture, which began to be read in 1636, and he inveſted the univerſity with many new privileges. He procured a charter for the town of Reading, founded in it an hoſpital, and endowed it with a revenue of 200*l. per annum*. The archbiſhop publiſhed ſome ſingle ſermons, which have been reprinted ſince in an octavo volume. He printed a conference between himſelf and the Jeſuit Fiſher. His diary has been printed ſince his death; and in the year 1700, was publiſhed "An hiſtorical Account of all the material Tranſactions relating to the Univerſity of Oxford, from Archbiſhop Laud's being elected Chancellor, to his Reſignation of that Office;" written by himſelf. His letters to Gerard John Voſſius were printed in London in 1690, and ſome others may be found at the end of Dr. Parr's Life of archbiſhop Uſher. Biog. Brit. Toulmin's Edit. of Neal. Hume.

LAUDA, in *Geography*, a town of the duchy of Wurzburg, on the Tauber; 28 miles S.S.W. of Wurzburg.—Alſo, a town of the duchy of Warſaw; 20 miles S.E. of Gneſna. It is called Laudica.

LAUDAMNAT, a town of Bengal; 12 miles S. of Nattore.

LAUDANUM, a name given by the chemiſts to certain preparations, chiefly extracts of opium, on account of their excellent qualities; the word being derived from *laudare, to praiſe*.

The "laudanum liquidum" of Sydenham, Thebaica tinctura, or wine of opium of the London Pharmacopeia of 1809, is prepared by macerating for eight days 1 oz. of extract of opium, bruiſed cinnamon bark and bruiſed cloves, of each a dram, in a pint of wine, and ſtraining. It is obſerved, that the degree of narcotic power of this preparation is nearly the ſame as that of the ordinary tincture of opium, from which it differs, in having the extract for its baſis, in the addition of aromatics, and in the vehicle employed. The extract of opium, it is ſuppoſed, produces leſs conſequent affection of the brain and nervous ſyſtem than crude opium, and the ſame effect ſeems to be further obviated by the aromatics which are joined to it. This is a compoſition of the ſame articles, in different proportions, as the Tinctura thebaica of P. L. 1745, and as the celebrated liquid laudanum of Sydenham. This is ſtill in uſe, and it poſſeſſes ſuch advantages by the modification of opium it affords, as to juſtify being reſtored to the Pharmacopeia. See OPIUM.

LAUDAVA, in *Geography*, a town of Pruſſia, in the palatinate of Culm; 20 miles N.E. of Thorn.

LAUDER, a royal borough, in Berwickſhire, Scotland, is ſituated on a river of the ſame name, about 22 miles to the ſouth of Edinburgh, and 24 from Berwick. It is now only a place of a mean appearance, and entirely deſtitute of trade. Formerly, however, it was a place of very conſiderable note. It was conſtituted a royal borough at a very early period, and for many years was diſtinguiſhed as the reſidence of royalty, and the ſeat of the Scottiſh parliament. In the reign of king James III., when the parliament was convened to conſult upon the means of repelling the Engliſh invaſion, the nobility were ſo enraged at the conduct of the favourite miniſter, ſir Robert Cochrane, that they hung him and his aſſociates over Lauder bridge, in preſence of the king and his army. This town has five fairs during the year. It joins with Haddington, Salburgh, Dunbar, and North Berwick, in ſending a repreſentative to parliament. Near the town, on the ſide of the river, is Lauderfort, built by Edward I. of England, and now the principal ſeat of the earl of Lauderdale. In this manſion are ſeveral noble apartments, rich in ſtucco work. One of them is very carefully preſerved, as a curious example of the taſte of the age in which it was made. Many veſtiges of ancient Pictiſh camps can ſtill be diſtinctly traced in this neighbourhood. Several tumuli, alſo, are viſible on Lauder-Muir, which has probably been the ſcene of ſome battles in ancient times, as many fragments of ſwords, bows and arrows, &c. have been dug up from this place. On a riſing ground, not far from the town, are the remains of a Roman ſtation, in which a number of coins of that people have been found at different periods. Some ancient Spaniſh, Engliſh, and Scottiſh coins have likewiſe been diſcovered in different fields in this vicinity. The ſoil in the pariſh of Lauder is light and ſandy, and in a high ſtate of cultivation. The country riſes gradually from the river, on both ſides, to hills of a moderate height, which afford excellent paſture for ſheep. Copper ore has been diſcovered in different ſpots, but is not rich enough to admit of being wrought with any proſpect of advantage. Slate is alſo in plenty, but of an inferior quality. Adderſtones and arrowpoints of flint, commonly called *elf*, or *fairy arrows*, and ſeveral other ſtones of the moſt fanciful ſhapes, are found here after heavy rains. The whole pariſh, according to the parliamentary returns in 1800, contained 349 houſes, inhabited by 1760 perſons. Sinclair's Account of Scotland, vol. i. by the Rev. Dr. James Ford.

LAUDI SPIRITUALI, *Ital.* the moſt ancient melodies that can be found in Italy, ſet to Italian words. It was the opinion of Father Meneſtrier (ſur les Drames en Muſique) that hymns, canticles, and myſteries, in the vulgar tongues of Europe, had their origin from the pilgrims who went to the Holy Land. St. Francis d'Aſſiſe, born 1182, is mentioned by Creſcimbeni, and other Italian writers, among the firſt pious perſons of that country who exerciſed their genius in compoſing hymns and ſpiritual ſongs, called *Laudi*, in the form of canzonets. *Le Laudi*, which were likewiſe called *lalde*, *lodi*, *cantici*, or *canticles*, are compoſitions in praiſe of God, the Virgin Mary, or the ſaints and martyrs. They reſemble hymns as to the ſubject, but not the character and verſification: hymns having been originally conſtructed on Greek and Roman models; but the laudi, or ſpiritual ſongs, are entirely of Italian invention.

A ſociety for the performance of theſe religious poems was inſtituted at Florence ſo early as the year 1310, the members of which were called *laudeſi*, and *laudiſti*. In the fifteenth century this ſpecies of ſacred poetry was very much eſteemed and practiſed, as is manifeſt by the various collections that were made of them, one of which was printed 1485. It the next century ſeveral volumes of them were publiſhed, among which there are many poetical compoſitions on ſacred ſubjects by Politian, Bembo, Lodovico Martelli, and other eminent poets. (Quadrio, Storia d'Ogni Poeſ vol. ii. p. 466.) In the 17th century, though their favour was ſomewhat diminiſhed, yet, beſides a large volume compoſed by Serafino Razzi, and publiſhed by the author, 1608, there were many collections of theſe ſpiritual ſongs printed.

Creſcimbeni tells us that the company of *laudiſti* of St. Benedict, at Florence, went to Rome during the time of the grand jubilee, in the year 1700, and ſung through the ſtreets in proceſſion ſeveral laudi that were written by the celebrated Filicaia. In moſt of the ancient collections, the melodies were prefixed to each of theſe ſongs. They were at firſt little more than chants, and without baſe. However, according to the commentary on Boccaccio, by Sanſovino, publiſhed at Venice, 1546, they were afterwards ſung in many different parts. "There are in Florence," ſays he, "ſeveral ſchools of artizans and mechanics, among which are thoſe of Orſanmichele, and Santa Maria Novella. Every Saturday after nine o'clock theſe aſſemble in the church, and there ſing five or ſix laudi, in four parts, the words of which are by Lorenzo de Medici, Pulci, and Giambellari; and at every laud they change the ſingers, and to the ſound of the organ diſcover a madonna, which finiſhes the feſtival. And theſe ſingers, who are called *laudeſi*, have a preceptor, whom they denominate their captain or leader."

This company ſtill ſubſiſted in 1770, when we frequently heard them ſing their hymns, through the ſtreets, in three parts, and likewiſe in their church, accompanied by an organ. Of the antiquity of this inſtitution, as a MS. volume of Laudi Spirituali, which we found in the Magliabecchi library at Florence, is an indiſputable proof, the preface, and a ſpecimen of thoſe ancient melodies, bearing date MCCCXXXVI. have been inſerted in the General Hiſtory of Muſic, vol. ii. p. 327.

LAUDICOENI, among the *Romans*, formed of *laus*, *praiſe*, and *cœna*, *ſupper* or *entertainment*, applauders, or perſons who, for a reward, attended the rehearſal of plays and orations, in order to raiſe, or join in the acclamation. See ACCLAMATION and APPLAUSE.

LAUDON, GIDEON ERNEST, baron, in *Biography*, was deſcended from a reſpectable family, originally from Scotland, a branch of which ſettled in Livonia, and there purchaſed an eſtate at Totzen, where the ſubject of the following article was born in 1716. He diſplayed, at an early age, a ſtrong inclination for a military life, and being inſtructed with this view, he entered, at the age of fifteen, into the Ruſſian army as a cadet, and, in 1733, he was at the taking of Dantzic, where the king of Poland had ſought refuge, in conſequence of the diſturbances which then prevailed in that country. He ſerved three campaigns under count Munich againſt the Turks, and was preſent at the taking of Azof, Oczakow, and Chotzim. On the reſtoration of peace, he ſtaid ſome time at Peterſburgh, in hopes of higher promotion, but being diſappointed in his expectations, he went to Vienna, and was appointed by the empreſs queen to a command in the corps of Pandours, then raiſed by baron Trenk, and with theſe he proceeded to Bavaria. While he belonged to this corps he was ſeverely wounded, and taken priſoner by the French, but was reſcued by his own corps before his wound was healed. After this he was engaged much in active ſervice, but he employed every leiſure moment in the ſtudy of the military art, and in preparing himſelf for the active ſituation in which he was afterwards placed in the ſeven years' war. In 1754, he was employed to reduce to obedience the rebellious Croats, which he did rather by his judicious conduct than by force of arms. During the ſeven years' war, which commenced in 1756, he performed the moſt noble exploits, which we cannot in this place give in detail. Towards the cloſe of that war, he determined to make an attack on Schweidnitz. The night appointed for the execution of this plan was the 30th of September. Every preparation being made, Laudon harangued his ſoldiers, forbade them, under the ſevereſt penalties, to plunder the town, and promiſed, in caſe of their obedience, to diſtribute among them the ſum of 100,000 rix-dollars. The guards exclaimed with one voice, "No, general, lead us on to glory, we do not want money." At two in the morning the ſignal was given, and the firſt aſſault made, and in four hours Laudon was in poſſeſſion of the whole fortreſs. Although this achievement had been undertaken without the order of the Aulic council, the empreſs congratulated the victor in a letter written by her own hand, and ſent him her picture ſet round with diamonds. On the concluſion of peace in 1763, the general retired to his eſtates in Bohemia, but in 1766 the empreſs appointed him a member of the Aulic council of war, and in the following year he was elected a member of the equeſtrian order of the empire, and in 1769 he was made commander-in-chief in Moravia. In 1770, when Frederic the Great paid a viſit to the emperor Joſeph at Neuſtadt, the principal officers were invited to dine with the two monarchs. As the company were about to place themſelves at table, his Pruſſian majeſty ſaid to Laudon, "come general, and ſit near me, I would rather have you by my ſide than oppoſite to me." In the war of Bavaria, in 1778, he was promoted by the emperor to be field-marſhal, and entruſted to the command of the Auſtrian army, which amounted to 50,000 men. The plans which he formed to counteract the deſigns of the enemy were worthy the reputation which he had before acquired. After the peace, Laudon again retired to his eſtates, from whence he was again called, on the breaking out of the Turkiſh war, in 1788. He had the command of the grand army when it was reſolved to reduce Belgrade; the archduke Francis was to be preſent at the ſiege, and the emperor, in a letter to Laudon, ſaid, that "his nephew could not be in a better ſchool than under his Gideon." The attack commenced on the 15th of September, and on the 30th it was determined that the place ſhould be carried by ſtorm. The aſſault began about nine in the morning, and at one the outworks were in poſſeſſion of the beſiegers. The fortreſs ſtill refuſed to capitulate; but, after a dreadful bombardment, by which moſt of the enemy's cannon were ſilenced, the place ſurrendered. In conſequence of this achievement, he was appointed generaliſſimo of the whole Auſtrian army, an office which had been conferred on no perſon ſince the time of prince Eugene, and which gave him an unlimited controul over all the Auſtrian generals, and even over the Aulic council of war. On his return to Vienna, he was received with every mark of diſtinction that his ſovereign and the people, by whom he was idolized, could beſtow. After the death of the emperor Joſeph, he was confirmed in all his appointments by his ſucceſſor Leopold, who continued the war; ſoon after this he was taken ill of a fever, of which he recovered, but having imprudently rode out, contrary to the advice of his phyſicians, he was ſeized with a ſuppreſſion of urine, which put an end to his life in the month of June following. This great general was beloved by his troops, who, under his command, believed themſelves to be invincible. The moſt ſtriking feature in the character of Laudon was that dauntleſs preſence of mind, combined with daring intrepidity, ſo eſſential to the hero, and which can turn to the beſt advantage any unexpected opportunity that occurs. Joſeph II. had a buſt made of him, to be erected in the hall of the Aulic council of war, with the following inſcription, "Gideonis Laudoni, ſummi caſtrorum præfecti, ſemper ſtrenui, fortis, felicis militis, et civis optimi exemplum, quod duces militeſque imitantur, Joſephus II. Aug. in ejus effigie proponi voluit, anno 1783." After the capture of Belgrade, the emperor took from the family repoſitory of the houſe of Auſtria the large ſtar of the Thereſian order, and ſent it to Laudon, with permiſſion for him to wear it on his breaſt; though by the ſtatutes it could only be worn by the grand maſter of the order. Gen. Biog.

LAUDS, LAUDES, the ſecond part of the ordinary office of the breviary, ſaid after matins, though, heretofore, it ended the office of the night.

The laudes conſiſt principally of pſalms, hymns, &c. whence they took their name, from *laus, laudis, praiſe*.

LAVELANET, in *Geography*, a town of France, in the department of the Arriege, and chief place of a canton, in the diſtrict of Foix; 12 miles N.E. of Taraſcon. The place contains 1200, and the canton 12,831 inhabitants, on a territory of 327½ kiliometres, in ſeven communes. N. lat. 42° 56′. E. long. 1° 55′.

LAVELLO, a town of Naples, in Baſilicata, the ſee of a biſhop, ſuffragan of Bari; ſix miles N. of Venoſa.

LAVEN, a ſmall iſland near the E. coaſt of Luçon. N. lat. 14° 12′. E. long. 124° 6′.

LAUENAU, a town of Weſtphalia, in the principality of Calenberg; 15 miles N. of Hameln.

LAUENBURG, a town of Hinder Pomerania, and chief town of a lordſhip of the ſame name, ſituated on the Lehe; 36 miles W. of Dantzic. N. lat. 54° 32′. E. long. 17 42′.—Alſo, a town of Germany, in the duchy of Saxe Lauenburg, on the right coaſt of the Elbe, built by Henry the Lion. Here is a toll on the Elbe; 30 miles S.E. of Hamburgh. N. lat. 53° 22′. E. long. 10° 48′. See SAXE-LAUENBURG.

LAVENDER, in *Agriculture*, a ſmall ſhrubby plant, ſometimes cultivated in fields near large towns for the ſpikes of flowers, which are either ſold in ſmall bundles, or diſtilled for lavender-water, and the eſſential oil of the plant.

The common ſpike lavender is moſtly employed with this intention. According to ſome the method of cultivating it is by planting the ſlips or cuttings of the young ſhoots, after being ſtruck, in rich ſhady borders or nurſeries the preceding ſpring, about September or October, in rows, two, three, or more feet diſtance from each other, and about the ſame diſtance apart in the rows, the ground being kept clean by digging or hoeing in the ſpring or autumn, and the plants retained in order by proper pruning. And as they decay from age or other accidents, they are replaced from the nurſeries; the ſlips of ſuch plants as are wearing out being made uſe of for the purpoſe. The ſpikes of flowers begin to get ripe and ready for gathering about the end of June or July, when it is collected by women and children by cutting off the heads and tying them up in bundles, ſo as to be ſent to the ſtill-houſe, or other places, in proper baſkets. When, for diſtilling, the lower parts of the ſtems are then cut off and the heads put into the ſtill.

But this plant, when cultivated in the field, ſhould, according to others, have the ground well prepared by digging, or repeated ploughing and harrowing; after which, in the ſpring ſeaſon, as about March or beginning of April, a proper quantity of ſlips or cuttings of the young ſhoots or branches ſhould be provided, and planted at once by means of a dibble, in rows of not more than two and a half or three feet apart, and one and a half or two feet diſtant in the rows, cloſing the mould well about them. They afterwards require to be kept clean by means of the hoe, and to have the mould brought up to them occaſionally, particularly in the autumn, and the dead ſtems or leaves cleared away.

They will moſtly afford ſpikes of flowers in plenty in the ſecond ſummer, after being thus planted out.

Lavender ſucceds beſt where the ſoil is rather of a dry quality, and not too ſtiff. In ſome parts of the ſouthern diſtricts near London, it is grown in the fields with much profit.

In the Agricultural Survey of Berkſhire, it is ſtated, that the late field-marſhal Conway, about twenty years ago, formed a large lavender plantation, and erected proper apparatus for its management at Park-place, near Henley. "There are about twenty acres planted with lavender, on the ſide, and at the bottom of a chalky hill, with a ſouth-weſtern aſpect. The land at the bottom is very good, but that on the ſlope has only a thin covering of mould over the chalk, and the difference of ſoil is ſtrongly marked by the luxuriance of the plants they reſpectively bear."

It is of ſuch importance to keep crops of this ſort perfectly clean, that three men are conſtantly employed in weeding this plantation; who, occaſionally, uſe ſmall hand-hoes, but not much, as they are liable, without great care, to break and injure the plants. When the ſtate of the weather will not admit of this ſort of buſineſs being done, they go over the plantation with large ſhears, and clip off all the ſtalks which were left by the lavender cutters.

Hot ſummers are very favourable to the productiveneſs of plantations of this kind.

Lavender, in *Botany*. See Lavandula.

Lavender *Cotton*. See Santolina.

Lavender, *French*. See Cassidony.

Lavender, *Sea, Limonium*. See Statice.

Lavender, *Hollow-leaved Sea,* or *Side-ſaddle Flower*. See Sarracena.

LAUENFRED, in *Geography*, a town of Weſtphalia, in Calenberg, on the Weſer; 15 miles N.W. of Gottingen.

LAVENHAM, a market-town and pariſh in the hundred of Babong, and county of Suffolk, England, was formerly conſiderable for its manufacture of woollen cloths and calimancoes. The making of yarn from wool is now, however, the principal employment of the inhabitants. The market is held here on Tueſday, and there are two fairs during the year; one for butter and cheeſe on the 10th of October, and another for horſes on Shrove Tueſday. Six capital burgeſſes, choſen for life, conſtitute the governors of the town, and by them all the inferior officers are appointed. The land here is of that ſort called Borough-Engliſh, whereby all heritable property deſcends to the youngeſt ſon, or, in default of iſſue, to the youngeſt brother. The town itſelf is agreeably ſituated on the banks of the river Brell, from which it riſes in a gentle acclivity, and conſiſts of nine ſtreets or diviſions, and a market-place, with a ſtone croſs in the centre. At the ſouth end ſtands the pariſh-church, one of the fineſt ſpecimens of ancient eccleſiaſtical architecture in the county. This noble building was probably founded towards the cloſe of the fifteenth century. Its walls are built of freeſtone, interſperſed with very curious decorations of flint-work. On every ſide they exhibit a variety of arms of noble perſonages, who probably obtained that diſtinction by their benefactions towards the erection of the church. The inner roof is very finely wrought in carved work; and there are two pews of ſuch exquiſite workmanſhip, as to vie with any in Henry VIIth's chapel. This town has, likewiſe, a meeting-houſe for Diſſenters, two charity-ſchools, and two Sunday-ſchools, one of which is ſupported by the Diſſenters. In the parliamentary returns for 1800, the houſes are ſtated to amount to 339 in number, and the inhabitants to 1776 perſons.

LAVENIA, in *Botany*, a genus formed by the late Dr. Solander, and adopted from his manuſcripts by profeſſor Swartz, of the *Cotula Verbeſina*, and *Verbeſina Lavenia* of their common preceptor Linnæus. The name is of unknown origin, and ſuſpected by profeſſor Martyn to be vernacular in Ceylon. It firſt appears in the ſupplement to Ray's *Hiſtoria Plantarum*, v. 3. 217, on the authority of Sherard, for the ſpecies laſt mentioned, for which it was adopted by Linnæus as the trivial name. Whatever the derivation or meaning of this word may be, its euphony may uphold it, though, according to ſound principle, Swartz ought to have preferred *Adenoſtemma*, given to the ſame plant by the claſſical Forſter, and conſtructed of αδην, *a gland*, and ϛεμμα, *a crown*, the ſeed being crowned with three glands inſtead of the feather, hair or membrane appropriated to other genera of this family. Swartz. Prod. 112. Schreb. 544. Willd. Sp. Pl. v. 3. 1724. Mart. Mill. Dict. v. 3. (Adenoſtemma; Forſt. Gen t. 45. Juſſ. 184.)—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* ovate, ſomewhat imbricated, conſiſting of from 10 to 14 lanceolate, equal, permanent ſcales. *Cor.* compound, uniform, of from 15 to 20 equal hermaphrodite florets, which are funnel-ſhaped, dilated at the baſe, the limb in five regular ſpreading ſegments. *Stam.* Filaments five, thread-ſhaped, ſhorter than the tube; anthers oblong, flattiſh, didymous, ſlightly cohering laterally. *Piſt.* Germen oblong; ſtyle thread-ſhaped, longer than its own corolla, deeply divided; ſtigmas flattiſh, club-ſhaped. *Peric.* none, except the permanent ſpreading calyx. *Seeds* rather club-ſhaped, ſlightly rugged, viſcid with glands. Crown of three awl-ſhaped briſtles, glandular at the tips. *Recept.* naked.

Eſſ. Ch. Receptacle naked. Seed-down of three briſtles, glandular at their tips. Calyx ovate, ſlightly imbricated. Style divided.

Obſ. Forſter deſcribes the florets as bearded or downy on their upper or inner ſurface.

1. L. *decumbens*. Decumbent Lavenia. (Cotula Verbeſina; Linn. Sp. Pl. 1258. Mant. 473. Chryſanthemum ſylvaticum repens minus, chamædryos folio, flore luteo nudo, ſemine roſtrato; Sloane Jam. v 1. 262. t. 155. f. 2. Tanacetum herbaceum erectum, foliis cordatis crenatis oppoſitis, capitulis paucioribus remotis terminalibus; Browne Jam. 316. Herb. Linn.)—Stem decumbent. Leaves heart-ſhaped, obtuſe, obtuſely ſerrated.—Native of the inland cool and ſhady woods of Jamaica. *Root* annual. *Stem* decumbent or proſtrate, from nine to eighteen inches long, throwing out roots from the lower joints, ſimple, except now and then a ſhort axillary ſhoot or two, leafy, nearly ſmooth, bluntly quadrangular. *Leaves* oppoſite, ſtalked, an inch or more in length and almoſt as broad, heart-ſhaped, nearly ſmooth, blunt, unequally and bluntly ſerrated, three-ribbed, often cut away cloſe to the lateral ribs at the baſe. *Flowers* few, terminal, convex, yellow, ſcarcely ſo large as a pea, on long, ſlender, in ſome degree panicled, ſtalks.

2. L. *erecta*. Upright Lavenia. (Adenoſtemma viſcoſa; Forſt. Prodr. 54. Verbeſina Lavenia; Linn. Sp. Pl. 1271. Swartz. Obſ. 312. Eupatoriophalacron ſcrophulariæ aquaticæ foliis oppoſitis; Burm. Zeyl. 95. t. 42. Pu-tumba; Rheede Hort. Mal. v. 10. 125. t. 63.)—Stem erect. Leaves elliptical, pointed, ſharply ſerrated; tapering and entire at the baſe.—Native of Ceylon, the coaſt of Malabar in ſandy ground, and the Society iſles. *Root* annual, of many pale fibres. *Stem* a foot high, erect, ſomewhat branched, leafy, ſquare, rough with aſcending briſtles. *Leaves* ſtalked, oppoſite, the uppermoſt leſs exactly ſo; all of a broad elliptical figure, tapering much at each end, three-ribbed, rough, two or three inches long, entire at the baſe, broadly and acutely ſerrated upwards. *Flowers* on ſhortiſh, hiſpid, hoary, axillary ſtalks, accompanied by linear *bracteas*, and

conſiſting of fewer florets than the preceding, of a paliſh blue colour, and externally downy.

LAVENSAR, in *Geography*. See LAVANSARI.

LAVENSTEIN, or LOEWENSTEIN, a town of Germany, in the principality of Culmbach, near which is a copper-mine; 12 miles S. of Saalfeld.—Alſo, a town of Weſtphalia, in Calenberg; nine miles E. of Hameln.—Alſo, a town of Saxony, in the margravate of Meiſſen; 18 miles S. of Dreſden. N. lat. 50° 42. E. long. 13° 46′.

LAVENZA, a ſea-port of Italy, in the department of the Apennines, with a harbour at the mouth of a ſmall river; ſeven miles S.E. of Sarzana. N. lat. 44° 3′. E. long 10° 1.

LAVER, in *Botany*, perhaps from the verb *to lave*, alluding to its being waſhed up on the ſhore. See ULVA.

LAVER *Bread*, a ſort of food made of a ſea-plant, otherwiſe called the *oiſter-green*, or *ſea-liverwort*. It is ſaid to be uſed in the county of Glamorgan, and other parts of Wales.

LAVER, in *Scripture Hiſtory*, a ſacred utenſil placed in the court of the Jewiſh tabernacle, conſiſting of a baſon, whence they drew water by cocks, for waſhing the hands and feet of the officiating prieſts, and alſo the entrails and legs of the victims.

LAVERNA, in *Antiquity*, the goddeſs of thieves and cheats among the Romans, who honoured her with public worſhip, becauſe ſhe was ſuppoſed to favour thoſe who wiſhed that their deſigns might not be diſcovered. Varro ſays, that ſhe had an altar near one of the gates of Rome; hence called Porta Lavernalis.

LAVERNICK, in *Geography*, a town of Pruſſia, in the territory of Culm, on the Drebentz; 44 miles E. of Culm.

LAVEZZO, a name given by the Italians to a ſteatitic ſtone, of which veſſels are made; called alſo *Lapis comenſis* and POTSTONE, which ſee.

LAUF, in *Geography*, a town of Germany, in the territory of Nuremberg; 8 miles E.N.E. of Nuremberg. N. lat. 49° 8′. E. long. 11° 13′.

LAUFFEN, a town of the archbiſhopric of Salzburg, on the Salza; 11 miles N.N.W. of Salzburg. N. lat. 47° 54′. E. long 12° 52′.

LAUFFEN, a village and caſtle of Switzerland, which gives name to a bailiwick, in the canton of Zurich, near the Rhine, where is a celebrated cataract; 2 miles below Schaffhauſen.

LAUFFEN *am Neckar*, a town of Wurtemburg, on the Neckar, formerly imperial; 16 miles N. of Stuttgart. N. lat. 49° 5′. E. long. 9° 18′.

LAUFFEN, a town of Pruſſia, in Natangen; 15 miles S. of Bartenſtein.—Alſo, a town of Auſtria, where the diet was held under Frederick I.; 18 miles S. of Gemunden.

LAUFFENBURG, a fortified town of Germany, and one of the four foreſt-towns of the late Auſtrian Swabia, ſituated on both ſides of the Rhine, over which is a bridge; and at this place there is a fall in the river; 26 miles W. of Schaffhauſen. N. lat. 47° 36′. E. long. 8° 4′

LAUFFON, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the diſtrict of Délémont, ſeated on the Barſch; 16 miles N. of Soleure. The place contains 740, and the canton 7513 inhabitants, on a territory of 172½ kiliometres, in 21 communes. N. lat. 47° 32′. E. long. 7° 20′.

LAUGEON, a town of Meckley; 42 miles W. of Munnypour.

LAUGERIA, in *Botany*, named by Jacquin, in honour of Robert Laugier, profeſſor of botany and chemiſtry in the univerſity of Vienna, when the botanic garden there was firſt eſtabliſhed. Jacq. Amer. 64. t. 177. f. 21. Linn. Gen. 102. Schreb. 140. Willd. Sp. Pl. v. 1. 1081. Mart. Mill. Dict. v. 3. Juſſ. 206. Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, tubular, ſmall, deciduous, unequal at the orifice. *Cor.* of one petal, ſalver-ſhaped; tube very long; limb in five obovate ſegments. *Stam.* Filaments five, very ſhort; anthers linear, long, within the tube. *Piſt.* Germen nearly ovate, inferior; ſtyle thread-ſhaped, rather longer than the tube; ſtigma capitate. *Peric.* Drupa roundiſh, umbilicated with a ſmall depreſſion. *Seed.* Nut roundiſh, with five furrows, and from two to five cells.

Eſſ. Ch. Corolla ſalver-ſhaped, five-cleft. Stamens within the tube. Drupa inferior. Nut of five cells.

Obſ. Vahl ſuggeſts that this genus might with propriety perhaps be united to *Guettarda*; ſee that article.

1. L. *odorata*. Linn. Sp. Pl. 276. Jacq. Amer. 64. (Edechi; Loefl. It. 259. 271. 306.)—Leaves elliptic-lanceolate, pointed, nearly ſmooth. Stem ſomewhat ſpinous. Cluſters panicled. Nut with five cells.—Native of South America; obſerved by Jacquin in expoſed buſhy places on the ſea ſhore, about the Havanah and Carthagena. The *ſtem* is ſhrubby, ten feet high, erect, branching, the *branches* oppoſite and widely ſpreading. *Leaves* oppoſite, on ſhort ſtalks, from one to two inches, or more, in length, elliptic-lanceolate inclining to obovate, pointed, entire, veiny, deſcribed by Jacquin as ſmooth, but a young branch ſent by him to Linnæus, from the Vienna garden, has numerous hairs on the leaves, eſpecially at the rib and edges, and its *footſtalks*, like the twig itſelf, are very hairy. *Stipulas* axillary, oppoſite, lanceolate, recurved. *Cluſters* axillary, panicled, lax, as long as the leaves. *Flowers* dirty red, very fragrant at night. *Fruit* copious, larger than a pea, very black, ſoft, when ripe falling off on the ſlighteſt ſhaking of the buſh.

2. L. *lucida*. Swartz Ind. Occ. v. 1. 475. Vahl. Symb. v. 3. 40. t. 57.—Leaves oblong, obtuſe, membranous, ſhining. Cluſters forked. Nut with two cells.—Native of buſhy places, in the warmer parts of Jamaica, as well as in St. Lucia and Santa Cruz. A *ſhrub* with round, ſmooth, ſpreading branches. *Leaves* two or three inches in length, oblong, with a blunt point, ſhining, ſmooth on both ſides. *Stipulas* axillary, ovate, acute, deciduous. *Cluſters* from the boſoms of the upper leaves, ſo as to appear terminal, ſolitary, rarely oppoſite, the length of the leaves, either ſimply forked, or twice divided, widely ſpreading. *Flowers* nearly ſeſſile in a ſimple row on each branch of the cluſter, with a ſolitary intermediate one, whitiſh, fragrant. *Fruit* black, its nut of two unequal cells. Dr. Swartz thinks this may be the *Ipotaraguapin* of Loefl. It. 270, with the deſcription of which it agrees in many reſpects, but he never obſerved any ſpines on his *L lucida*. We have, nevertheleſs, no doubt of their being one and the ſame ſpecies.

3. L. *coriacea*. Vahl. Eclog. v. 1. 26.—"Leaves elliptic-ovate, rather coriaceous, ſmooth on both ſides, bluntiſh. Spikes twice divided. Flowers tetrandrous."—Found on the ſummits of mountains in the iſland of Montſerrat, where it was probably found by Von Rohr. A *ſhrub* or *tree*, but we know nothing further concerning it.

4. L. *reſinoſa*. Vahl. Eclog. v. 1. 27.—"Leaves broad-lanceolate, ſmooth; glaucous beneath. Spikes axillary, cloven. Branches reſinous at the ſummit."—Native of lofty mountains in Montſerrat.

5. L. *tomemtoſa*. Swartz Ind. Occ. v. 1. 477.—"Leaves ovate, acute; downy beneath. Cluſters forked. Nut of two cells."—Native of ſhrubby places in the weſtern part of Jamaica. A ſmall *tree*, thrice the height of a man, with

ſubdivided downy *branches*. *Leaves* ſhining and ſmooth above, ſilky and ſoft beneath. *Flowers* whitiſh. It bloſſoms in autumn, and reſembles a *Tournefortia* in habit and infloreſcence. *Swartz.*

LAUGHER, a name given to a particular ſpecies of pigeon, called by Moore the columba ridens. It is about the ſize of the common pigeon, and much of the ſame make; but it has a very bright pearl-coloured eye, almoſt white, and is a mottled red, or blue. They are ſaid to be brought from Jeruſalem, and the country thereabouts. When the cock of this ſpecies courts the hen, he has a guttural cooing, not unlike the guggling of a bottle of water, when poured out haſtily; and after this he always makes a noiſe not unlike laughing, from the ſingularity of which he has obtained his name.

LAUGHI, Le, in *Geography*, a fief of Piedmont, which takes its name from a mountain; formerly held immediately of the empire, ceded, in 1746, to the king of Sardinia, or duke of Savoy, and now annexed to France.

LAUGHTER, an action or paſſion peculiar to man.

Authors attribute laughter to the fifth pair of nerves, which ſending branches to the eye, ear, lips, tongue, palate, and muſcles of the cheek, parts of the mouth, præcordia, &c. there hence ariſes a ſympathy, or conſent, between all theſe parts; ſo that when one of them is acted upon, the others are proportionably affected.

Hence a ſavoury thing ſeen or ſmelt, affects the glands and parts of the mouth, a thing ſeen or heard, that is ſhameful, affects the cheek with bluſhes; on the contrary, if it pleaſe and tickle the fancy, it affects the præcordia and muſcles of the mouth and face with laughter; if it cauſes ſadneſs and melancholy, it likewiſe affects the præcordia, and demonſtrates itſelf by cauſing the glands of the eyes to emit tears.

Laughter, according to Hobbes, is "a ſudden glory, ariſing from a ſudden conception of ſome eminency in ourſelves, by compariſon with the infirmity of others, or with our own formerly." Dr. Campbell, on the contrary, maintains, that this emotion doth not reſult from the contempt, but ſolely from the perception of oddity, with which the paſſion is occaſionally, not neceſſarily, combined. See RIDICULE.

L'AUGIER, MONSIGNOR, in *Biography*, principal phyſician to the imperial court at Vienna in 1772; the moſt intelligent and beſt informed critic, among *muſical* dilettanti, with whom we ever converſed. He had been in France, Spain, Portugal, Italy, and Conſtantinople, and was perfectly well acquainted with national ſtyles of muſic, and the peculiar merits and defects of individual compoſers throughout Europe. This gentleman, in deſpite of uncommon corpulency, poſſeſſed a moſt active and cultivated mind. His houſe was the rendezvous of the firſt people of Vienna, both for rank and genius, and his converſation was as entertaining as his knowledge was extenſive and profound. Among his other acquirements he had arrived at great ſkill in practical muſic, had a moſt refined diſcriminating taſte, and could give, vocally, ſpecimens of the *national melody*, which he had heard with philoſophical ears wherever he had been; in fine, he was a living hiſtory of muſic. In Spain he had been intimately acquainted with Dominico Scarlatti, who, at ſeventy-three, compoſed for him a great number of harpſichord leſſons, the chief of which had never been printed. The book in which they had been tranſcribed contained forty-two pieces, among which were ſeveral *ſlow* movements, with which, for want of ſoſtinuto and expreſſion, in the old harpſichords, he ſeldom enriched his works. Theſe leſſons were compoſed in 1756, when Scarlatti was too fat to croſs his hands, as he uſed to do; ſo that theſe are not ſo difficult as his more juvenile works, which were made for his pupil and patroneſs, the late queen of Spain, while ſhe was infanta of Portugal. M. L'Augier uſed to relate, that the empreſs queen Thereſa had been a very notable muſician, and that ſome years ago he had heard her ſing very well. In the year 1739, when ſhe was only twenty-two years of age, and very handſome, ſhe ſung a *duo*, with old Senefino, at Florence, ſo well, that by her voice, which was then a very fine one, and graceful and ſteady manner, ſhe ſo much captivated the old man, that he could not proceed without ſhedding tears of ſatisfaction. Her imperial majeſty had ſo long been a performer, that ſhe one day, in pleaſantry, told the old Fauſtina, the wife of Haſſe, who was then upwards of ſeventy, that ſhe thought herſelf the firſt (meaning the oldeſt) virtuoſa in Europe; for her father, at a rehearſal, brought her on the court ſtage at Vienna, when ſhe was only five years old, and made her ſing a ſong.

Metaſtaſio, in a letter to Farinelli, calls M. L'Augier Monſignore; the phyſician of the pope, and we ſuppoſe the imperial phyſician is qualified with the title of Monſignore, my lord. The imperial Laurrat tells Farinelli, that Monſignor L'Augier is charmed with him, with his heart, and with his conduct. And ſporting with his rotundity, he ſays, "he often viſits me, in ſpite of his immeaſurable corpulency, and mounts to the altitude where I reſide, with the lightneſs of the moſt ſlim dancer. I ſhall, for your ſake, embrace as much as poſſible of his majeſtic circumference." This extraordinary perſonage, with a mind proportioned to his body, died at Vienna in 1774, to the great loſs of ſociety in that city, and of ſound criticiſm and good taſte.

LAVIANO, in *Geography*, a town of Naples, in Principato Citra; 27 miles E. of Salerno.

LAUJAR, a town of Spain, in Grenada; 18 miles N.W. of Almeria.

LAVIGEN, a town of Norway, in the dioceſe of Drontheim; 24 miles N. of Drontheim.

LAVIGNON, a name which the fiſhermen of the vicinity of Rochelle give to a ſhell-fiſh, which is uſed for food in that place, and is probably a ſpecies of Solen. It is common on the coaſt of Poitou, and has a very thin pair of ſhells for its covering, and which never can ſhut cloſe, in the manner of the oiſter or muſcle, or other common bivalve ſhells: the fiſh, therefore, always buries itſelf in the mud by way of ſecurity. The ſhells are very ſmooth and poliſhed, eſpecially on the inſide, and they are naturally white. This colour they always retain within, though their outer ſurface is often tinged black by the mud.

They are often buried five or ſix inches deep in the mud, but it is always eaſy to know where they are, becauſe they muſt keep a free communication with the water above; by means of a round aperture, of about a tenth of an inch diameter, which opens from the ſurface of the mud to every ſhell-fiſh. When the ſhells of this fiſh are opened to their utmoſt width, it is eaſy to ſee a ſort of arm with which each is furniſhed, in the manner of the common muſcle, for its progreſſive motion. This part ſerves them to bury themſelves in the mud, and to raiſe themſelves out of it again, when they are inclined to ſeek a new habitation; into which they make their way in a more ſpeedy manner than would eaſily be thought.

When the creature is plunged to its proper depth under ground, it receives the benefit of the water above, by means of two pipes, or proboſcides, which have each a double aperture at their ends. Theſe take in water, and throw it out again, alternately, for the uſes of the animal, and either of the two is indifferently qualified to anſwer either purpoſe. The fiſh has a power of lengthening, or ſhortening theſe pipes at pleaſure, and, when it pleaſes, takes them wholly into the ſhell. Mem. Acad. Par. 1710.

LAVIN, in *Ornithology*, a name given by the people of the Philippine iſlands to a ſpecies of hawk, a bird of great beauty, being variegated all over with yellow, black, and white. They call it alſo *ſicub*.

LAUINGEN, in *Geography*, a town of Bavaria, in the principality of Neuburg, on the Danube, ſuppoſed to have been a Roman colony; ſix miles above Hockſtett. N. lat. 48° 32′. E. long. 10° 32′.

LAVINGTON, East, or *Market Lavington*, a market-town and pariſh in the hundred of Swanborough, and county of Wilts, England, is ſituated at the northern termination of Saliſbury plain. It was formerly called Steeple, or Staple, Lavington, and was a conſiderable town; having acquired the name of Cheaping, or Market Lavington, from its great corn market, which was eſtabliſhed early in the fifteenth century, but is now much decreaſed, as the chief reſort of the dealers is to Devizes. Eaſt Lavington is 89 miles from London; the markets were on Monday and Wedneſday. The population, as returned to parliament in 1800, was 918; the number of houſes 167. Biſhop Tanner, the celebrated author of "Notitia Monaſtica," was born in this town in 1674.

Weſt, or *Biſhop's Lavington*, is a pariſh within two miles of the foregoing, but is ſituate in the hundred of Whorlſdon; it was returned, in 1800, as containing 214 houſes, and 958 inhabitants. Britton's Beauties of Wiltſhire, 8vo.

LAVINIUM, in *Ancient Geography*, a ſmall town of Latium, exactly S. of Rome, and eight miles S.E. of Laurentum, near the ſea-coaſt, on the rivulet Numicus, between the mouth of which, and the Tiber, Æneas is ſuppoſed to have landed. According to Strabo, he built this town after the defeat of Turnus, king of Ardea; thus perpetuating his victory and the name of his wife Lavinia, daughter of king Latinus. According to the ſame author, he erected here a temple of Venus, the care of which he committed to the Ardeates. But as this city was not ſtrong enough to reſiſt the aſſaults of his enemies, who were jealous of his power, he built another on an eminence, E. of the firſt. See Lanuvium.

LAVINO, in *Geography*, a town of Italy, in the Milaneſe; 18 miles W.N.W. of Como.—Alſo, a town of Naples, in the Moliſe; 24 miles N.E. of Moliſe.

LAVIS, a town of Tyrol, at the union of the rivers Lavis and Adige; eight miles N. of Trent.

LAVIT de Lomagne, a town of France, in the department of the Gers, and chief place of a canton, in the diſtrict of Lectoure; 12 miles E. of Lectoure. The place contains 1330, and the canton 7696 inhabitants, on a territory of 195 kiliometres, in 15 communes. N. lat. 43° 57′. E. long. 1°.

LAUKAS, a town of Sweden, in the government of Waſa; 124 miles E.S.E. of Waſa.

LAUKOWITZ, a town of Bohemia, in the circle of Boleſlaw; 10 miles N.N.E. of Jung-Buntzel.

LAUNAY, Peter, in *Biography*, was born at Blois in the year 1573, and having conſiderable family intereſt, he obtained, in early life, a poſt under government, and was made ſecretary to the king. Theſe honours he willingly renounced, in order that he might devote his time to the ſtudy of the ſacred writings. His works prove how diligently he followed his new profeſſion. He acquired the reſpect and eſteem of the French Proteſtants, and he was choſen deputy to all the ſynods of his province, and to almoſt every national ſynod which was held in his time. He died in 1662, at the age of eighty-nine years. His works are paraphraſes on the books of Proverbs, Eccleſiaſtes, the prophet Daniel, all the epiſtles of St. Paul, and the Apocalypſe, which were publiſhed at different periods. He publiſhed likewiſe "Remarks on the Bible, or an Explanation of the different Words, Phraſes, and Figures of the ſacred Writings;" and "A Treatiſe on the Lord's Supper."

LAUNCE, in *Ichthyology*. See Ammodytes.

LAUNCEGAYS, in our *Old Writers*, a kind of offenſive weapons now diſuſed, and prohibited by the ſtatute 7 Rich. II. cap. 13. Many of the commentators on our ancient laws profeſs themſelves unable to explain what kind of weapons theſe were. Groſe ſuggeſts, that the term launcegay may be a corruption of the words lance aigue, a ſharp or pointed lance; and if the intention of the acts be conſidered, it will juſtify, in a degree, this ſuppoſition; as they were evidently framed to prevent thoſe violent affrays that frequently aroſe among the gentry of that time, commonly attended by a numerous ſuite, who, if armed with miſchievous weapons, might have ſpilt much blood. A lance fit for war was, perhaps, termed ſharp, or pointed, in oppoſition to a blunt or tilting lance. See Lance.

LAUNCESTON, in *Geography*, a populous borough and market-town in the hundred of Eaſt, and county of Cornwall, England, is ſituated on an eminence, at the diſtance of one mile from the river Tamer, near the central part of the eaſtern ſide of the county. Its ancient name was Dunheved, the Swelling Hill; but the preſent appellation, according to Borlaſe, ſignifies the "Church of the Caſtle." The caſtle is the moſt important object in the town, to which, in all probability, it gave origin. Its mouldering walls ſurround and cover a conſiderable extent of ground, and prove it to have been a fortreſs of great ſtrength and importance. The principal entrance was from the ſouth-weſt, through a fortified paſſage upwards of an hundred feet in length, and ten in breadth. At the end of this ſtood the great gate, the arch of which was pointed, but is now in ruins. This led to a ſmaller gate, with a round arch, opening into the baſe court, which formed a ſquare of 136 yards, ſurrounded by thick walls and fortified with a deep ditch. At the ſouth-weſt angle was a very ſtrong round tower, whence a terrace extended to the keep or citadel at the ſouth-eaſt angle of the court. This conſiſted of an immenſe artificial hill, nearly ninety feet in perpendicular height, about 300 feet diameter at its baſe, and 93 at its ſummit. The aſcent to this keep originally commenced at a ſemi-circular tower, and continued to the top through a covered way, ſeven feet wide, now in ruins. The keep conſiſts of three wards, and is ſurrounded by a circular wall. The thickneſs of the outer wall, or parapet, is about three feet; the ſecond wall is ſix feet from the former, nearly four times the thickneſs, and conſiderably higher. About eight feet within this wall is another, ten feet thick, and thirty-two feet high from the floor of the incloſed area, the diameter of which is about eighteen feet. In the baſe court formerly ſtood the county gaol, a ſpacious aſſize court, a chapel, and other buildings; but theſe have all been taken down, except the gaol, which retains its ſituation near the bottom of the hill. The building of this caſtle has been generally attributed to William, earl of Moreton and Cornwall, in the time of William the Conqueror; but this opinion is probably erroneous, as the ſtyle of workmanſhip exhibited in ſeveral parts of the remains, is apparently of a much earlier date. The walls of the keep, in particular, have every appearance of being conſiderably more ancient; and from a retroſpective view of events that have occurred in this county, the conjecture appears to be fully warranted that the foundation of the caſtle is as remote as the time of the Britons. The era in which the town was founded, or, at leaſt, began to aſſume a regular form, is better determined; this was about the year 900. No remains of the original buildings are now extant. On the north ſide of the town was a priory of Auguſtine monks, ſaid to have been eſtabliſhed by Warlewaſt, biſhop of Exeter. As this town was a principal reſidence of the earls of Cornwall for many years after its foundation, its conſequence continually increaſed, and many liberties and privileges were granted to its inhabitants. Soon after the conqueſt a weekly market was eſtabliſhed on Sunday; in the reign of king John, the townſmen paid five marks for the removal of the market to Thurſday, but it has ſince been changed to Saturday. In the reign of Henry III. Launceſton was made a free borough by the king's brother, Richard, earl of Poictiers and Cornwall; he alſo granted the inhabitants ſome additional immunities, which were confirmed by ſeveral ſubſequent charters; and in the reign of Richard II. the aſſizes were ordered to be held at Launceſton, and "no where elſe." This regulation was obſerved till the firſt year of George I. when an act was paſſed empowering the lord chancellor to appoint any other place in the county. Since that period the winter aſſizes only have been held here; thoſe of the ſummer having been removed to Bodmin. By a charter of Philip and Mary, granted in 1555, which enumerates and confirms the various prior charters, the government is veſted in a mayor, recorder, and eight aldermen, who, with the free burgeſſes, have the right of electing the parliamentary repreſentatives. The whole number of voters is about twenty. This borough made its firſt return in the twenty-third of Edward I. and had a mayor as early as the time of Edward IV. Near the centre of the town is the church of St. Mary Magdalen, a handſome fabric, built with ſquare blocks of granite, moſt of which are enriched with carved ornaments, executed in a very ſingular manner. At the weſt end is a lofty tower; and a figure of the Magdalen, in a recumbent poſture, is placed in a niche at the eaſt end. This church was originally only a chantry chapel; in the reign of Henry IV. it was re-edified and conſiderably enlarged; in Henry VI.th's reign it was conſtituted a pariſh church, and was again rebuilt in the time of Henry VIII. The town was formerly ſurrounded by a wall, of which ſome parts ſtill remain. The ſtreets are narrow; but the houſes are well built; on the ſouth ſide is a fortified gateway, containing an apartment uſed as the town gaol. The children of the poor are educated in two charity-ſchools maintained by voluntary ſubſcription; and a free-ſchool founded and endowed by queen Elizabeth. Launceſton is diſtant from London 213 miles; has a weekly market on Wedneſday, beſides that on Saturday already mentioned, and ſix annual fairs; the return to parliament in the year 1801 ſtated the population to be 1483, the number of houſes 226. The houſes of this town are connected with thoſe of Newport, which is a borough, though apparently only part of Launceſton. See Newport.

About two miles north of this town is Werrington, a ſeat of the duke of Northumberland. Polwhele's Hiſtory of Cornwall, 4to. Beauties of England and Wales, vol. ii.

LAUNCH, in *Ship Building*, is the ſlip or deſcent whereon the ſhip is built, alſo the whole machinery uſed in launching.

To facilitate the operation of launching, the ſhip, when ſhe is firſt built, is ſupported by ſtrong platforms, laid with a gradual inclination to the water, on the oppoſite ſides of her keel, to which they are parallel. Upon the ſurface of this declivity are placed two correſponding ranges of planks, which compoſe the baſe of a frame, called the *cradle*, whoſe upper part envelops the ſhip's bottom, to which it is ſecurely attached. Thus, the lower ſurface of the cradle, conforming exactly to that of the frame below, lies flat upon it, lengthways, under the oppoſite ſides of the ſhip's bottom; and as the former is intended to ſlide downwards upon the latter, carrying the ſhip along with it, the planes or faces of both are well daubed with ſoap and tallow. The neceſſary preparations for the launch being made, all the blocks and wedges by which the ſhip was formerly ſupported, are driven out from under her keel, till the whole weight gradually ſubſides upon the platforms, which are accordingly called the ways. The ſhores and ſtanchions, by which ſhe is retained upon the ſtocks till the time of launching, are at length cut away, and the ſcrews applied to move her, if neceſſary. The motion uſually begins at the inſtant when the ſhores are cut, and the ſhip ſlides downward along the ways, which are generally prolonged under the ſurface of the water to a ſufficient depth, to float her as ſoon as ſhe arrives at the fartheſt end thereof. When a ſhip is to be launched, the enſign, jack, and pendant, are always hoiſted, the laſt being diſplayed from a ſtaff erected in the middle of the ſhip. Ships of the firſt rate are commonly conſtructed in dry docks, and afterwards floated out, by throwing open the flood-gates, and ſuffering the tide to enter, as ſoon as they are finiſhed. Falconer.

LAUNCHING, the act of conveying the ſhip into the water after ſhe is built.

Launching-*Draft of Water*, the depreſſion of the ſhip, when firſt launched below the water's ſurface.

Launching-*Planks*, form the upper ſurface of the platform on each ſide the ſhip, whereon the buldgeways ſlide in the act of launching the ſhip.

LAUNDER, in *Mineralogy*, a name given in Devonſhire, and other places, to a long and ſhallow trough, which receives the powdered ore, after it comes out of the box, or coffer, which is a ſort of mortar, in which it is powdered with iron peſtles.

The powdered ore, which is waſhed into the launder by the water from the coffer, is always fineſt neareſt the grate, and coarſer all the way down. See Buddle and *Dreſſing of* Ore.

LAUNDRY, as if *Lavanderie*, Fr. the room in which clothes are waſhed; or, in a more reſtricted and appropriate ſenſe, as the term is uſed in the ſubſequent article, it denotes the place where clothes are mangled, dried, and ironed. Under this head we ſhall include the *waſh-houſe*, as it is neceſſarily connected with the laundry. Waſhing and getting up linen are employments of great importance in moſt families, and they have engaged the attention of many ingenious mechanics, who have contrived various waſhing-machines for the abridgment of labour and expence in this department of domeſtic economy. Moſt of the machines hitherto uſed are objectionable on many accounts, but principally becauſe they operate by *friction*, inſtead of *preſſure*. When the linen is properly prepared for waſhing, it may be thoroughly cleanſed by *preſſure* only. Rubbing it with the hands, or by any machine that operates by friction, injures it more than the wear it ſuſtains in actual uſe. Hence it follows that the beſt method of cleanſing foul linen is, firſt, to prepare it for the operation by ſoaping it where neceſſary, and putting it into ſoak for at leaſt twelve hours. This will looſen the filth, and decompoſe the greaſe and other matter with which it is ſoiled, and it will then be readily removed by alternately ſoaking, and ſqueezing or preſſing. The deſideratum, therefore, is, to conſtruct a machine that would, by a rotative motion, or an up-and-down ſtroke, (like pumping) alternately preſs and ſaturate the linen with the

the ſuds, and laſtly with clear water. The machine that comes neareſt to this, of any that has fallen under our notice, is one invented by Mr. Gould.

We ſhall now deſcribe a waſh-houſe and laundry, conſtructed upon ſcientific principles by John Bentley, eſq. the preſent poſſeſſor of Highbury Houſe, near London, being the completeſt of the kind we have met with.

The waſh-houſe is 24 feet long, nine feet broad, and eight feet high. It is furniſhed with a filtering machine, a ciſtern for filtered water, two coppers, a copper cullender, a jack with pullies, ſix waſhing tubs, a ſtone ſink, a table, a wringing machine, and a pump of hard water.

The floor is rough Yorkſhire-ſtone, laid upon a ſharp current. Over two-thirds of the roof is a lead ciſtern containing 40 hogſheads of rain water, ſupplied from the adjoining buildings. The other third of the roof is conical, ſurmounted with a cylinder for a ſteam-vent, which opens and ſhuts at pleaſure. When open, beſides emitting the ſteam, it admits both light and air. The ciſtern for filtered water holds 200 gallons, and ſupplies, by pipes and cocks, the copper tubs and ſink.

The firſt copper is fixed ſo that the top of it is level with the bottom of the ciſtern, and the bottom of it is level with the top of the other copper, and the tops of the tubs and ſink, all which it ſupplies with hot water. The tubs, coppers, and ſink, are ſupplied with cold water from the ciſtern. Each of the tubs has a braſs plug at bottom, to diſcharge the foul water. A nine-inch board runs along the front of the tubs and ſink on the ground, to prevent the ſplaſhing of the water when diſcharged. Each tub is furniſhed with a ſmall wooden ſtrainer for ſoap.

The ſecond copper is for boiling the linen, and has a copper cullender to hold the linen, which is drawn up by the jack and pullies. The jack has a paul and ratchet wheel to keep the cullender ſuſpended over the copper till the water is drained from the linen into the copper, which can then be turned out altogether into the rinſing-tub. By this contrivance, the uſual mode of poking the linen out with a ſtick (which frequently damages it) is avoided. At the bottom of this copper is a large braſs cock for diſcharging the ſuds when they are done with.

Though the ſix tubs are ſupplied with both hot and cold water, there are only ſix cocks to the whole, one cock ſupplying two tubs, by means of a ſcrew-joint in the nozzle, which turns at pleaſure to either tub. There is alſo a ſcrew-joint between the key and pipe in each cock, by which means it can at any time be repaired without the aſſiſtance of the plumber.

The filtering machine performs its operation by aſcent. It has three cocks in one pipe. The uppermoſt is for regulating the quantity of water to be filtered, which can be varied at pleaſure from 50 to 500 gallons in a day. The other is for cleanſing the machine when ſaturated with filth, which is accompliſhed by only turning the cock, and will, in a few minutes, be as clean as it was at firſt, the mud, &c. being diſcharged at the third or middle cock, which alſo ſerves to draw unfiltered water when required. Under the ciſtern is a receptacle for coals, and under the filtering machine a place for pails and mops. Both ciſterns have a ſurplus water-pipe to prevent running over, and in which are alſo plugs to diſcharge all the water when needful.

The table hangs to the wall, and may be put up and down at pleaſure. It is for ſorting and ſoaping the foul linen, &c.

The laundry adjoining the waſh-houſe is 18 feet ſquare, and 11 feet in height. It has two windows in front. The floor is level, of rubbed Yorkſhire-ſtone, laid upon brick piers, to keep it perfectly free from damp. It is furniſhed with one of Baker's large mangles; an ironing-board 12 feet by three feet, with four large drawers for the ironing-cloth, iron-holders, &c. with room for the clothes-baſkets underneath; a ſtove or drying-cloſet, eight feet by ſix feet; a furnace for heating the cloſet and the irons, and a place for coals under the floor, cloſe by the furnace. The cloſet contains four wooden horſes, each with five rails or bars. Each horſe runs in and out of the cloſet upon two ſmall iron wheels, upon an iron rail-way. One horſe holds ſix ſhirts, or a proportionable quantity of other linen, and the whole will dry off as much and as ſpeedily as ſix women can waſh in ſucceſſion. It hardens the linen after being ironed, and is alſo uſeful for airing feather beds, &c. The linen, whilſt drying, is kept free from ſmoke and duſt, and there never can be any ſteam in the room.

The furnace for heating it is ſimilar to thoſe under coppers or in a hot-houſe, immediately over which, before it enters the flue to the cloſet, is an iron oven for heating the irons. The flue is continued round the bottom of the cloſet, and carried up the end of the building. The top of the horizontal part of the flue is of caſt-iron plates; iron being a good, and brick a bad conductor of heat. A few inches above theſe iron plates, the iron rail-way before mentioned is laid, between which and the flue there is a flooring of wire work. This prevents any accident from the caſual falling of linen upon the flues, but does not impede the aſcent of warm air. Level with the rail-way, inſide the cloſet, there is an opening 15 inches ſquare, communicating with the external air. The cieling of the cloſet is in the form of a hopper, terminating in a funnel of the ſame diameter (15 inches) as the external air-vent. Both theſe vents are furniſhed with a ſliding door, which opens and ſhuts, as required, by pulley cords.

The principle upon which it acts is by heating it to a degree ſufficient to excite a ſtrong evaporation from the wet linen, and carrying off the moiſture by means of the two vents. During the time of its acquiring this heat, both the vents, and alſo the horſes, are kept cloſely ſhut, ſo that the cloſet is nearly air-tight. As ſoon as the proper degree of heat is obtained, both the vents are to be opened, when a ſtrong current of air ruſhes in at the loweſt, carrying up all the vapour from the linen through the upper vent or funnel, when the drying will be very ſpeedily completed. The linen is then removed, a freſh ſupply put in, and the operation repeated as before, beginning by cloſely ſhutting all up.

Beſides the diſpatch and economy attending this waſh-houſe and laundry, the health and comfort of thoſe employed in them are greatly promoted, by being entirely free from the pernicious effects of damp vapour, and in not being incommoded by any extra heat in hot weather.

Since this article was written, the gentleman above mentioned has made a conſiderable improvement in the waſh-houſe. He has conſtructed an apparatus for performing the operation by *ſteam*. Although it is not yet (December 1811) quite completed, it is ſufficiently ſo to have aſcertained by experiment, that every ſpecies of *white* linen may be better cleanſed this way than it is poſſible to do it by the hands, or any machine hitherto invented.—We ſay *white* linen, becauſe the operation proves to be ſo powerful, that it diſcharges the colour from all dyed and printed articles that have been tried with it.

At the end of the waſh-houſe a ſtrong iron-boiler is fixed, three feet ſix inches long, one foot eight inches wide, and two feet nine inches deep, with fittings up the ſame as thoſe for ſteam-engines, *viz.* a feeding-pipe with regulator, a mercury gauge-tube, a three-inch ſteam-tube, two obſervation cocks, a ſafety valve, and a diſcharging pipe. From the ſteam-tube, a pipe of $1\frac{1}{2}$ inch bore is continued the whole length of the building; and from this main ſteam-pipe, others of ſmaller dimenſions, from $\frac{3}{8}$ to $\frac{3}{4}$ inch diameter, are laid on the different ſteaming veſſels. Theſe may be either of wood, tin, or copper; but the latter is certainly beſt, for the action of ſteam is ſo powerful, that it will ſoon render both wood and tin uſeleſs. They muſt be fitted with a looſe grating inſide, about two inches from the bottom; a cock at one end, to admit the ſteam; and another at the other end, quite at the bottom, to diſcharge the foul water. The proceſs is as follows: Soap the linen where it is very dirty, and put it to ſoak; then place the linen upon the grating in the ſteam veſſel; cover it up, and turn on the ſteam. The diſcharging cock muſt be occaſionally opened, to draw off the condenſed ſteam; and when it is found to come off perfectly clear, which it will do in half an hour, or leſs, the operation is finiſhed, and the articles will come out perfectly clean, and moſt beautifully white.

By this ſimple and eaſy proceſs, the drudgery of waſhing is entirely done away; and the ſaving in time, ſoap, and other expences, is greater than can well be conceived. The ſaving of water in many ſituations is a matter of conſequence; but what is of ſtill more importance, the linen will laſt double the time it otherwiſe would do: for as there is neither preſſure nor friction, it cannot be injured in this proceſs.

Waſhing by ſteam has been practiſed, but never before by this method. The way it has been done has been by ſteaming the linen *in the ſuds*. Hence it is evident that the filth that is forced out of the linen is mixed with the ſuds, and is again diſperſed equally all through the linen; ſo that repeated changes of ſoap and water muſt be had recourſe to, before the linen is made thoroughly clean. But by this new proceſs, the linen being put into the ſteaming veſſels, without any other liquor than it retains on being taken out of the ſoaking tubs, every particle of matter which is diſlodged from it inſtantly ſubſides to the bottom of the veſſel, and never can again come in contact with the linen. Our readers muſt excuſe the prolixity of this article, on account of its great importance and uſefulneſs in domeſtic economy to every family.

Note.—The boiler above deſcribed alſo heats an hot-houſe in an adjoining garden, beſides boiling a copper, and thus does the work of ſix fires.

LAUNOY, John de, in *Biography*, was born at Valdeſie, a village of Lower Normandy, in 1603. He received the early part of his education at Conſtance, whence he was ſent to the univerſity of Paris, where he purſued his ſtudies with great diligence for five or ſix years. In 1636 he was ordained prieſt, and ſoon after was admitted to the degree of doctor of divinity at the college of Navarre. For the ſake of improvement he travelled to Rome, and became acquainted with the moſt eminent characters; but on his return to Paris, he applied with great intenſeneſs to his ſtudies, and compoſed a vaſt variety of works on ſubjects relating to hiſtory, criticiſm, and eccleſiaſtical diſcipline. At his own houſe he formed a kind of literary ſchool, for the diſcuſſion of topics that tended to the improvement of the mind. He was an able defender of the rights of the Gallican church, in oppoſition to the pretenſions of Rome. He attacked ſeveral falſe traditions with great intrepidity; and he contended ſo forcibly for expunging the names of ſeveral falſe ſaints from the calendar, that he was called the baniſher of ſaints. It was ſaid of him, that "he was a terrible critic, formidable both to heaven and earth; that he had expelled a greater number of ſaints from paradiſe than ten popes have canonized. He ſuſpected the whole martyrology; and he examined all the ſaints one after another, in the ſame manner as they do the nobility in France." By the freedom which he exerciſed in his writings, he provoked againſt him an hoſt of enemies; and he was obliged, at the intimation of the king, to diſcontinue his aſſemblies, which were held at his own apartments. He met with an excellent friend in the abbè d'Eſtrees, who preſented him with a very valuable preferment in the church, which he ſoon reſigned, chooſing to live contented on a ſmall income rather than endure the cares of buſineſs. He ſaid that it was much more difficult for a Chriſtian to make a right uſe of riches, than to live without them. He died in his 75th year, in 1678. His works are very numerous, and have been collected and publiſhed in ten volumes, folio. Of one of his pieces, *viz.* "De Auctoritate negantis Argumenti," Bayle ſays, had he publiſhed nothing elſe, he would have eſtabliſhed his fame as a benefactor to the republic of letters, by a thouſand fine hints which it contains for diſtinguiſhing truth from falſehood in hiſtorical matters. He was a perſon of great ſimplicity, a good friend, diſintereſted, and laborious; an enemy to vice, void of ambition, charitable and beneficent, and ever obſerving the ſame tenor of life. Bayle. Moreri.

LAUNY, or Laun, in *Geography*, a town of Bohemia, in the circle of Saatz, on the Egra, on the road from Leipſic to Prague; 9 miles E.N.E. of Saatz. N. lat. 50° 20′. E. long. 13° 54′.

LAVOISIER, Anthony Lawrence, in *Biography*, a diſtinguiſhed chemical philoſopher, was born at Paris, on the 13th of Auguſt 1743. His father, who was a man of opulence, ſpared no expence in beſtowing upon him the advantages of a liberal education; and he diſplayed very early proofs of the extent and ſucceſs of his ſtudies, eſpecially in the circle of the phyſical ſciences. In the year 1764, the French government propoſed a prize queſtion, relative to the beſt method of lighting the ſtreets of a large city. Lavoiſier preſented a diſſertation on the ſubject, which he diſcuſſed upon the moſt enlarged and philoſophical views. This was not only highly approved, and printed at the expence of the Academy of Sciences, but obtained for him the preſent of a gold medal from the king, which was delivered to him by the preſident of the Academy, at a public ſitting, in April 1766. Two years afterwards, he was admitted a member of that learned body, of which he was conſtantly one of the moſt active and uſeful aſſociates. About the ſame time, he was occupied in experimental reſearches on a variety of ſubjects; ſuch as the analyſis of the gypſum found in the neighbourhood of Paris; the cryſtallization of ſalt; the properties of water; and in exploring the phenomena of thunder, and of the aurora borealis: and he diſtinguiſhed himſelf by ſeveral diſſertations on theſe and other topics, practical and ſpeculative, which appeared in different periodical works. In the Memoirs of the Academy for 1770 were publiſhed his obſervations on the nature of water, and on the experiments which had been ſuppoſed to prove the poſſibility of its converſion into earth. He proved, by a careful repetition of theſe experiments, that the earthy depoſit, left after repeated diſtillations of water, proceeded ſolely from an abraſion of the veſſels employed. Lavoiſier performed ſeveral journies into various parts of France, in company with M. Guettard; in the courſe of which he collected a ſtore of materials for a lithological and mineralogical hiſtory of that kingdom, which he ingeniouſly arranged in the form of a chart. Theſe materials were the baſis of a great work on the revolutions of the globe, and on the formation of the ſtrata of the earth: two intereſting ſketches of which were printed in the Memoirs of the Academy for the years 1772 and 1787.

In fact, M. Lavoiſier devoted his whole time and fortune to the cultivation of the ſciences, the boundaries of which he ſeemed, by ſuch an union of zeal, talent, and wealth, deſtined to extend. About this period, a new mine of experimental reſearch, which promiſed the moſt curious and intereſting reſults, had been opened out by the genius of Dr. Black, and already purſued with much ſagacity and induſtry by Dr. Prieſtley.—We allude to the diſcovery of the properties of certain aëriform ſubſtances, gaſes, or (as they have been called) factitious airs, which had hitherto eſcaped the attention of chemical inquirers. M. Lavoiſier, ſtruck with the beauty and importance of theſe diſcoveries, entered into the ſame field of reſearch with all the ſcientific ardour by which he was characterized: and here the advantage of his ample wealth was manifeſt; for he conducted his experiments upon a large ſcale, with coſtly inſtruments of the moſt improved conſtruction. The reſult of this courſe of experimental inquiry he gave to the world in 1774, in his "Opuſcules Chymiques," which contained not only a clear and elegant view of all that had hitherto been done, in regard to gaſeous or aëriform fluids, but alſo ſeveral original experiments, remarkable for their ingenuity and accuracy.

The exiſtence of a gaſeous body, in a *fixed* or ſolid ſtate, in the mild alkalies and alkaline earths, which, when expelled from theſe ſubſtances, aſſumed an aërial form, and left them in a cauſtic ſtate, as well as its production during the combuſtion of fuel, had been demonſtrated by Dr. Black; and Bergman had ſhewn that this air poſſeſſed acid properties. Dr. Prieſtley had alſo ſubmitted it to various experiments in the year 1767; but no progreſs had been made in aſcertaining the real conſtituent parts of this acid gas, or fixable air. The honour of this diſcovery was left for Lavoiſier; who, in 1772, by expoſing a piece of charcoal, incloſed in a glaſs veſſel, to the action of a *lens*, diſcovered that part of the charcoal was conſumed, that a diminution of air had taken place in the receiver, and that the reſidue poſſeſſed the properties of the fixable air:—whence he concluded that charcoal was one of the conſtituent parts of this gas. The combuſtible nature of the diamond having been already proved by Macquer, d'Arcet, and others, Lavoiſier was induced to ſubmit this ſubſtance to the ſame treatment as the charcoal in the former experiment; and he found that preciſely the ſame reſults took place: whence he inferred, that there exiſted a great analogy between charcoal and diamond. Both theſe concluſions have been amply confirmed by ſubſequent experiments: they were in every reſpect important; and ſeem, together with the facts previouſly known, of the production of acids by the combuſtion of ſulphur and phoſphorus, to have given the firſt hint to Lavoiſier of his ſubſequent general theory of the formation of acids.

Lavoiſier now turned his experimental reſearches to the ſubject of the *calcination* (as it was then termed, from its apparent ſimilarity to the proceſs of making *lime*) of metals. It had already been ſhewn by Rey and Homberg, that metals acquire an augmentation of weight during calcination. This additional weight was attributed by the latter to the fixation of heat and light; but was ſuppoſed by the former to proceed from the fixation of a part of the air. M. Lavoiſier publiſhed the reſult of his inveſtigation of this curious ſubject in 1774, in a memoir on the calcination of tin in cloſe veſſels, in which he demonſtrated the following very important facts. He ſhewed, 1, that a given quantity of air was requiſite for the calcination of a given quantity of tin; 2, that a part of the air is abſorbed during this proceſs, by which not only the bulk, but the weight of the air is diminiſhed; 3, that the weight of the tin is increaſed during the ſame proceſs; and, 4, that the weight acquired by the tin is exactly equal to that which is loſt by the air.

Thus by a few ſimple, accurate, and well-choſen experiments, Lavoiſier had apparently arrived at the legitimate inference, that during the proceſs of the formation of acids, whether with carbonaceous matter, ſulphur, or phoſphorus, and alſo during that of the calcination of metals, an abſorption and fixation of air take place, and thus he gained a glimpſe of principles, in the view of which his ſingular ſagacity in deviſing experiments, and his accuracy in executing them, would in all probability have alone conducted him to thoſe brilliant reſults, to which the active genius of Dr. Prieſtley ſo materially contributed. The ſynthetic proofs only of this union of air with the baſe had been as yet aſcertained: but Dr. Prieſtley firſt furniſhed the analytic proof, by diſſevering the combination; a diſcovery which at once advanced the naſcent theory of Lavoiſier, and, in his hands, became the ſource of more than one important concluſion. In Auguſt 1774, Dr. Prieſtley diſcovered, that by heating certain metallic calces, eſpecially the calcined mercury, (the precipitate *per ſe*, as it was then called,) a quantity of air was ſeparated, while the mercury reſumed its metallic form; and this air, which he found was much purer than that of the atmoſphere, he called, from the theory of the time, *dephlogiſticated* air. The ſucceeding winter he ſpent at Paris, and communicated to Lavoiſier, and the other philoſophers there, his recent diſcovery: and the importance of this intelligence to the views of Lavoiſier was manifeſt in a memoir publiſhed by him in the following year, 1775, on the nature of the principle which combines with metals during their calcination. In this paper he ſhewed, in conformity with the experiments of Dr. Prieſtley, that the mercurial precipitate *per ſe*, by being heated in a retort, gives out a highly reſpirable air, (ſince called *oxygen*,) and is itſelf reduced to the metallic ſtate; that combuſtible bodies burn in this air with increaſed brilliancy; and that the ſame mercurial calx, if heated with charcoal, gives out not the pure air, but fixed air:—whence he concluded that fixed air is compoſed of charcoal and the pure air. It has, therefore, ſince been called *carbonic acid*.

A ſecond very important conſequence of Dr. Prieſtley's diſcovery of the pure or vital air, was the analyſis of the air of the atmoſphere: which was accompliſhed by Lavoiſier in the following manner. He included ſome mercury in a cloſe veſſel, together with a known quantity of atmoſpheric air, and kept it for ſome days in a boiling ſtate: by degrees a ſmall quantity of the red calx was formed upon the ſurface of the metal; and when this ceaſed to be produced, the contents of the veſſel were examined. The air was found to be diminiſhed both in bulk and weight, and to have been rendered altogether incapable of ſupporting combuſtion or animal life: part of the mercury was found converted into the red calx, or precipitate *per ſe*; and, which was extremely ſatisfactory, the united weight of the mercury and the precipitate exceeded the weight of the original mercury, by preciſely the ſame amount as the air had loſt. To complete the demonſtration, the precipitate was then heated, according to Dr. Prieſtley's firſt experiment, and decompoſed into fluid mercury and an air, which had all the properties of vital air; and this air, when mixed with the unreſpirable reſidue of the original air of the receiver, compoſed an elaſtic fluid poſſeſſing the ſame properties as atmoſpherical air. The vital air was afterwards made the ſubject of various experiments in reſpect to the calcination of metals, to the combuſtion and converſion of ſulphur and phoſphorus into acids, &c. in which proceſſes it was found to be the chief agent. Hence it was named by Lavoiſier *oxygen* (or generator of acids), and the unreſpirable reſidue of the atmoſphere was called *azot*, (*i. e.* incapable of ſupporting *life.*)

The new theory thus acquired farther ſupport and conſiſtency: oxygen appeared to be one of the moſt active and important agents of chemiſtry and of nature; combuſtion, acidification, and calcination, (or, as it was now called, *oxydation*. the calces being alſo termed *oxyds*, *i. e.* ſomething approaching to, or reſembling acids,) were proved to be proceſſes ſtrikingly analogous to each other; all according in theſe points, that they produced a decompoſition of the atmoſpheric air, and a fixation of the oxygenous portion in the ſubſtance acidified or calcined.

Time alone ſeemed now requiſite to eſtabliſh theſe doctrines, by exemplifying them in other departments of chemical reſearch. In the year 1777, ſix memoirs were communicated to the Academy of Sciences by Lavoiſier, in which his former experiments were confirmed, and new advances were made to a conſiderable extent. Our countrymen, Black and Crawford, in their reſearches reſpecting latent heat, and the different capacities of bodies under different circumſtances, had laid a ſolid foundation, on which the doctrines of combuſtion, reſulting from the foregoing experiments, might be perfected, and the cauſe of the light and heat connected with it might be explained. The firſt mentioned philoſopher, Dr. Black, had ſhewn, that a ſolid, when it is made to aſſume a liquid form, and a liquid, when it aſſumes the form of vapour, abſorbs or combines with, and renders latent, a large portion of heat, which is again parted with, becomes free and cognizable by the ſenſe of feeling, and by the thermometer, when the vapour is again condenſed into a liquid, and the liquid becomes ſolid. In like manner, it was now ſaid by Lavoiſier, during the proceſs of combuſtion, the oxygen, which was previouſly in a gaſeous ſtate, is ſuddenly combined with the ſubſtance burnt into a liquid or ſolid. Hence all the latent heat, which was eſſential to its gaſeous ſtate, being inſtantaneouſly liberated in large quantity, produces flame, which is nothing more than very condenſed free heat. About the ſame time, the analogy of the operation and neceſſity of oxygen in the function of reſpiration, with the preceding hypotheſis of combuſtion, was pointed out by Lavoiſier. In the proceſs of reſpiration, it was found that, although atmoſpheric air is inhaled, carbonic acid and azot are expired. This animal operation, ſaid Lavoiſier, is a ſpecies of ſlow combuſtion: the oxygen of the air unites with the ſuperfluous carbon of the venous blood, and produces carbonic acid, while the latent or combined *caloric* (the matter of heat) is ſet free, and thus ſupplies the animal heat. Ingenious and beautiful, however, as this extenſion of the analogy appeared, the ſubject of animal temperature is ſtill under many obſcurities and difficulties.

The phenomena of chemiſtry, however, were now explicable upon principles more ſimple, conſiſtent, and ſatisfactory than by the aid of any former theory; and the Lavoiſierian doctrines were every where gaining ground. But there yet remained a formidable objection to them, which was derived from a circumſtance attending the ſolution of metals in acids; to wit, the production of a conſiderable quantity of inflammable air. If ſulphuric acid (formerly called vitriolic acid, or oil of vitriol) conſiſts only of ſulphur and oxygen, it was ſaid, and bar iron is nothing more than this metal in a ſimple ſtate, how does it happen, that when theſe two ſubſtances, with a little water, come in contact, they ſhould produce a large quantity of inflammable air during their re-action? This objection was unanſwerable, and appeared to be fatal to the whole theory: but it was moſt opportunely converted into an argument in its favour, by the great diſcovery of the decompoſition of water, made by Mr. Cavendiſh; who reſolved that element, as it was formerly eſteemed, into oxygen and inflammable air. The latter has ſince, therefore, been called *hydrogen*, or generator of water. This experiment was repeated with full ſucceſs by Lavoiſier and his aſſociates in 1783; and the diſcovery was farther eſtabliſhed by a ſucceſsful experiment of the ſame chemiſts, carried on upon a grand ſcale, in which, by combining the oxygen with hydrogen, they produced water, and thus adding ſyntheſis to analyſis, brought the fact to demonſtration.

This new view of chemical phenomena, together with the immenſe acceſſion of new compounds and ſubſtances, which the labours of modern experimentaliſts had brought to light, appeared to demand a correſpondent alteration in the nomenclature. Accordingly, a committee of ſome of the ableſt of the French chemiſts, of whom Lavoiſier was the moſt conſpicuous, undertook the arduous taſk, and produced a regular ſyſtem of nomenclature, derived from the Greek language, which, although far from being faultleſs, and notwithſtanding much oppoſition with which it was at firſt treated, has become the univerſal language of chemical ſcience, and has been adopted even in pharmacy and medicine. His work, entitled "Elemens de Chymie," which was publiſhed in 1789, was a model of ſcientific compoſition.

We have hitherto viewed M. Lavoiſier principally as a chemical philoſopher, in which character he has founded his great claims to the reſpect and admiration of poſterity. But the other arts and ſciences are indebted to him for conſiderable ſervices which he rendered them, both in a public and private capacity. In France, more than in any other country, men of ſcience have been conſulted in matters of public concern; and the reputation of Lavoiſier cauſed him to be applied to, in 1776, to ſuperintend the manufacture of gunpowder, by the enlightened miniſter Thurgot. By the application of his chemical knowledge to this manufacture, he was enabled to increaſe the exploſive force of the powder by one fourth; and while he ſuppreſſed the troubleſome regulations for the collection of its materials from private houſes, previouſly adopted, he quintupled the produce. The Academy of Sciences received many ſervices from his hands. In addition to the communication of forty papers, relative to many of the moſt important ſubjects of philoſophical chemiſtry, which were printed in the twenty volumes of Memoirs, from 1772 to 1793, he moſt actively promoted all its uſeful plans and reſearches, being a member of its board of conſultation, and, when appointed to the office of treaſurer, he introduced order into its accounts, and economy into its expenditure. When the new ſyſtem of meaſures was propoſed, he contributed ſome new and accurate experiments on the expanſion of metals. The national convention conſulted him with advantage concerning the beſt method of manufacturing aſſignats, and of ſecuring them againſt forgery. Agriculture early engaged his attention, and he allotted a conſiderable tract of land on his eſtate in the Vendome, for the purpoſe of experimental farming. The committee of the conſtituent aſſembly of 1791, appointed to form an improved ſyſtem of taxation, claimed the aſſiſtance of his extenſive knowledge; and he drew up, for their information, an extract of a large work on the different productions of the country and their conſumption, for which he had been long collecting materials. This was printed by order of the aſſembly, under the title of "Richeſſes Territoriales de la France," and was eſteemed the moſt valuable memoir on the ſubject. In the ſame year, he was appointed one of the commiſſioners of the national treaſury; and he introduced into that department ſuch order and regularity, that the proportion between the income and the expenditure, in all the branches of government, could be ſeen at a ſingle view every evening. This ſpirit of ſyſtematic and lucid arrangement was, indeed, the quality by which he was peculiarly diſtinguiſhed, and its happy influence appeared in every ſubject which occupied his attention.

The private life of this diſtinguiſhed perſon was equally eſtimable with his public and philoſophical character. He was extremely liberal in his patronage of the arts, and encouraged young men of talents in the purſuit of ſcience. His houſe became a vaſt laboratory, where philoſophical experiments were inceſſantly carrying on, and where he held converſaziones twice a week, at which all the votaries of learning and ſcience, foreigners as well as Frenchmen, aſſembled. In his manners M. Lavoiſier was mild, affable, and obliging; a faithful friend and huſband, a kind relation, and charitable to the poor upon his eſtates; in a word equally claiming eſteem for his moral qualities, as for thoſe of his underſtanding.

The time was arrived, however, when diſtinction even by his talents and worth was ſo far from ſecuring public reſpect, amid the tumults of the revolution, that it became a ſource of danger, and, when joined with wealth, was almoſt certainly fatal. All thoſe eſpecially, who had held any ſituation under the old adminiſtration, particularly in the financial departments, were ſacrificed during the murderous reign of Robeſpierre, to the popular odium. Lavoiſier was ſeized and thrown into priſon, upon ſome charges fabricated againſt himſelf and twenty-ſeven other farmers-general. During his confinement he foreſaw that he ſhould be ſtripped of all his property; but conſoled himſelf with the expectation that he would be able to maintain himſelf by the practice of pharmacy. But a more ſevere fait awaited him: he was capitally condemned, and dragged to the guillotine, on the 8th of May, 1794.

The name of Lavoiſier will always be ranked among the moſt illuſtrious chemiſts of the preſent age, when it is conſidered what an extenſive and beneficial influence his labours have had over the whole ſcience. It has been ſaid, indeed, that if he be eſtimated on the ſcore of his actual diſcoveries, not only Scheele and Prieſtley, and Cavendiſh, but many more, will ſtand before him. But he poſſeſſed in a high degree that rare talent of diſcernment, by which he detected analogies, which others overlooked, even in their own diſcoveries, and a ſagacity in deviſing and an accuracy in completing his experiments, for the purpoſe of elucidating every ſuggeſtion which he thus acquired, ſuch as few philoſophers have poſſeſſed. No one who did ſo much, probably ever made ſo few unſucceſsful or random experiments. It was the ſingular perſpicuity, ſimplicity and order to which he reduced the phenomena of chemiſtry, that claimed for his theory the general reception which it met with, and occaſioned the abandonment of thoſe doctrines which prejudice and habit conſpired to ſupport. Subſequent diſcoveries, however, and more eſpecially thoſe numerous facts which the genius of Mr. Davy has lately brought to light, through the medium of that moſt powerful agent of decompoſition, galvaniſm, have rendered ſeveral modifications of the Lavoiſierian theory neceſſary, and bid fair to produce a more general revolution in the language and doctrines of chemiſtry.

M. Lavoiſier married, in 1771, the daughter of a farmer-general, a lady of pleaſing manners and conſiderable talents, who partook of her huſband's zeal for philoſophical inquiry, and cultivated chemiſtry with much ſucceſs. She engraved with her own hand the copper plates for his laſt work. Mad. Lavoiſier has ſince given her hand to another eminent philoſopher, count Rumford. Gen. Biog. Hutchinſon's Biog. Med.

LAVONIA, in *Geography*, a town of Naples, in Calabria Citra; 8 miles W.S.W. of Roſſano.—Alſo, a town of Calabria Ultra; 14 miles W. of Squillace.

LAVORA, or TERRA DI LAVORA, a fertile and delightful province of Naples, diverſified with hills and plains, lying between 40° 36′ and 41° 45′ N. lat.; anciently Terra Laboria, Campania, and Campus Laboricus, and in the middle ages the Caſtellany of Capua. It received its preſent name in 1091 from Richard II., prince of Capua, on account of the fitneſs of the ſoil for every kind of cultivation. This province is populous, and abounds in corn, wine, oil, and other productions of Italy. It is bounded on the N.W. by Campagna di Roma, on the N. and E. by Abruzzo Citra and Contado di Moliſe, on the S.E. and S. by Principato Ultra and Principato Citra, and on the W. by the Mediterranean; being 90 miles from N.W. to S.E. and 30—45 in breadth; and in 1779 it contained 1,210,989 inhabitants. It is watered by the rivers Garigliano and Volturno; the former, which is a placid ſtream, riſes in Abruzzo Ultra, and falls into the ſea below Trajetto; the latter deſcends from the Apennines, paſſes by Capua, and loſes itſelf in the gulf of Gæta. The capital of this province is Naples.

LAUPEN, a town of Switzerland, in the canton of Berne, and chief place of a bailiwick: it is ſituated at the conflux of the Sannen and Senſe; 5 miles S.W. of Berne. It was once imperial.

LAUQUEN, called *Villarica* by the Spaniards, a lake of Chili, about 72 miles in circuit, with a beautiful conic hill in the centre. From this hill ſprings the river Tolten, which joins the Pacific ocean.

LAUR, a town of Perſia, in Chuſiſtan; 50 miles E. of Toſtar.

LAURA, a town of Ruſſia, in the government of Moſcow; 36 miles N.E. of Moſcow.

LAURA, a town of Hindooſtan, in the circar of Nagore; 20 miles W. of Catchwana,

LAURA, Λαυρα, primarily ſignifying *village*, *ſtreet*, or *hamlet*, a name given to the reſidence of the ancient monks. Authors cannot agree about the difference between a laura and a monaſtery: ſome pretend, that a laura was a monaſtery, wherein there lived at leaſt a thouſand monks; but this is nowiſe credible. The more natural opinion is, that the ancient monaſteries were the ſame with the modern, conſiſting of large buildings divided into halls, chapels, and cells, poſſeſſed by the monks, each of whom had his apartment; but the lauræ were a kind of villages, whereof each houſe was inhabited by one or two monks at the moſt; ſo that the houſes of the Chartreux ſeem, in ſome meaſure, to repreſent the ancient lauræ, and thoſe of the other monks proper monaſteries. The term laura was only underſtood of the religious places in Egypt, and the Eaſt, where their houſes ſtood apart from each other, and were not joined by any common cloiſter, the monks that inhabited them only meeting in public once a week.

LAURADIO, in *Geography*, a town of Portugal, in the province of Eſtramadura, on the S. ſide of the Tagus; 6 miles S.S.E. of Liſbon.

LAURAGAIS, the name, before the revolution, of a ſmall country of France, in Upper Languedoc, of which Caſtelnaudary was the capital.

LAURANA, a ſea-port of Iſtria, with a ſmall harbour, in the gulf of Quarnero; 8 miles S. of Caſtua. N. lat. 45° 28′. E. long. 14° 17′.

LAURE, a town of Portugal, in the province of Alantejo; 30 miles W.N.W. of Evora.

LAUREAT, Poet, is a well known office in the king's houſhold. Sir John Hawkins obſerves, that there are no records which aſcertain the origin of the inſtitution of the office in this kingdom, though there are many that recognize it. It appears that as early as the reign of Henry III. there was a court poet, named Henry de Avranches, who is ſuppoſed to have had an appointment of a hundred ſhillings a year, by way of ſalary or ſtipend. In 1341 Petrarch was crowned with laurel in the Capitol by the ſenate of Rome; afterwards Frederic III. emperor of Germany, gave the laurel to Conradus Celtes; and ever ſince the counts palatine of the empire have claimed the privilege of ſolemnly inveſting poets with the bays. Chaucer, who was contemporary with Petrarch, and acquainted with him, when abroad, aſſumed the title of poet-laureat on his return to England; and in the 12th year of Richard II. obtained a grant of an annual allowance of wine. We read of perſons under the ſame title in the reigns of Edward IV. Henry VII. and VIII. and of James I. who, in 1615, granted to his laureat an annual penſion of 100 marks. In the year 1630, this penſion was augmented, by letters patent of Charles I. to 100*l.* *per annum*, with an additional grant of one terſe of Canary Spaniſh wine, to be taken out of the king's ſtore of wines yearly. Hawkin's Hiſt. of Muſic, vol. iv. p. 13.

LAUREATION, a term in the Scottiſh univerſities, uſed for the act of taking up the degree of a maſter of arts, to which the ſtudents are admitted after four years' ſtudy in the univerſities.

LAUREL, in *Botany* and *Gardening*. See Laurus and Prunus.

Laurel, *Common* or *Cherry*, *Prunus laurocerasus*, in the *Materia Medica*, is a native of the Levant, and has been long cultivated in Britain. The leaves have a bitter ſtyptic taſte, accompanied with a flavour reſembling that of bitter almonds. The flowers alſo have a ſimilar flavour. The powdered leaves, applied to the noſtrils, excite ſneezing, but leſs powerfully than tobacco. The kernel-like flavour of the leaves has cauſed them to be uſed for culinary purpoſes, eſpecially in cuſtards, puddings, blanc-mange, &c. and as the proportion to the quantity of milk is inconſiderable, this has been done without any noxious effect. However, as the poiſonous quality of this laurel is now indubitably proved, the public ſhould be cautioned againſt its internal uſe. The firſt and principal proofs of the deleterious effects of this vegetable upon mankind were communicated to the Royal Society by Dr. Madden of Dublin, in a "letter giving an account of two women being poiſoned by the ſimple diſtilled water of laurel-leaves, and of ſeveral experiments upon dogs, by which it appears that this laurel is one of the moſt dangerous poiſons hitherto known." He mentions alſo the caſe of a gentleman, who by miſtake drank a quantity of this laurel water, and died in a few minutes, complaining of a violent diſorder in his ſtomach. (See Phil. Tranſ. N° 418. 426. vol. xxxvii.) The caſe of ſir Theodoſius Boughton is more recent. His death in 1780 was aſcribed by an Engliſh jury to this poiſon. In this caſe the active principle of the laurocerasus was concentrated by repeated diſtillations, and given to the quantity of an ounce. It has been found by the experiments of Madden, Mortimer, Nicholls, Langriſh, Vater, Fontana, and others, that to brute animals this poiſon is almoſt inſtantaneouſly mortal. Theſe experiments alſo ſhew, that the laurel-water is deſtructive to animal life, not only when taken into the ſtomach, but alſo on being injected into the inteſtines, or applied externally to different organs of the body. The moſt volatile is the moſt active part of the laurocerasus; and from its ſenſible qualities we may be led to judge, that an analogous principle ſeems to pervade many other vegetable ſubſtances, eſpecially the kernels of drupaceous fruits; and in various ſpecies of the Amygdalus, this ſapid principle extends to the flowers and leaves. It is obſervable, that it is much leſs powerful in its action upon human ſubjects than upon dogs, rabbits, pigeons, and reptiles. To poiſon man, the eſſential oil of the laurocerasus muſt be ſeparated by diſtillation, as in the ſpirituous or common laurel water; and unleſs this is ſtrongly imbued with the oil, or given in a large doſe, it proves innocent. Dr. Cullen remarks, that the ſedative power of the laurocerasus acts upon the nervous ſyſtem in a different manner from opium and other narcotic ſubſtances, whoſe primary action is upon the animal functions; for the laurocerasus does not occaſion ſleep, nor does it produce local inflammation, but ſeems to act directly upon the vital powers. "Although this vegetable ſeems to have occupied the notice of Stoerck, its medicinal uſe has its advocates. From Linnæus we learn, that in Switzerland it is commonly and ſucceſsfully uſed in pulmonary complaints. Langriſh mentions its efficacy in agues; and as Bergius found bitter almonds to have this effect, we may from analogy conclude, that this power of the laurocerasus is well eſtabliſhed. Baylies found that it poſſeſſed a remarkable power of diluting the blood, and from experience, recommended it in all caſes of diſeaſe ſuppoſed to proceed from too denſe a ſtate of that fluid; adducing particular inſtances of its efficacy in rheumatiſm, aſthma, and in ſchirrous affections. Nor does this author ſeem to have been much afraid of the deleterious quality of the laurocerasus, as he orders a pound of its leaves to be macerated in a pint of water, of which he gives from 30 to 40 drops three or four times a day." Woodville's Med. Bot.

Laurel, *Alexandrian*, in *Botany*. See Ruscus.

Laurel, *Dwarf*, of *America*. See Kalmia.

Laurel, *Sea-ſide*. See Phyllanthus.

Laurel, *Spruce*, or *Spurge*. See Daphne.

Laurel *Mountains*, in *Geography*, a range of mountains W. of the Alleghany ridge, and part of the Alleghany mountains; extending from Pennſylvania to North Carolina, and giving riſe to ſeveral branches of the Ohio river. The Great Kanhaway breaks through the Laurel ridge in its way to the Ohio. N. lat. 38° 30'. W. long. 81° 19'. About lat. 36°, in a ſpur of this mountain, is a ſpring of water 50 feet deep, very cold, and, as it is ſaid, blue as indigo. The lands, within a ſmall diſtance of the Laurel mountains, through which the Yonghiogang river runs, are in many places broken and ſtony, but rich and well timbered; and in ſome places, and particularly on Laurel creek, they are rocky and mountainous. From the Laurel mountain to Monongahela, the lands for the firſt ſeven miles are good, level, and fit for farming, interſperſed with fine meadows: the timber, white-oak, cheſnut, hickory, &c. Morſe.

Laurel *River*, a river of Kentucky, which runs into the Cumberland, N. lat. 36° 34'. W. long. 83° 50'.

LAURELS, pieces of gold coined in the year 1619, with the king's head laureated, which gave them the name of laurels; the twenty-ſhilling pieces of which were marked with XX, the ten ſhillings X, and the five ſhilling pieces with V.

LAUREMBERG, Peter, in *Biography*, a learned phyſician, was born at Roſtock, where his father was profeſſor of medicine and mathematics. Peter took the degree of doctor in the univerſity of his native place, and afterwards travelled

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travelled into France, and ſettled for ſome time at Montauban, where he taught philoſophy in 1611. In 1614, however, he was at Hamburgh, and was profeſſor of natural philoſophy there until 1620 ; when he returned to Roſtock, and was appointed profeſſor of poetry in 1624. He died in this city on the 13th of May, 1639, at the age of 54. He left ſeveral works; thoſe on anatomy, however, were eſteemed by Riolan as of very indifferent worth. They are, “Diſputationes Phyſicæ,” Roſtock, 1616. “Iſagoges Anatomicæ Græcæ Interpretatio,” Hamburgh, 1616. “Proceſtria Anatomica,” ibid. 1619. “Laurus Delphica, ſeu, Conſilium quo deſcribitur Methodus perfacilis ad Medicinam,” Leyden, 1621. “In Synopſin Aphoriſmorum Chymiatricorum Angeli Salæ, Vicentini, Notæ et Animadverſiones,” Roſtock, 1624. “Porticus Eſculapii, ſeu, generalis Artis Medicæ Conſtitutio,” ibid. 1630. “Apparatus Plantarius primus, &c.” Francfort, 1632. “Paſicompſe nova, id eſt, delineatio Pulchritudinis,” Leipſic, 1634. “Anatomia corporis humani, ſive Collegium Anatomicum duodecim diſputationibus comprehenſum,” Roſt. 1636.

William Lauremberg, the father of the preceding, who died in 1612, left an “Eſſay on the malignant, petechial Fever,” Roſtock, 1605 ; and the following poſthumous works : “De Curatione Calculi,” Leyden, 1619. “Botanotheca, ſive Modus conficiendi Herbarium vivum,” 1626 : and “Hiſtoria Deſcriptionis Aelitis, ſive Lapidis Aquilæ,” 1627. His younger ſon, John Lauremberg, likewiſe was a phyſician, and author of ſeveral works, on the antiquities of Greece, algebra, and arithmetic, &c. Eloy. Dict. Hiſt. de la Méd.

LAUREMBERGIA, in *Botany*, ſo named by Bergius in honour of Peter Lauremberg, formerly an excellent gardener, who publiſhed a work on horticulture at Francfort in 1632, which is ſaid to have led the way to the modern improvements in that art. Berg. Cap. 350. t. 5. f. 10. See SERPICULA, to which the ſynonym of Bergius undoubtedly belongs, though cited with heſitation in Schreb. Gen. 628. Lamarck's figure of *Serpicula*, t. 758, is in fact a copy of that of Bergius.

LAURENCE, *Canons of St.*, an order of regular canons, ſo called from the monaſtery of St. Laurence d'Oulx, in Dauphiné.

This congregation is ſaid to have been founded by St. Benedict. It was deſtroyed by the Vandals, and continued uninhabited till the middle of the 11th century. In 1057, Odo, count of Savoy, gave it to one Gerard, and his canons. This donation was confirmed in 1065, by Cunibert, biſhop of Turin, who added to it above forty other churches ; by which means a very conſiderable congregation was formed, to whom the ſucceeding popes, and counts of Savoy, granted a great many privileges.

It had thirty priories ; the chief, who is the prior of the congregation, bears the title of provoſt, and exerciſes a ſpiritual juriſdiction throughout his provoſtſhip.

LAURENCE, *Bay of St.*, in *Geography*, a bay on the E. coaſt of Ruſſia, at the entrance of Beering's ſtraits. N. lat. 63° 47′. E. long. 188° 15′.

LAURENCE *Creek*, a river of Kentucky, which runs into the Ohio, N. lat. 38° 30′. W. long. 83° 36′.

LAURENCE *Iſland*, a ſmall iſland in the gulf of Florida, near the coaſt of Eaſt Florida. N. lat. 25° 36′. W. long. 80° 22′.

LAURENCE *Iſland*, an iſland in the Pacific ocean, on the coaſt of Ruſſia, near Tſchukotſkoi Noſs ; about three leagues in circuit. N. lat. 63° 47′. E. long. 188° 15′.

LAURENCE, *Gulf of St.*, a part of the North Atlantic ocean, ſituated between the iſland of Newfoundland, Labrador, Canada, Nova Scotia, and the iſland of Cape Breton ; 350 miles in length, and 150 in breadth. This is the eſtuary of the river of the ſame name, and is generally frozen from December to April. This noble gulf is cloſed by the iſland of Newfoundland, and by numerous ſand-banks, particularly by that which is called the Great Bank. N. lat. 47° 51′. W. long. 57° to 65°.

LAURENCE, *Harbour of St.*, a bay on the S. coaſt of Newfoundland, ſituated N.W. of the entrance into Placentia bay.

LAURENCE *Key*, a ſmall iſland in the bay of Honduras, near the coaſt of Mexico. N. lat. 16°. W. long. 89° 48′.

LAURENCE *Kirk*, a town of Scotland, in the county of Kincardine, in which have been lately eſtabliſhed manufactures of lawns, cambric, &c. In 1799 it was erected into a burgh of barony, with the privilege of a market. The population in 1801 was 1215 ; 7 miles W. of Bervie.

LAURENCE, or *Lawrence*, *River of St.*, the largeſt, or at leaſt the ſecond, river in North America, being not leſs than 90 miles wide at its mouth, and navigable for ſhips of the line as far as Quebec, a diſtance of 400 miles from the ſea. Near Quebec it is five miles wide ; at Montreal, 560 miles from its mouth, from two to four miles broad. To this place it is navigable with perfect ſafety for ſhips drawing fourteen feet water. During the whole of its courſe to Kingſton on lake Ontario, 743 miles from its mouth, it is navigable for batteaux of two tons burden, except merely at the rapids above Montreal, at the Fall of the Thicket, and at the Long Fall, where it is neceſſary to lighten the batteaux, if heavily laden. Mr. Weld ſuggeſts, that at each of theſe places it is poſſible to conſtruct canals, ſo as to prevent the trouble of unlading any part of the cargoes of the batteaux ; and that, at a future day, when the country becomes rich, ſuch canals will, without doubt, be made. The ſource of this river is not preciſely aſcertained ; but the name is generally appropriated to the ſtream that iſſues from lake Ontario. From Ontario to Montreal it has the name of Iroquois, and afterwards it aſſumes the name of St. Laurence. This river cannot, conformably to geographical uſage, be traced beyond lake Ontaiio, to lake Superior ; much leſs, with Mr. Weld, to lake Winipic, which, according to the beſt maps, has no communication with the ſea of Canada, or the connected lakes Superior, Michigan, and Huron. The length of the St. Laurence may be reckoned about 700 Britiſh miles, its chief characteriſtic being its breadth. Mr. Weld has made ſeveral obſervations on the importance of this river to the commerce of North America. The time required to aſcend this river, from Montreal to Kingſton, is commonly found to be ſeven days, but with a ſtrong and favourable wind the voyage may be performed in leſs time, and with an adverſe wind it will of courſe require longer time. The paſſage downwards is performed in four or five days, according to the wind. The current is ſo ſtrong, that a contrary wind ſeldom lengthens the paſſage in this direction more than a day. The channel of this river, inſtead of having been impaired by time, like thoſe of many others, and that of the Miſſiſippi in particular, is found to be conſiderably better now than when it was firſt diſcovered ; and there is reaſon to imagine that it will improve ſtill more in proceſs of time, as the clear water from lake Ontario comes down with ſuch impetuoſity during the floods in the ſpring of the year, as frequently to remove banks of ground and of looſe ſtones in the river, and thus to deepen its bed. To this purpoſe, it is obſerved, that the channel on the N. ſide of the iſland of Orleans, immediately below Quebec, which, in the year 1720, was not deep enough to admit a

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ſhallop of ſmall ſize, except at the time of high tides, is at preſent of ſufficient depth for the largeſt veſſels, and is the channel moſt generally uſed. This river, in its courſe, forms a great variety of bays, harbours, and iſlands, which are not only fertile and pleaſant, but favourable for the purpoſes of commerce. It appears by a compariſon of the St. Laurence with other rivers, connecting the lakes with the Atlantic ocean, that this river opens a ſhorter paſſage than any of the others, and that the portages are ſhorter than in any of the other routes; they are alſo fewer, and goods may be tranſported in the ſame boats the whole way from Montreal to the lakes. Beſides, the St. Laurence will, on another account, be found a more commodious channel than any other for the carrying on of trade between the ocean and the lakes. Being conſtantly ſupplied from that immenſe reſervoir of water, lake Ontario, it is never ſo low, even in the drieſt ſeaſon, as not to be ſufficiently deep to float laden batteaux.

The ſcenery along various parts of this river is very fine, as it winds for hundreds of miles through a rich country, diverſified with riſing grounds, woodlands, and cultivated plains. The attention, in going down the river, is particularly attracted by the beautiful diſpoſition of the towns and villages on its banks. All the houſes have a neat appearance at a diſtance; and in each village, however ſmall, there is a church: the churches are kept in good repair, and moſt of them are covered, according to the cuſtom of the country, with tin, which, from the manner in which it is put on, never becomes ruſty.

LAURENS, Andrew du, or Laurentius, in *Biography*, a French phyſician, was born at Arles. He was a diſciple of Lewis Duret, at Paris; but after having taken his degree of doctor of medicine, he ſettled in a provincial town. He was induced, however, to accompany a lady of quality to court, and through her intereſt was appointed chancellor of the univerſity of Montpellier, phyſician to the queen, and ultimately (in 1606) firſt phyſician to the king, Henry IV. He died in 1609. He left ſeveral works, the principal of which were upon anatomical ſubjects, and were more remarkable for elegance of ſtyle, than correctneſs in the detail of facts. His "Hiſtoria Humani Corporis et ſingularum ejus partium anatomica," folio, 1600, was often reprinted, and tranſlated into French by Heliot, in 1741. The figures of this work are chiefly copied from Veſalius. He publiſhed alſo "Diſcours de la Vue, des Maladies melancholiques, des Catarrhes, et de la Vieilleſſe," 1596, which was tranſlated both into Latin and Engliſh. Gen. Biog. Hutchinſon Biog. Med.

Laurens, in *Geography*, a diſtrict of South Carolina, lying between Enoree and Saluda rivers; about 31 miles long and 22 broad, containing 12,809 inhabitants, of whom 1919 are ſlaves.

Laurens *Court-houſe*, a place in the above county, 20 miles from Buſh river, 32 from Newbury, and 40 from Greenville; in which is a poſt-office.

Laurens, *St.*, a ſmall iſland in the Indian ſea. S. lat. 9° 35′. E. long. 52°.

LAURENT, St., a town of Hiſpaniola, on the Ozema; ſeven miles N. of St. Domingo.—Alſo, a town of France, in the department of the Vendée; ſeven miles S.E. of Mortagne.—Alſo, a town of France, in the department of the Jura; 12 miles N. of St. Claude.—Alſo, a town of France, in the department of the Lower Seine; ſeven miles N. of Rouen.—Alſo, a town of France, in the department of the Aude; four miles E. of La Graſſe.—Alſo, an iſland in the Pacific ocean, near the coaſt of Peru, at the entrance of the harbour of Callao.

Laurent *d'Aigouze, St.*, a town of France, in the department of the Gard; 15 miles S. of Niſmes.

Laurent *d'Arce, St.*, a town of France, in the department of the Gironde; eight miles S.E. of Bourg.

Laurent *de Cerdans, St.*, a town of France, in the department of the Eaſtern Pyrenées; nine miles S.W. of Cerat.

Laurent *de Chamouſſet, St*, a town of France, in the department of the Rhone, and chief place of a canton, in the diſtrict of Lyons; 15 miles W. of Lyons. The place contains 1255, and the canton 10,978 inhabitants, on a territory of 182½ kiliometres, in 14 communes.

Laurent-*ſur-Gorre, St.*, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diſtrict of Rochechouart; 15 miles W.S.W. of Limoges. The place contains 2313, and the canton 13,519 inhabitants, on a territory of 265 kiliometres, in nine communes.

Laurent *de Médoc, St.*, a town of France, in the department of the Gironde, and chief place of a canton, in the diſtrict of Leſparre; 50 miles from Leſparre. The place contains 549, and the canton 3706 inhabitants, on a territory of 657½ kiliometres, in ſix communes.

Laurent *le Minier, St.*, a town of France, in the department of the Gard; ſix miles S.E. of Le Vigan.

Laurent *du Mottay, St.*, a town of France, in the department of the Mayne and Loire; nine miles S.E. of St. Florent.

Laurent *des Mures, St.*, a town of France, in the department of the Iſere; nine miles S.E. of Lyons.

Laurent *ſur Othais, St.*, a town of France, in the department of the Meuſe; 12 miles N. of Eſtain.

Laurent *de la Pluine, St.*, a town of France, in the department of the Mayne and Loire; three miles S.W. of Chalonne.

Laurent *du Pont, St.*, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of Grenoble; 12 miles N. of Grenoble. The place contains 3339, and the canton 11,551 inhabitants, on a territory of 182½ kiliometres, in eight communes.

Laurent *de Rividol, St.*, a town of France, in the department of the Aveiron; nine miles N. of Severac.

Laurent *de la Salaque, St.*, a town of France, in the department of the Eaſtern Pyrenées; ſeven miles N.E. of Perpignan.

LAURENTALIA, or Larentalia, called alſo *Larentinalia*, *Laurentales*, and *Larentales*, feaſts celebrated among the Romans on the tenth of the calends of January, or twenty-third of December, in memory of Acca Laurentia, wife of the ſhepherd Fauſtulus, and nurſe of Romulus and Remus.

Acca Laurentia, from whom the ſolemnity took its name, is repreſented as no leſs remarkable for the beauty of her perſon, than her laſciviouſneſs; on account of which, ſhe was nick-named by her neighbours, *lupa, ſhe-wolf*; which is ſaid to have given riſe to the tradition of Romulus and Remus being ſuckled by a wolf. She afterwards married a very rich man, who brought her great wealth; which, at her death, ſhe left to the Roman people; in conſideration of which they performed her theſe honours; though others repreſent the feaſt as held in honour of Jupiter Latiaris. See Larentinalia and Lares.

LAURENTEVA, in *Geography*, a bay or gulf of the Frozen ſea, on the W. coaſt of Nova Zembla. N. lat. 72° 15′. E. long. 53° 14′.

LAURENTIA, in *Botany*, Mich. Gen. 18. t. 14, received its appellation from Micheli, in compliment to Dr.

Mark Anthony Laurenti, a phyſician and profeſſor at Bologna, whoſe botanical merits have not been tranſmitted to poſterity, and the name is now ſunk in that of *Lobelia*, to which article we refer the reader.

LAURENTUM, in *Ancient Geography*, a town of Italy, in Latium, of which it was for ſome time the capital; and ſuppoſed to have been the reſidence of king Latinus; ſituated upon the ſea-coaſt, about eight miles S. of the capital.

LAUREOLA, in *Botany*, Spurge Laurel. See Daphne.

LAURI, Filippo, in *Biography*, painter of figures and landſcapes. He was ſon of Baldaſſare Lauri of Antwerp, a landſcape-painter of note, who ſettled at Rome, and died there in 1641.

Filippo was born in 1623, and became celebrated for cabinet pictures in the Flemiſh ſtyle of colour, but with a much more correct and refined taſte of form than prevailed in that ſchool; which moſt probably he acquired by reſiding with his father in Rome. His pictures are agreeably compoſed, touched with great ſpirit and freedom, of good colour and pictureſque effect. Claude Lorraine paid him the compliment to employ him frequently to put figures in the fore-grounds of his landſcapes; and in ſome of his beſt pictures, the hand of Lauri is diſcernible in the better proportion and beauty of touch with which the figures are wrought than in thoſe completed by Claude's own hand.

The ſubjects he generally ſelected were thoſe of nymphs, gods, and goddeſſes, and the like; where he could, with propriety, introduce much of the nude. To theſe he gave great eaſe in their actions, and compoſed them in a very agreeable manner. He died in 1694, at the age of 71.

Lauri, in *Botany*, a natural order of plants, to which *Laurus*, one of the number, gives its name; (the *Laurinæ* of Ventenat and Brown; ſee Prodr. Nov. Holl. v. 1. 401.)—This is the 27th order of Juſſieu's ſyſtem, the fourth of his ſixth claſs. There is nothing equivalent to it among the *Ordines Naturales* of Linnæus.

The characters of Juſſieu's ſixth claſs are—Cotyledons two; petals none; ſtamens inſerted into the calyx.—The calyx is of one leaf, either ſuperior or inferior, entire or divided. Corolla wanting, but there are ſometimes little ſcales, reſembling petals, borne by the calyx. Stamens perigynous, or inſerted into the calyx, definite or indefinite, both filaments and anthers diſtinct. Germen ſuperior or inferior, or only inveſted with the calyx, ſimple, or rarely ſeveral in a definite number; ſtyle either ſolitary, or ſeveral in a definite number, or wanting; ſtigma ſimple or manifold. Seed naked, ſuperior, or pericarp ſuperior or inferior, often containing a ſingle ſeed, rarely ſeveral. The ſituation of the embryo is various. Sometimes the flowers are of ſeparate ſexes.—The orders of this claſs are ſix; *Elæagni*, *Thymelææ*, *Proteæ*, *Lauri*, *Polygoneæ*, and *Atriplices*. It is one of thoſe in which botaniſts differ moſt with reſpect to the application of the terms calyx and corolla. In the two firſt orders Linnæan botaniſts uſe the term calyx for what in the third and fourth is called corolla, and in the fifth and ſixth again calyx. The analogy of one claſs, if truly natural, ought certainly to preſcribe the uſe of the ſame term throughout, for the ſame part; but a queſtion will but too frequently ariſe how far any claſs is really natural, or out of the reach of all exception; for, in every ſyſtem, the leading ſections, or claſſes, muſt be regulated by technical characters.

The order of *Lauri* is thus characterized:

Calyx divided into ſix parts, permanent. Stamens ſix, inſerted into the lower part of each ſegment, or double that number, ſix of them being interior; anthers combined with the filament, opening from the baſe upwards. Germen ſuperior; ſtyle one; ſtigma ſimple or divided. Drupa or berry of one cell, containing a nut with one ſeed. Embryo deſtitute of albumen. Stem arboreſcent or ſhrubby. Leaves alternate, rarely oppoſite.

The genera are *Laurus*, *Poroſtema*, Schreb, and *Douglaſſia*, Schreb. to which Mr. Brown has added *Endiandra*, *Cryptocarya*, *Tetranthera*, and the Linnæan genus *Caſſytha*.—Genera ſubjoined by Juſſieu as allied to the *Lauri* are *Myriſtica*, *Virola* of Aublet, which Schreber properly reduces to *Myriſtica*, and *Hernandia*; to which liſt Mr. Brown adds *Gyrocarpus*; ſee that article. The excellent author laſt mentioned, accuſtomed, as has been ſaid of Jortin and Goldſmith, to enrich every ſubject which he touches, has made the curious diſcovery of the cotyledons of the *Lauri* being peltate near their baſe. He has alſo remarked a ſtrange inadvertence of Gærtner, who takes the cotyledons of *Caſſytha* for albumen, and the plumula for cotyledons. Theſe parts, being rightly underſtood, admirably prove the true affinity of the genus, notwithſtanding its paraſitical and leafleſs habit.

Lauri, in *Geography*, a town of Naples, in Lavora; two miles S.W. of Sezza.

LAURIA, a town of Naples, in Baſilicata; 17 miles E. of Policaſtro.

LAURICAUCHA, a mountain of Peru, abounding in ſilver ore; ſix miles N. of Paſco.—Alſo, a lake of Peru; 80 miles N. of Lima.

LAURIERE, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the diſtrict of Bellac; 18 miles E. of Bellac. The place contains 1407, and the canton 6502 inhabitants, on a territory of 145 kiliometres, in ſeven communes.

LAURINGEN, a town of the duchy of Wurzburg, on the Laur; 30 miles N.E. of Wurzburg. N. lat. 50° 13'. E. long. 10° 32'.

LAURINO, a town of Naples, in Principato Citra; 9 miles W.N.W. of Policaſtro.

LAURINUM. See Daphnelæon.

LAURISTAN, in *Geography*, a town of Perſia, in the province of Irak, on the Zenderoud; 90 miles W. of Iſpahan.

LAURO, a town of Portugal, on a river of the ſame name, in the province of Alentejo; 27 miles W.N.W. of Evora.

LAUROCERASUS, in *Botany*, the Cherry-laurel, ſo called, from the laurel-like appearance of its leaves, as well as from the fruit; which is truly a cherry, and, though not wholeſome, eatable, notwithſtanding the very dangerous qualities of the reſt of the plant. See Prunus and Laurel.

LAUROTAXA, a name uſed by Columna, and ſome other authors, for the narrow-leaved kind of *ruſcus*, or butcher's broom, called by others *biſlingua*.

LAUROW, in *Geography*, a town of Hindooſtan, in Bahar; 10 miles S.S.W. of Gayah.

LAURUS, in *Botany*, the ancient Latin name of the Bay-tree, for which it is retained by modern botaniſts, and along with which it now comprehends a great number of ſpecies, conſtituting one of the nobleſt genera in the whole vegetable kingdom. The origin of the word is loſt in the obſcurity of antiquity; and whether etymologiſts derive it from *lavo*, to waſh, or from *laus*, praiſe or honour, they give us little more ſatisfaction in one caſe than the other.—Linn. Gen. 200. Schreb. 270. Willd. Sp. Pl. v. 2. 477. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed 2. v. 2. 427. Sm. Prodr. Fl. Græc. Sibth. v. 1. 268. Juſſ. 80. Tourn. t. 367.

t. 367. Lamarck. Illuſtr. t. 321. Gærtn. t. 92.—(Borbonia; Plum. Gen. 3. t. 2. Perſea; ibid. 44. t. 20.) Claſs and order, *Enneandria Monogynia.* Nat. Ord. *Holeraceæ*, Linn. *Lauri*, Juſſ.

Gen. Ch. *Cal.* none, unleſs the corolla be taken for ſuch. *Cor.* in ſix deep, ovate, pointed, concave, erect, alternately external ſegments. Nectary conſiſting of three pointed coloured tubercles, each terminating in two briſtles, ſurrounding the germen. *Stam.* Filaments nine, ſhorter than the corolla, compreſſed, obtuſe, three in each row; anthers attached to the edges of each filament, in the upper part, at each ſide. There are two globular glands, on a very ſhort ſtalk, attached to every filament of the innermoſt row, near its baſe. *Piſt.* Germen ſuperior, nearly ovate; ſtyle ſimple, of equal thickneſs throughout, the length of the ſtamens; ſtigma obtuſe, oblique. *Peric.* Drupa oval, pointed, of one cell, contained within the corolla. *Seed.* Nut ovate, pointed, with a kernel of the ſame ſhape.

Obſ. Moſt of the ſpecies, including the Cinnamon and Camphor, have united, or hermaphrodite, flowers; ſeveral are dioecious, as *L. nobilis*, the Sweet Bay, which has moſtly from 8 to 14 ſtamens, and a deeply four-cleſt corolla. The glandular bodies attached to ſome of the filaments, afford a diſcriminating character.

Eſſ. Ch. Calyx none. Corolla calyx-like, in ſix deep ſegments. Nectary of three glands, bearing two briſtles, and ſurrounding the germen. Innermoſt filaments bearing glands. Drupa with one ſeed.

Linnæus's 14th edition of Syſt. Veg. has 16 ſpecies, Willdenow has 34, the increaſe being chiefly from the works of Swartz and Thunberg. Several ſtill nondeſcript are in the hands of moſt collectors of tropical plants. The genus is extremely intereſting on account of ſeveral fine and valuable aromatic ſpecies, as the Cinnamon, Caſſia, Camphor, Saſſafras, &c. The habit of the whole is arboreſcent. *Leaves* ſtalked, almoſt without exception alternate, undivided, entire, ſmooth and evergreen, more or leſs ovate or elliptical. *Flowers* moſtly panicled, ſmall, pale or greeniſh, not ornamental, but very curious in ſtructure. *Fruit* large in proportion to the bloſſom. Mr. Brown expreſſes an intention of ſeparating *Cinnamomum*, as a diſtinct genus from *Laurus*, as indeed it originally ſtood, till Linnæus united them. It is extremely probable that other ſpecies require more accurate generic inveſtigation than they have hitherto received, in which predicament we ſuſpect is the *Saſſafras* of North America, a tree with deciduous and partly lobed leaves. There appears alſo to be an oriental Saſſafras wood, of a much more permanent though ſimilar flavour to the American, of which we formerly procured a ſpecimen at Venice, but of the tree that produces it we know nothing.

The following may ſuffice for examples of *Laurus* as the genus at preſent ſtands.

L. *Cinnamomum.* Cinnamon-tree. Linn. Sp. Pl. 528. (Cinnamomum foliis latis ovatis frugiferum; Burm. Zeyl. 62. t. 27 Caſſia cinnamomea, ſive Cinnamomum; Herm. Lugduno-Bot; 129. t 655, 656.)—Leaves triply-ribbed near the baſe, ovate; lateral ribs vaniſhing near the top. Panicles repeatedly compound. Native of Ceylon, where, as well as in Amboyna, its importance as an object of cultivation, for the ſake of its precious bark, is univerſally known. (See CINNAMON.) Concerning the botanical determination of the preſent ſpecies, there has always been ſome doubt, Linnæus having defined it *foliis trinerviis*, that is, with three ribs diſtinct at the baſe, which is only ſo far true, that they are united to the mid-rib at a much leſs diſtance above the baſe, which is rounded, than thoſe of *L. Caſſia.* It ſeems moreover that this Cinnamon, like other cultivated plants, is liable to many varieties, not only in quality, but in external configuration, and it may very poſſibly have originated from the *Caſſia*, like apples from the wild crab. For a long while the true Cinnamon was ſcarcely to be ſeen in the herbariums of Europe, but we have a ſpecimen from Amboyna, by favour of the late Mr. Chriſtopher Smith, in which the *panicles* are copious, longer than the *leaves*, repeatedly ſubdivided, and ſomewhat umbellate. The *flowers* are ſilky externally, and rather ſmall. Linnæus ſays they are dioecious. Another ſpecimen, from the garden at the Mauritius, has narrower *leaves*, and much ſmaller panicles. The true Cinnamon is now not rare in the ſtoves of curious collectors. The biſhop of Wincheſter, many years ſince, raiſed it from ſeeds ripened in his own garden.

L. *Caſſia.* Caſſia-bark-tree. Linn. Sp. Pl. 528. (Carua; Rheede Hort. Mal. v. 1. 107. t. 57.)—Leaves triply-ribbed far above the elongated baſe, elliptic-lanceolate; lateral ribs vaniſhing beyond the middle. Panicles corymboſe.—Native of Malabar, Sumatra, Java, &c. The narrower *leaves*, tapering at each end, and the very different qualities of the bark, which is more mucilaginous and far leſs gratefully aromatic, diſtinguiſh this from the preceding, whether it be a ſpecies, or only a variety. Rheede ſays, the bark of the *root* yields camphor.

L. *Camphora.* Japaneſe Camphor-tree. Linn. Sp. Pl. 528. Jacq. Coll. v. 4. 221. t. 3. f. 2. Kæmpf. Amoen. 770. t. 771. (Arbor camphoriſera japonica; Commel. Hort. Amſt. v. 1. 185. t. 95.)—Leaves elliptical, pointed, triply-ribbed far above the elongated baſe. Cluſters axillary, ſomewhat compound, ſhorter than the leaves. Native of Japan, often to be ſeen flowering in the Engliſh ſtoves. The curious ſtructure of the *bloſſoms* may be ſeen in Jacquin. The Japaneſe camphor is believed to be obtained by diſtillation from this tree, that of Borneo and Sumatra being the produce of one of a different ſpecies, if not genus, of whoſe botanical characters little is known. This latter is erroneouſly called *Laurus Camphora* in our article CAMPHOR, to which we refer the reader.

L. *nobilis.* Common Bay-tree. Linn. Sp. Pl. 529. (Laurus; Camer. Epit. 60. Ger. em. 1407.)—Leaves lanceolate, veiny, finely reticulated, evergreen. Flowers four-cleft, dioecious, in ſhort axillary cluſters. Native of Italy and Greece, almoſt perfectly hardy in our climate, being one of the moſt deſirable evergreens we have, though of ſlow growth. The *leaves* are of a rich deep green, highly and pleaſantly aromatic. *Flowers* born by old trees only, pale yellow. *Fruit* black, the ſize of an unripe olive, ſtrongly aromatic, never, as far as we know, perfected in England, but plentiful in Italy. This is certainly the δαφνη of Dioſcorides, and conſequently the claſſical laurel. It is ſtill called by the ſame name among the modern Greeks. There is a broad-leaved variety, called δαφνη πλατυτερα in Dioſcorides.

L. *æſtivalis*, *Benzoin* and *Saſſafras*, three North American ſpecies, have deciduous leaves. The true Benjamin tree, or Gum Benzoin (ſee thoſe articles) is not, as Ray ſuppoſed, this *Laurus Benzoin*, but a ſpecies of *Styrax*, as was firſt ſhown by the late Mr. Dryander in the Philoſophical Tranſactions for 1787, p. 307. t. 12. See STYRAX.

LAURUS, in *Gardening*, compriſes plants of the evergreen and deciduous tree kinds, for borders, green-houſe, and ſtove, of which the ſpecies cultivated are the common ſweet bay (L. nobilis); the willow-leaved bay (L. æſtivalis); the common benjamin-tree (L. benzoin); the ſaſſafras-tree (L. ſaſſafras); the royal bay, or Indian laurel (L. indica); the broad-leaved Carolina bay, or red bay (L. borbonia); the camphor, or camphire-tree (L. camphora);

phora) ; the cinnamon-tree (L. cinnamomum) ; the caſſia, or wild cinnamon-tree (L. caſſia) ; and the alligator pear (L. perſea).

The firſt ſort has ſeveral varieties, as the broad-leaved, which is almoſt too tender for the open air in this climate, with leaves much broader and ſmoother than thoſe of the common ſort : the common, which is ſeldom hurt in this climate, except in very ſevere winters, of which there are two ſubvarieties, one with plain leaves, the other with leaves waved on the edges : the narrow-leaved, with very long narrow leaves, not ſo thick as thoſe of the preceding two ſorts, and of a light green, the branches covered with a purpliſh bark, and the male flowers come out in ſmall cluſters from the axils of the leaves, ſitting cloſe to the branches ; of which there are ſubvarieties in the nurſeries with variegated leaves. What is now called bay, was formerly called laurel, which has introduced ſome confuſion.

It may be noticed, that the chief of the camphor uſed in Europe is prepared from this tree in Japan, by ſplitting the wood into ſmall pieces, and ſubliming or diſtilling it with water in an iron retort, covered with an earthen or wooden head, in the hollow of which they faſten hay or ſtraw, to which the camphor, as it riſes, adheres. This camphor is browniſh or white, but in very ſmall ſemi-pellucid grains. It is packed up in wooden caſks, and thus ſent to India and Europe, where it is purified by a ſecond ſublimation, and reduced into the ſolid maſs as found in the ſhops. Native camphor, or the Capoor Baroos of the Malays, is a production obtained in Sumatra and Borneo, by cutting down the trees, and ſplitting them with wedges into ſmall pieces, the camphor being found in the interſtices in the ſtate of a concrete cryſtallization. Some have aſſerted that it is from the old trees alone that this ſubſtance is procured, and that in the young trees, if it is in a fluid ſtate, it is called Meenio Capoor, or camphor oil ; but this is a miſtake : the ſame ſort of tree that produces the fluid does not produce the dry, tranſparent, flaky ſubſtance, nor ever would. They are readily diſtinguiſhed by the natives. Many of the trees, however, produce neither the one nor the other. The traders uſually diſtinguiſh three degrees of quality, by the names of head, belly, and foot, according to its purity and whiteneſs. Some add a fourth ſort, of extraordinary fineneſs, of which a few pounds only are imported to Canton, and ſell there at the rate of two thouſand dollars the pecul.

The common camphor will evaporate till it wholly diſappears ; while that of Sumatra and Borneo, called native camphor, though ſubject to ſome decreaſe, does not appear to loſe much in quantity from being kept.

Camphor oil is obtained by the Sumatrans by making a tranſverſe inciſion into the tree, to the depth of ſome inches, and then cutting ſlopingly downwards from above the notch, till a flat horizontal ſurface be left. This they hollow out, till it is of a capacity to receive a quart : then put into the hollow a bit of lighted reed, and let it remain for about ten minutes, which acting as a ſtimulus, draws the fluid to that part. In the ſpace of a night the liquor fills the receptacle previouſly made. The trees are ſoon exhauſted.

The eighth ſort has ſeveral varieties ; but it is the Ceylon cinnamon that is chiefly uſed as a ſpice.

Method of Culture.—The firſt ſort may be increaſed by ſeed, layers, and ſuckers. The ſeed ſhould be ſown ſoon after the berries are ripe, or early in the ſpring, either in beds, covering them with earth near an inch deep, or in drills half a foot aſunder, the ſame depth. When the plants are come up, they ſhould be ſupplied with frequent waterings during the ſummer, and in winter defended from ſevere froſt by the ſhelter of mats, or ſome other covering, being tender while young ; and after having two ſummers' growth in the ſeed-bed, in the ſpring following the ſtrongeſt ſhould be removed into nurſery rows, one or two feet aſunder, and a foot apart in each row, giving water in dry weather, till they have taken good root, and keeping them clear from weeds. When they are half a yard, or two or three feet high, they are of proper growth for tranſplanting into the ſhrubbery in autumn or ſpring. The berries may alſo be ſown in pots, and plunged into a hot-bed in ſpring, which brings the plants forwarder, being careful to inure them to the full air in the ſummer ſeaſon.

In the layer, ſome of the lower branches that are well furniſhed with young ſhoots, may be laid down in the early ſpring, or in Auguſt, but the latter is the beſt ſeaſon ; each ſhoot being ſlit-layed ; they become rooted in one year, when in ſpring following they may be taken off, and planted in the nurſery, in the manner directed for the ſeedlings.

Where ſuckers are had recourſe to, they ſhould be taken up with good roots in autumn or ſpring, and be planted in the nurſery like the ſeedlings and layers.

This ſort is alſo capable of growing by cuttings, planted in the beginning of April on a moderate hot-bed of tanners' bark covered eight inches deep with rich looſe freſh earth, five inches deep, and eight or nine aſunder, rubbing off their leaves, and watering them gently every evening while the bed continues warm, covering the glaſſes with mats during the heat of the day. When the cuttings have ſhot roots, they ſhould receive all mild gentle ſhowers, and the evening dews. In the beginning of Auguſt, the glaſſes may be taken off, being replaced when the weather begins to be froſty ; keeping them open every mild day. In the beginning of the April following, or as ſoon as the weather becomes temperate, both glaſſes and frames ſhould be removed, continuing frequent and plentiful waterings during the ſummer months, as the weather may require ; and in the ſucceeding April the plants will be ſtrong, well rooted, and fit for planting out.

At the period when the plants raiſed in theſe ways are removed to the nurſery, they ſhould have their ſuperfluous roots and branches cut away, encouraging the leading ſhoots ; planting them in a well ſheltered quarter of light mould. The ground ſhould be dug over in autumn and ſpring, keeping it clean, looſe, and mellow in ſummer, and the plants be annually pruned in April.

The gold-ſtriped variety is tender, being commonly kept in pots, and houſed with hardy green-houſe plants. When it ſtands in the open ground, it is ſometimes much injured in ſevere winters. The method of increaſing it is by budding it on the plain ſort.

And the broad-leaved and narrow-leaved varieties are not ſo hardy as the common ſort, being ſcarcely able to live abroad whilſt young, in common winters, without ſhelter. As in ſevere winters the old trees are frequently killed, or at leaſt the branches much injured, the plants are frequently kept in tubs, and houſed in the winter ſeaſon.

The ſecond, third, and fourth ſorts may be increaſed by ſeed, by layers, and ſometimes by ſuckers and cuttings. The ſeeds or berries procured from America, and preſerved in ſand, ſhould be ſown, as ſoon after they arrive as poſſible, in a bed of light earth an inch deep, or in largiſh pots the ſame depth, plunging them in mould, in an eaſtern border, up to their rims, till the ſpring following ; when they ſhould be placed in a hot-bed, which greatly forwards the germination of the ſeed, and ſoon brings up the plants. They muſt be timely inured to the full air. The plants raiſed by either method ſhould, while young, be watered during ſummer, and ſheltered from the froſt in winter, and when two years old be planted out in nurſery rows, as directed for the other plants. They may alſo be increaſed by layers and ſuckers in the ſame manner as directed for the firſt ſort; but it is ſometimes long before the layers are rooted.

They are likewiſe ſometimes capable of being increaſed by cuttings, by the aid of a good hot-bed.

And the fifth, ſixth, and ſeventh ſorts may be increaſed by layers, but they are ſometimes two years before they are ſufficiently rooted. They may alſo be raiſed from ſeeds, procured from the places of their natural growth, ſowing them in pots, and plunging them in a hot or bark-bed; but without this aid they do not always grow freely the firſt ſeaſon; in which caſe they ſhould be placed in the open air in ſummer, and in a frame, or in the green-houſe, near the windows, in winter: and in ſpring the pots be plunged in a hot-bed, which will bring up the plants, giving air daily, and frequent waterings, and inuring them by degrees to the open air as the ſummer advances; placing them in ſhelter in winter, and in the following ſpring planting them out in ſeparate ſmall pots, managing them as other green-houſe ſhrubs.

The eighth, ninth, and tenth ſorts are alſo raiſed by layers and ſeed, ſown and managed as above, generally aſſiſted by the bark-bed of the ſtove; the plants being planted off into ſeparate pots, and managed afterwards as other hot-houſe plants.

It may be noticed that the firſt, ſecond, third, and fourth ſorts are highly ornamental in the borders and clumps of pleaſure grounds; the three following in green-houſe collections; and the three laſt among other ſtove plants.

LAURUSTINE, a name often given to a fine evergreen flowering ſhrub. See VIBURNUM *Tinus*.

LAUS, in *Ancient Geography*, a town of Italy, in the territory of the Laconians; founded by the Sybarites, but afterwards taken poſſeſſion of by the Lycaonians, a colony of the Samnites.

LAUS *Pompeia*, a town of Gallia Tranſpadana towards the S.E.; founded by the Boii, and afterwards belonging to the Inſubrians. It was a Roman colony and municipal.

LAUS *Kaurens*, in *Geography*, a peninſula of Finmark, in the Frozen ſea. N. lat. 70 45′. E. long. 30° 24′.

LAUSANNE, a city of Switzerland, in the canton of Berne, and the largeſt town in the Pays de Vaud, and by the French diviſion of 1798 the capital of the department and canton of Leman, is beautifully ſituated on the declivities of three hills, and in the intermediate vallies, environed by an old wall, and diſtant two miles from the lake of Geneva, and 37 miles N.E. from Geneva itſelf. The diſtrict to which it gives name was once a republic itſelf, but afterwards annexed to the canton of Berne, and is a conſiderable tract, lying below the border of Vevay and Venoge, about 13 miles in length and five in breadth. The aſcent upon which the town is built is ſo ſteep, that in ſome places the horſes cannot, without great difficulty, draw up a carriage, and foot paſſengers aſcend to the upper part of the town by ſteps. Theſe inconveniences, however, are amply compenſated by the ſublimeſt views in nature, commanding the lake of Geneva, the Pays de Vaud, and the rugged coaſt of Chablais. The church is a magnificent Gothic building, having been formerly a cathedral, while the Pays de Vaud was ſubject to the houſe of Savoy. It ſtands on the moſt elevated part of the town; and contains, among many other ſepulchres, the tomb of Amadeus VIII. duke of Savoy, ſtyled the Solomon of his age, but more known by the name of the antipope Felix V., who exhibited a ſingular inſtance in the annals of Europe of a perſonage *twice* abdicating the pomp of ſovereignty, and *twice* retiring to a private ſtation. The number of inhabitants, according to Coxe, is about 7000; Pinkerton ſtates them at 9000. In the year 1536, when part of the Pays de Vaud was conquered from the houſe of Savoy, the biſhop of Lauſanne retired from the town, and the inhabitants put themſelves under the direction and ſovereignty of the canton of Berne, which granted to it new privileges, in addition to thoſe which it had formerly poſſeſſed. The reformation was introduced by Pierre du Viret in the ſame year. The biſhop's dioceſe formerly comprehended the greater part of the cantons of Berne, Soleure, and Friburg, the Pays de Vaud, the principality of Neufchâtel, Bienne and its territory, and the country of Erguel, and extended almoſt to Franche Comté. Since the reformation, it has been reduced to little more than the canton of Friburg and a part of that of Soleure. Lauſanne chooſes its own magiſtracy, which conſiſts of a burgomaſter, five bannerets, the town council, the council of ſixteen, and the great council. An academy was eſtabliſhed here in 1537, and a college in 1540. Profeſſors in every ſcience are appointed by government, and there is a tolerable library for the uſe of the public. The bailiwick of Lauſanne is extenſive; the bailiff, who is choſen every ſix years, ſucceeded to the biſhop, and has equal juriſdiction. The air of Lauſanne is very pure and healthy; and it has plenty of excellent water, with every neceſſary of life in the greateſt abundance. Lauſanne is not only governed by its own magiſtrates, and has its own courts of juſtice; but the burghers, who poſſeſs houſes in the principal ſtreet, enjoy the right of pronouncing ſentence in criminal cauſes. The criminal is tried by the civil power; if he is found, and acknowledges himſelf guilty, one of the magiſtrates pleads in defence of the priſoner, and another againſt him; the court of juſtice gives an opinion upon the point of law, and the majority of the burghers above-mentioned determine the penalty. If the puniſhment is capital, there is, according to the letter of the law, no pardon, unleſs obtained within twenty-four hours from the ſovereign council of Berne, although it generally happens that eight days are granted for that purpoſe. When the criminal is ſeized within the juriſdiction of the town, the fact is tried, and the burghers pronounce ſentence in the town-hall; in this caſe there is no appeal. But when he is taken within the diſtrict of the bailiff, they aſſemble in his houſe, and an appeal lies from their determination to Berne. Lauſanne is 41 miles S.W. of Berne. N. lat. 46° 33′. E. long. 6° 28′. Coxe's Travels in Switzerland, vol. ii.

LAUSSIG, a town of Saxony, in the circle of Leipſic; 14 miles S.E. of Leipſic. N. lat. 51° 7′. E. long. 12° 36′.

LAUSSNITZ, a town of Saxony, in the margravate of Meiſſen; 13 miles N. of Dreſden.

LAUSZA, a town of Samogitia; 44 miles N.W. of Miedniki.

LAUT. See PULO *Laut*.

LAUTAKARI, a ſmall iſland in the N. part of the gulf of Bothnia. N. lat. 65° 35′. E. long. 24° 34′.

LAUTENBURG, a town of Pruſſia, in the territory of Culm; 48 miles E. of Culm.

LAUTER, a town of Germany, in the county of Henneberg; 11 miles N.E. of Meinungen.

LAUTERBACH, a town of Bohemia, in the circle of Saatz; 65 miles W. of Prague. N. lat. 50° 2′. E. long. 12° 45′.—Alſo, a town of Upper Heſſe; 13 miles N.W. of Fulda.—Alſo, a town of Saxony, in the circle of Erzgebirg; five miles N.W. of Zwickau.

LAUTERBERG, a town of Weſtphalia, in the

Hartz foreſt, near which are mines and forges of copper and iron; 14 miles S. of Goſlar.

LAUTERBOURG, a town of France, in the department of the Lower Rhine, and chief place of a canton, in the diſtrict of Wiſſembourg, ſituated on the Lauter. The place contains 1941, and the canton 9782 inhabitants, on a territory of 180 kiliometres, in 10 communes; 29 miles N.N.E. of Straſburg. N. lat. 49°. E. long. 8° 14′.

LAUTERBRUENNEN, a valley of Switzerland, in the canton of Berne; ſix miles S. of Interlachen, and about 15 miles in circuit, emboſomed in the midſt of the Alps, and celebrated for its pictureſque and romantic ſcenery. The weſtern boundary, from which the Staubbach falls, forming a cataract, would, in any other country, be called an enormous mountain; it here appears only a trifling hill, in compariſon with the oppoſite chain, of which the higheſt point is the beautiful Jungfrau-horn, that ſtretches in a ſemicircular direction, and, towering above the adjacent peaks, riſes to a ſtupendous height. At the extremity of the vale, there are ſome noble points of view, and glaciers which ſtretch from the foot of the Breithorn and Groſs-horn. In this delightful valley, many ſtreams of the cleareſt water guſh from the earth like ſmall rivers, and numberleſs torrents precipitate themſelves from the mountains. From this circumſtance the valley derives its name; *Lauterbruennen* ſignifying, in German, *many ſprings*. One of the peaks, adjoining to this valley, which is called the Groſs-horn, is of a pyramidal ſhape, and capped with frozen ſnow; another, the Breithorn, is conical, and ſeems crowned with an enormous maſs of tranſparent ice, from which the reflection of the ſun-beams is inexpreſſibly beautiful. But the moſt elevated and the moſt majeſtic of the whole group, is the Jungfrau-horn. (See JUNGFRAU.) The hollows between the mountains are filled with large vallies of ice, broken into various ſhapes, and ſeveral torrents, burſting from the ſnow, and uniting in their courſe, form the Weits-Lutchine, a river which rolls rapidly through the valley of Lauterbruennen, joins the Schwartz Lutchine, which flows from Grindewald, and ſwells the Aar. This valley is bordered by calcareous rocks to its furtheſt extremity. Wengenalp is the laſt of a group of calcareous and ſchiſtous mountains between Lauterbruennen and Grindewald, which there joins the Jungfrau, the ſummits of which appear to be of granite. Coxe's Travels, vols. i. and ii.

LAUTEREKEN, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the diſtrict of Kaiſerſlautern; 24 miles N. of Deux Ponts. The place contains 627, and the canton 4594, inhabitants, in 21 communes. N. lat. 49° 39′. E. long. 7° 35′.

LAUTERHOFEN, a town of Bavaria; 12 miles S.W. of Sulzbach.

LAUTERN, a town of Pruſſia, in the province of Ermeland; 14 miles S.S.E. of Heilſberg.

LAUTERSHAUSEN, a town of Germany, in the principality of Anſpach, on the Altmuhl; eight miles W. of Anſpach.

LAUTERSTEIN, a town of Saxony, in the circle of Erzgeberg; 17 miles S.S.W. of Freyberg.

LAUTREC, a town of France, in the department of the Tarn, and chief place of a canton, in the diſtrict of Caſtres; 12 miles N.N.W. of Caſtres. The place contains 3238, and the canton 7548 inhabitants, on a territory of 147½ kiliometres, in 12 communes.

LAUTTE, a town of Pruſſia, in Oberland; 16 miles E.S.E. of Marienwarder.

LAVUNS, a town of France, in the department of the Lower Pyrenées; 15 miles S.E. of Oleron.

LAUZERTE, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Montauban; 17 miles N.W. of Montauban. The place contains 3608, and the canton 12,176 inhabitants, on a territory of 232½ kiliometres, in 16 communes. N. lat. 44° 15′. E. long. 1° 13′.

LAUZES, a town of France, in the department of the Lot, and chief place of a canton, in the diſtrict of Cahorn. The place contains 444, and the canton 7139 inhabitants, on a territory of 237½ kiliometres, in 11 communes.

LAUZET, LE, a town of France, in the department of the Lower Alps, and chief place of a canton, in the diſtrict of Barcelonnette; 10 miles W. of Barcelonnette. The place contains 857, and the canton 5038 inhabitants, on a territory of 295 kiliometres, in ſeven communes.

LAUZUN, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the diſtrict of Marmande; 14 miles N.E. of Marmande. The place contains 1089, and the canton 12,852 inhabitants, on a territory of 220 kiliometres, in 17 communes. N. lat. 44° 38′. E. long. 0° 32′.

LAW, EDMUND, in *Biography*, a learned Engliſh prelate, the ſon of a clergyman, in the neighbourhood of Cartmel, in Lancaſhire, was born in the year 1703. He received the greater part of his claſſical learning at the free grammar ſchool of Kendal, from which place he was ſent to St. John's college, Cambridge. He was admitted to the degree of B. A. in 1723, and ſoon afterwards was elected fellow of Chriſt's college. During his reſidence in this college, he became known to the public by a tranſlation of archbiſhop King's "Eſſay upon the Origin of Evil," with notes. To this work was prefixed "A preliminary diſſertation," by the Rev. Mr. Gay of Sidney college. In the controverſy which took place in conſequence of Dr. Clarke's "Demonſtration of the Being and Attributes of God," Mr. Law took a part, and among other things publiſhed his "Enquiry into the Ideas of Space, Time, &c." In the year 1735, a new and improved edition of Robert Stephens' "Theſaurus Linguæ Latinæ" was given to the public, and in the preparation of this valuable work, Mr. Law had a conſiderable ſhare. In 1737, he was preſented by the univerſity to the living of Grayſtock, in the county of Cumberland, worth about 300*l. per annum*. In 1743, he was promoted by ſir George Flemming, biſhop of Carliſle, to the archdeaconry of that dioceſe, and, in 1746, went from Grayſtock to reſide at Salkeld, a pleaſant village upon the banks of the river Eden, the rectory of which is annexed to the archdeaconry. During his reſidence at this place, he publiſhed his "Conſiderations on the Theory of Religion;" to which he ſubjoined "Reflections on the Life and Character of Chriſt;" and an appendix concerning the uſe of the words "Soul and Spirit." In 1749, Mr. Law proceeded doctor of divinity; in his public exerciſe for which degree, he defended the doctrine of what is uſually denominated "The ſleep of the ſoul." In 1754, he was elected maſter of Peter-houſe, in Cambridge, and in the following year appointed head librarian of the univerſity; a ſinecure place, with a ſalary of fifty pounds a-year. He received almoſt every year ſome additional preferments, which were rather honourable expreſſions of regard from his friends, than of much advantage to himſelf: in 1767, he obtained a ſtall in the church of Durham, and in 1769, on the recommendation of the duke of Grafton, he was nominated biſhop of Carliſle, and was permitted to hold, in connection with the biſhopric, the maſterſhip of Peter-houſe, and the rectory of Grayſtock. In 1774, he publiſhed a very valuable tract, entitled "Conſiderations on the Theory of

Religion," which has paſſed through at leaſt eight editions. The object of this work was to ſhew that arts and ſciences, natural and revealed religion, have upon the whole been progreſſive, from the creation of the world to the preſent time; as alſo that they have been ſuited to each other, as well as to the circumſtances of mankind, during each eminent period of this their progreſſion. In 1777, Dr. Law gave the public a handſome edition, in four vols. 4to. of the works of Mr. Locke, with a life of the author, and a preface. In the edition of the "Conſiderations," publiſhed at Carliſle in 1784, he made ſuch alterations as ſhewed that he had given up the doctrine of the pre-exiſtence of Chriſt, a fact which he noticed to a friend in pretty ſtrong language. Dr. Law died in Auguſt 1787, in the 84th year of his age. ' The life of Dr. Law was a life of inceſſant reading and thought, almoſt entirely devoted to metaphyſical and religious enquiries. The leading peculiarity of his religious ſentiments is, that "Jeſus Chriſt will, at his ſecond coming, by an act of his power, reſtore to life and conſciouſneſs the dead of the human ſpecies, who, by their own nature, and without his interpoſition, would remain in the ſtate of inſenſibility, to which the death, brought on mankind by the ſin of Adam, had reduced them." Dr. Law publiſhed, beſides the articles already mentioned, ſome ſingle ſermons; a tract on "The Nature and Neceſſity of Catechiſing;" "A Defence of Mr. Locke's Opinion concerning perſonal Identity;" and "Obſervations occaſioned by the Conteſt about literary Property." See life prefixed to an edition of his Reflections printed by Johnſon in 1803.

Law, John, a famous projector, the ſon of a goldſmith in Edinburgh, was born about the year 1681. It appears that he was not brought up to any profeſſion, but having a turn for calculation, he made himſalf a proficient in numbers, and in the ſpeculations depending upon them. He obtained, while very young, the confidence of the king's miniſters for Scotland, and was employed by them to arrange the revenue accounts, which were at that time in great diſorder. To remedy the want of a circulating medium he propoſed the eſtabliſhment of a bank, which, according to his plan, might iſſue paper-money to the amount of the value of all the lands in the kingdom. This was not adopted. At the death of his father he ſucceeded to a ſmall eſtate, and commenced the fine gentleman, ſupplying the deficiency of his income by gaming. In conſequence of a duel, in which he killed his antagoniſt, he was obliged to leave the country. He viſited Venice and Genoa, from which cities he was baniſhed as a ſharper; he wandered through Italy, ſupporting himſelf by his wits, chiefly by the ſucceſs of ſingular wagers, in which, by his ſkill in calculation, he always took care that the chances ſhould be in his favour. He propoſed his financial ſcheme to Louis XIV. who liſtened to his plans. A bank was eſtabliſhed, compoſed of 1200 ſhares of 3000 livres each; to this was annexed a Miſſiſippi company, who had grants of land in Louiſiana, and was expected to realize an immenſe ſum by planting and commerce. To this were afterwards joined the trade of Senegal, and the privilege of the old Eaſt India company. In 1718, it was declared a royal bank; and by a number of advantages arbitrarily conferred upon it, ſuch were the extent of its buſineſs, and the magnitude of its funds, that its ſhares roſe to twenty times their original value. All France was ſeized with the rage of gambling in the funds. Money and valuables of all kinds were brought to the market and inveſted in bank paper, and thoſe thought themſelves truly happy who could ſtrip themſelves of every thing for a participation in this imaginary wealth. In 1720, Law was made comptroller-general of the finances. Regarded as the Plutus of the kingdom, he ſaw at his levee dukes, peers, and marſhals of France. At length the baſeleſs fabric of this proſperity began to give way: the ſhares ſunk daily in value, and the ruin of the ſyſtem ſeemed to be inevitable. He was obliged to reſign his poſt, after holding it only five months; and loaded with the public execrations, retired firſt to an eſtate in the country, and then, for further ſafety, quitted the kingdom. He now paſſed the remainder of his days in obſcurity, occupied, however, with his projects, fully convinced of the ſolidity of his ſyſtem, the failure of which he attributed to the oppoſition it met with. He died at Venice in 1729.

Law, William, a learned and pious divine of the church of England, was born at King's-Cliffe, Northamptonſhire, in 1686, and educated at Oxford, where he took his degrees. He entered into holy orders, but it does not appear that he ever had the cure of ſouls, owing probably to his adherence to non-juring principles, which he maintained to the cloſe of his life. He was ſome time a private tutor in a gentleman's family at Putney, after which he chiefly reſided in a very retired way at the houſe of Mrs. Heſter Gibbon, aunt of the celebrated hiſtorian, in Northamptonſhire, where he died in 1761. He was author of a great many theological publications, of which the moſt important is "The ſerious Call to a devout and holy Life, adapted to the State and Condition of all Orders of Chriſtians." His "Practical Treatiſe on Chriſtian Perfection" was likewiſe very much eſteemed. He entered the liſts againſt biſhop Hoadley; and was a zealous diſciple of the doctrines of Jacob Behmen, whoſe works he publiſhed.

Law, in its moſt general and comprehenſive ſenſe, ſignifies a rule of action; and is applied indiſcriminately to all kinds of action; whether animate or inanimate, rational or irrational; in which ſenſe it is uſed when we ſay, the laws of motion, of gravitation, of optics, or mechanics, as well as the laws of nature and of nations. Accordingly law is a command or precept, conſtituting a rule of action, and coming from ſome ſuperior authority, which an inferior is obliged to obey; or, according to ſome, law is a command, or mandate of ſome perſon, or power, whoſe precept carries with it the reaſon of obedience: or, it is a rule of action, that obliges by virtue of its being the will of a ſuperior. See Obligation.

The word is formed from the Saxon *lah*, *laga*, which ſignifies the ſame.

Thus, the commands of God with reſpect to men, of a city with reſpect to the citizens, and univerſally of all powerful beings in reſpect to thoſe who cannot reſiſt, are called their laws.

The nature of a law will be moſt clearly diſcovered by ſhewing wherein it differs from *covenant*, *counſel*, and *right* or *equity;* with all which it is frequently confounded.

Law is confounded with covenant, or compact, by thoſe who take laws to be nothing elſe but ομολογηματα, or forms of living determined by the conſent of mankind: among whom is Ariſtotle, who defines a law, "a declaration determined by the common conſent of a city, ſhewing in what manner things are to be done:" which is not ſo much the definition of a law, as of a *civil* law; nor yet properly of a civil law; for this common conſent is no more than a mutual covenant, which does not oblige any perſon, and conſequently is not any law, till ſome ſupreme power be conſtituted with a power to compel, and to make it penal to tranſgreſs it. Here then the covenant is confounded with the law, which leads into abſurdities; for a covenant or compact is a promiſe proceeding *from* us; a law, a command directed *to* us.

The difference between a counſel and a law is this:

A counſel is a precept, wherein the reaſon of obedience is taken from the thing itſelf preſcribed; a command is a precept, wherein the reaſon of obedience depends on the will of the preſcriber; for we cannot properly ſay, *ſic volo, ſic jubeo*, unleſs *ſtet pro ratione voluntas*. A law comes from a perſon who has a power over thoſe whom he commands; a counſel, from him who has no ſuch power. To do what is enjoined by a law, is an act of duty; what by a counſel, an act of choice, or freewill. Counſel is only matter of perſuaſion, law is matter of injunction; counſel acts only upon the willing, law upon the unwilling alſo.

Law is confounded with right or equity, by thoſe who perſiſt in doing what is permitted by the *divine* law, though prohibited by the laws of the country. What is prohibited by the *divine* law, cannot be permitted by the *civil* law; nor what is commanded by the divine law, be prohibited by the civil law; but what is permitted by the divine law, may, notwithſtanding, be prohibited by the civil law: for the inferior laws have a power of reſtraining the liberty left by the ſuperior laws, though they cannot enlarge it. Now right or equity is a natural liberty, not conſtituted by laws, but free of them; for take away laws and liberty is complete.

This liberty is firſt reſtrained by the *natural* and the *divine* law, the reſt reſtrained by the civil laws; and what remains unreſtrained by the civil law, may be again reſtrained by the conſtitution of particular cities and ſocieties. There is a great difference, therefore, between law and right, *lex & jus;* for law is a chain; but right a liberty; and they differ as two contraries. See *Civil* or *Municipal* Law, *infra*.

Law may be divided, with reſpect to its different original, into *divine* and *human*.

Law, *Divine*, may be conſidered as twofold, with reſpect to the two different manners in which God notifies or announces his will to man; *viz. natural* (or *moral*), and *poſitive*.

Law, *Natural*, is that which he has made known to all mankind, by an innate light, called *natural reaſon*.

Natural law may be divided into that natural law of men, which, in a peculiar ſenſe, is called the Law *of nature;* and the natural law of countries, commonly called the Law *of nations*. (See each of theſe articles.) The precepts are the ſame in both theſe; but becauſe, when ſocieties are once inſtituted, certain perſonal properties become veſted in men; that law, which, when we ſpeak of the duties of men ſeverally, we call the *natural* law, when transferred to cities or countries, we call the *law of nations*.

M. Regis ſays, that the laws of nature are the dictates of right reaſon, which teach every man how he is to uſe his natural right; and the laws of nations, the dictates, in like manner, of right reaſon, which teach every ſtate how to act and behave themſelves toward others.

Law, *Poſitive*, is that which God has revealed by his prophets, or by perſons ſupernaturally commiſſioned and inſpired and found only in the holy ſcriptures: ſuch are thoſe laws delivered to the Jews, relating to the divine worſhip and polity, which may be called *divine civil* laws, as being peculiarly directed to that people. As the matter of *natural* laws is ſomething in its own nature good and neceſſary, theſe laws are founded in the immutable natures and relations of things, carry with them their own recommendation, and if it were not for the depravity of mankind, would not need a ſupernatural light for the diſcovery of their reaſonableneſs and obligation. Whereas poſitive laws differ from the former, both with regard to the *matter* of them, as well as the *manner* of their publication. Theſe may be diſtinguiſhed into ſuch as are *purely* poſitive, or *partly* ſo. The matter of *purely* poſitive laws is indifferent; ſo that the poſitive decree of the legiſlator alone makes them to be laws, mere reaſon being then ſilent. Such were the ceremonial laws of the Jews, and ſuch are the ſacraments of the Chriſtian religion. Neverthleſs, every poſitive law is founded in reaſon, though reaſon may not be able, antecedently to their promulgation, to diſcover their fitneſs and utility. But the reaſons that recommend them, when they are actually promulged, would not give them the authority and ſanction of a law, without the expreſs inſtitution of the ſupreme lawgiver. Laws that are *partly* poſitive may be reſolved into the law of nature, or the moral law as revived, improved, and enforced by revelation. Several particulars of this law derive a greater degree of evidence from this new mode of promulgation, and alſo a ſtronger enforcement. The law concerning the ſabbath is in a peculiar ſenſe a law of this kind, the matter of it being of a mixed nature. That ſome part of our time ſhould be conſecrated to the worſhip of our creator, the light of nature dictates; but that it ſhould be a ſeventh part rather than any other, or the laſt ſeventh rather than the firſt, or the third, is not natural but poſitive.

Law *of Nature*, as it reſpects intelligent, moral, and accountable beings, is the will of God, relating to human actions, grounded in the moral differences of things; and becauſe it is, in ſome meaſure, diſcoverable by natural right, it is obligatory upon all mankind. It is thus defined by Cicero (De Legibus, lib. i.) "Lex eſt ratio ſumma inſita in natura quæ jubet ea quæ facienda ſunt, prohibetque contraria." It is called the law of nature, on account of the manner of its promulgation, which is by natural reaſon; on account alſo of its ſource or foundation, this law reſulting from the reſpective natures of beings and things, of beings, as God and man, and of things or actions, as morally good or evil, and having different phyſical effects; and, moreover, becauſe it is the law of God. Nature is but a fictitious perſon; and all that is ſaid of the wiſdom of her deſigns and operations, of her power, or of her laws, is to be aſcribed to him who is the author of nature. "Quid enim eſt aliud natura, quam Deus et divina Ratio, toti mundo, et partibus ejus inſerta?" Seneca de Benef. l. vi. c. 7. The demonſtration of this law of nature has been attempted by ſeveral learned men, who commonly urge the conſent of the more civilized nations, as a good argument for the exiſtence of this law. "Omni autem in re conſenſio omnium gentium lex natura putanda eſt," ſays Cicero; *i e.* "as to any point, the agreement of all nations in it is to be eſteemed a law of nature." Others have erroneouſly alleged, as a proof of the law of nature, innate ideas or practical principles, impreſſed on the ſoul of man by its creator: but of ſuch ideas and principles we have no evidence. A more direct and concluſive demonſtration of the law of nature may be deduced from the conſideration both of the divine and human nature; which beheld in one view and in the relation they bear to each other ſupply unequivocal evidence of the exiſtence and obligation of this law. To this purpoſe we ſhall avail ourſelves of ſome appropriate reflections and reaſonings of the learned judge Blackſtone in immediate connection with this ſubject. "As God," ſays this learned writer, "when he created matter, and endued it with a principle of mobility, eſtabliſhed certain rules for the perpetual direction of that motion; ſo, when he created man, and endued him with freewill to conduct himſelf in all parts of life, he laid down certain immutable laws of human nature, whereby that freewill is in ſome degree regulated and reſtrained, and gave him alſo the faculty of reaſon to diſcover the purport of thoſe laws."

Conſidering the Creator only as a being of infinite *power*, he was able unqueſtionably to have preſcribed whatever laws he pleaſed to his creature, man, however unjuſt or ſevere. But as he is alſo a being of infinite *wiſdom*, he has laid down only ſuch laws as were founded in thoſe relations of juſtice, that exiſted in the nature of things antecedent to any poſitive precept. Theſe are the eternal, immutable laws of good and evil, to which the Creator himſelf in all his diſpenſations conforms; and which he has enabled human reaſon to diſcover, ſo far as they are neceſſary for the conduct of human actions. Such among others are theſe principles: that we ſhould live honeſtly, ſhould hurt nobody, and ſhould render to every one his due; to which three general precepts Juſtinian has reduced the whole doctrine of law.

But if the diſcovery of theſe firſt principles of the law of nature depended only upon the due exertion of right reaſon, and could not otherwiſe be obtained than by a chain of metaphyſical diſquiſitions, mankind would have wanted ſome inducement to have quickened their inquiries, and the greater part of the world would have reſted content in mental indolence, and ignorance its inſeparable companion. As therefore the Creator is a being, not only of infinite *power*, and *wiſdom*, but alſo of infinite *goodneſs*, he has been pleaſed ſo to contrive the conſtitution and frame of humanity, that we ſhould want no other prompter to inquire after and purſue the rule of right, but only our own ſelf-love, that univerſal principle of action. For he has ſo intimately connected, ſo inſeparably interwoven the laws of eternal juſtice with the happineſs of each individual, that the latter cannot be attained but by obſerving the former; and, if the former be punctually obeyed, it cannot but induce the latter. In conſequence of which mutual connection of juſtice and human felicity, he has not perplexed the law of nature with a multitude of abſtracted rules and precepts, referring merely to the fitneſs or unfitneſs of things, as ſome have vainly ſurmiſed; but has graciouſly reduced the rule of obedience to this one paternal precept, "that man ſhould purſue his own true and ſubſtantial happineſs." This is the foundation of what we call ethics, or natural law. For the ſeveral articles into which it is branched in our ſyſtems, amount to no more than demonſtrating, that this or that action tends to man's real happineſs, and therefore very juſtly concluding that the performance of it is a part of the law of nature; or, on the other hand, that this or that action is deſtructive of man's real happineſs, and therefore that the law of nature forbids it.

This law of nature, being coeval with mankind and dictated by God himſelf, is of courſe ſuperior in obligation to any other. It is binding over all the globe in all countries, and at all times: no human laws are of any validity, if contrary to this; and ſuch of them as are valid derive all their force, and all their authority, mediately or immediately, from this original.

But in order to apply this to the particular exigencies of each individual, it is ſtill neceſſary to have recourſe to reaſon: whoſe office it is to diſcover, as was before obſerved, what the law of nature directs in every circumſtance of life; by conſidering, what method will tend the moſt effectually to our own ſubſtantial happineſs. And if our reaſon were always, as in our firſt anceſtor before his tranſgreſſion, clear and perfect, unruffled by paſſions, unclouded by prejudice, unimpaired by diſeaſe or intemperance, the taſk would be pleaſant and eaſy; we ſhould need no other guide but this. But every man now finds the contrary in his own experience; that his reaſon is corrupt, and his underſtanding full of ignorance and error.

This has given manifold occaſion for the benign interpoſition of divine providence; which, in compaſſion to the frailty, the imperfection, and the blindneſs of human reaſon, hath been pleaſed, at ſundry times and in divers manners, to diſcover and enforce its laws by an immediate and direct revelation. The doctrines thus delivered we call the revealed or divine law, and they are to be found only in the holy ſcriptures. Theſe precepts, when revealed, are found upon compariſon to be really a part of the original law of nature, as they tend in all their conſequences to man's felicity. But we are not from thence to conclude that the knowledge of theſe truths was attainable by reaſon, in its preſent corrupted ſtate; ſince we find that, until they were revealed, they were hid from the wiſdom of ages. As then the moral precepts of this law are indeed of the ſame original with thoſe of the law of nature, ſo their intrinſic obligation is of equal ſtrength and perpetuity. Yet undoubtedly the revealed law is of infinitely more authenticity than that moral ſyſtem, which is framed by ethical writers, and denominated the natural law. Becauſe one is the law of nature, expreſsly declared ſo to be by God himſelf; the other is only what, by the aſſiſtance of human reaſon, we imagine to be that law. If we could be as certain of the latter as we are of the former, both would have an equal authority: but, till then, they can never be put in any competition together.

Upon theſe two foundations, the law of nature and the law of revelation, depend all human laws; that is to ſay, no human laws ſhould be ſuffered to contradict theſe. There are, it is true, a great number of indifferent points, in which both the divine law and the natural leave a man at his own liberty; but which are found neceſſary for the benefit of ſociety to be reſtrained within certain limits. And herein it is that human laws have their greateſt force and efficacy: for, with regard to ſuch points as are not indifferent, human laws are only declaratory of, and act in ſubordination to, the former. To inſtance in the caſe of murder: this is expreſsly forbidden by the divine, and demonſtrably by the natural law; and from theſe prohibitions ariſes the true unlawfulneſs of this crime. Thoſe human laws that annex a puniſhment to it, do not at all increaſe its moral guilt, or ſuperadd any freſh obligation in *foro conſcientiæ* to abſtain from its perpetration. Nay, if any human law ſhould allow or injoin us to commit it, we are bound to tranſgreſs that human law, or elſe we muſt offend both the natural and the divine. But with regard to matters that are in themſelves indifferent, and are not commanded or forbidden by thoſe ſuperior laws; ſuch, for inſtance, as exporting of wool into foreign countries; here the inferior legiſlature has ſcope and opportunity to interpoſe, and to make that action unlawful which before was not ſo.

We might further add, that, as there is a natural and neceſſary difference between virtue and vice, and the ſeveral actions and diſpoſitions which are denoted by theſe two oppoſite terms, natural reaſon diſcovers it to be the will of God, that every man ſhould look upon this difference in the nature of things and actions, as a law or rule, which he is religiouſly to obſerve, under pain of his Maker's diſpleaſure. Among thoſe writers who have alleged arguments in proof of the law of nature, ſome have founded it upon the reaſon and fitneſs of things, others, on our moral ſenſe, and ſocial affections; and others, again, on the good effects of virtue, and evil effects and conſequences of vice; but, however they may differ in the principles upon which they have founded their reaſoning, they have ultimately arrived at the ſame concluſion. Theſe principles are illuſtrated under their proper heads in the courſe of this work. The names and works of the different writers are cited by Grove, in his “Syſtem of Moral Philoſophy,” vol. II. p. ii. n. 5. The law of nature, ſays the author laſt cited, is eternal and neceſſary; ſo that it always did, and always could not but exiſt. It is univerſal, inſomuch that all mankind are born the ſubjects and objects of this law, notwithſtanding the difference of climate, of government, of language, and of opinions and cuſtoms that have prevailed in different parts of the world. Moreover, the law of nature is immutable, for the divine nature is immutable. The firſt principle, or law of nature, according to Hobbes, is ſelf-preſervation. Thomaſius will have it to be our own happineſs, which falls in at laſt with the ſentiment of Hobbes. Puffendorf maintains it to be ſociality. Valentine Alberti, the belief that we are the image of God. Henry and Samuel Cocceius, the will of God. Grotius, right reaſon. Velthemius, the intrinſic decency or turpitude of actions. Strimeſius and Janus, that we are to love God, ourſelves, and our neighbour.

Laws, *Human*, comprehend all thoſe rules of conduct, which originate in the wiſdom of man, individually or collectively conſidered, and which are deſigned to regulate their behaviour to one another in more limited or more enlarged ſocieties, and which are enforced by human authority and worldly ſanctions. Human laws are neceſſary as a remedy, partly to the generality, and partly to the inefficacy of the divine. The laws of God are too general to aſcertain all the duties of ſociety, without ſome additional interpretations of men. That no man by fraud or violence injure another, and take his property, is a divine law; which notwithſtanding, human laws are in many caſes needful to ſettle the bounds of property, and aſſign every member of the community his rights and duties; what he may expect from others, and what he is to do to them. “Salus populi ſuprema lex eſto.” “To ſecure the welfare of the ſociety be the ſupreme law” is really a divine precept; but the geniuſes and intereſts of nations are ſo various, yea, ſo liable to change are the intereſts and circumſtances of the ſame people, that different laws are neceſſary to ſuit this diverſity of tempers, occaſions, and emergencies. Nor is it any reproach to the divine law that it is no more particular; ſince it muſt be infinite to reach all the particular circumſtances of mankind: and God hath given men reaſon, by which they may build upon the foundation that he hath laid ſuch further laws and conſtitutions, as the courſe and poſture of human affairs ſhall require. Nor is the inefficacy of the law of God, which is the other thing that makes human laws neceſſary, any more a diſhonour to it. For what is the cauſe of this inefficacy, but the wilful corruption of men? It was moſt fit, that the chief rewards and puniſhments annexed to the divine laws ſhould be unſeen and future; that the trial of human virtue might be more conſpicuous. And were not mankind ſunk into an extreme degeneracy, the proſpect of an eternal world would make all other conſiderations uſeleſs. But as it is now, the torments of an after-life are not a bridle ſtrong enough upon the luſts and paſſions of men. It is therefore neceſſary, that every ſociety, to ſecure its own peace, ſhould inſert as much of the divine law into their reſpective conſtitutions, as concerns the welfare of the body politic; and inforce theſe laws, not as divine, but as laws of the ſtate, with civil ſanctions; that they who will not be made honeſt by the fear of God, may be ſo by the fear of the laws of their country. The difference between the philoſophers and others was ſaid to be this, Μονοι ποιουσιν εκουσιως α ποιουσιν ακοντες οι λοιποι, “that they practiſed from choice that honeſty and virtue, which others obſerved through fear of the laws;” agreeably to that of the apoſtle, “that the law is not made for a righteous man, but for the lawleſs and diſobedient.” All human laws are of the nature of thoſe called *civil;* and theſe, with regard to the difference of their ſubject matter, may be ſub-divided into the law of nations, civil law, and canon law.

Law *of Nations*, *Jus Gentium*, is that rule, or meaſure, which all or ſeveral nations, either by a tacit or expreſs agreement, are obliged to obſerve towards one another, whether in peace or war. If, indeed, men were to live in a ſtate of nature, unconnected with other individuals, there would be no occaſion for any other laws, than the law of nature, and the law of God. Neither could any other law poſſibly exiſt: for a law always ſuppoſes ſome ſuperior who is to make it; and in a ſtate of nature we are all equal, without any other ſuperior but him who is the author of our being. But man was formed for ſociety; and, as is demonſtrated by the writers on this ſubject, is neither capable of living alone, nor indeed has the courage to do it. However, as it is impoſſible for the whole race of mankind to be united in one great ſociety, they muſt neceſſarily divide into many; and form ſeparate ſtates, commonwealths, and nations, entirely independent of each other, and yet liable to a mutual intercourſe. Hence ariſes a third kind of law, to regulate this mutual intercourſe, called “the law of nations:” which, as none of theſe ſtates will acknowledge a ſuperiority in the other, cannot be dictated by any; but depends entirely upon the rules of natural law, or upon mutual compacts, treaties, leagues, and agreements between theſe ſeveral communities: in the conſtruction alſo of which compacts we have no other rule to reſort to, but the law of nature; being the only one to which all the communities are equally ſubject: and therefore the civil law very juſtly obſerves, that “quod naturalis ratio inter omnes homines conſtituit, vocatur jus gentium.”

Law, *Civil* or *Municipal*, is the rule by which particular diſtricts, communities, or nations are governed; being thus defined by Juſtinian, (Inſt. 1. 2. 1) “Jus civile eſt quod quiſque ſibi populus conſtituit.” Judge Blackſtone calls it “municipal” law, in compliance with common ſpeech; for though, ſtrictly ſpeaking, that expreſſion denotes the particular cuſtoms of one ſingle *municipium*, or free town, yet it may with ſufficient propriety be applied to any one ſtate or nation, which is governed by the ſame laws and cuſtoms. Accordingly, municipal law, thus underſtood, is properly defined to be “a rule of conduct preſcribed by the ſupreme power in a ſtate, commanding what is right and prohibiting what is wrong.” It is a “rule;” not a tranſient order from a ſuperior to or concerning a particular perſon, but ſomething permanent, uniform, and univerſal. It is thus diſtinguiſhed from advice or counſel, and alſo from a compact or agreement. (See the beginning of the article Law.) It is a rule of “civil conduct,” by which it is diſtinguiſhed from the natural or revealed law. (See Law *of Nature.*) The municipal or civil law regards man as a citizen, and bound to other duties towards his neighbour than thoſe of mere nature and religion; duties in which he has engaged, in conſequence of enjoying the benefits of the common union; and which amount to no more than that he do contribute, on his part, to the ſubſiſtence and peace of the ſociety. It is likewiſe a rule “preſcribed,” becauſe a bare reſolution, confined in the breaſt of the legiſlator, without manifeſting itſelf by ſome external ſign, can never be properly a law. This reſolution muſt be notified to the people who are to obey it. This may be done by univerſal tradition and long practice, which ſuppoſe a previous publication, and is the caſe of the common law of England. It may be notified, *viva voce*, by officers appointed for that purpoſe, as is done with regard to proclamations, and ſuch acts of parliament as are appointed to be publicly read in churches and other aſſemblies. And, laſtly, it may be notified by writing, printing, or the like; which is the general courſe taken with all our acts of parliament. This notification, however, ſhould be made in the moſt public and perſpicuous manner; and not like the maſk of Caligula, who (according to Dion Caſſius) wrote his laws in a very ſmall character, and hung them up upon high pillars, the more effectually to enſnare the people. That, without doubt, can never be a rule to any perſon, which is not liable to his cognizance, or which he neither does nor can know. Agreeably to this circumſtance, ſome have derived "lex" *a legendo*; becauſe the law was to be publicly read, that it might be known to all and obſerved by all. The matter of *divine* laws being uſually of great importance, and the author a ſovereign who has an abſolute propriety in us, and on that ground an unqueſtionable right to the moſt entire devotedneſs, and zealous concern to pleaſe him; we ought to uſe all the means in our power to come at the knowledge of his will. But as *human* laws proceed from the will of thoſe who, by nature, are upon a level with the reſt of mankind, and have the conſent of others to govern them purely for their temporal or political good; ſuch a proviſion ought to be made for their publication, that by an ordinary care, and without taking up much of their time and thoughts, which are to be ſpent in their private callings, people may be able to know the pleaſure of their governors. There is another circumſtance, which is worſe than the non-promulgation of a law; and that is the making of laws "ex poſt facto:" when after an action (indifferent in itſelf) is committed, the legiſlator then for the firſt time declares it to have been a crime, and inflicts a puniſhment upon the perſon who has committed it. All laws ſhould be made to commence "in futuro," and be notified before their commencement. When the laws or rules of conduct are properly notified or preſcribed, it is the buſineſs of the ſubject to be thoroughly acquainted with them: for if ignorance, of what he might know, were admitted as a legitimate excuſe, the laws would be of no effect, but might always be eluded with impunity. On this head we ſhall only add, that it is requiſite to the very eſſence of a law, that it be made by the ſupreme power. Sovereignty and legiſlature are convertible terms; one cannot ſubſiſt without the other. That the law may anſwer the purpoſe of a complete rule, "commanding what is right and prohibiting what is wrong," it is neceſſary that the boundaries of right and wrong be eſtabliſhed and aſcertained by law: and it is then the buſineſs of the law, conſidered as a rule of civil conduct, to enforce theſe rights, and to redreſs theſe wrongs. For this purpoſe every law may be ſaid to conſiſt of ſeveral parts: one, *declaratory*, whereby the rights to be obſerved, and the wrongs to be eſchewed, are clearly defined and laid down; another, *directory*, whereby the ſubject is inſtructed and enjoined to obſerve thoſe rights, and to abſtain from the commiſſion of thoſe wrongs; a third, *remedial*, whereby a method is pointed out to recover a man's private rights, or redreſs his private wrongs; to which may be added a fourth, uſually termed the *ſanction*, or *vindicatory* branch of the law, whereby it is ſignified what evil or penalty ſhall be incurred by ſuch as commit any public wrongs, and tranſgreſs or neglect their duty. (Blackſt. Comm. book i.) For the interpretation of the law, ſee INTERPRETATION.

Civil laws, conſidered with regard to the two offices of the legiſlator, *viz.* to judge and to compel, may be divided into two branches; the one *diſtributive*, the other *vindictive* and *penal*.

LAW, *Diſtributive*, is that by which every man has his right; or, it is that which conſtitutes the rules and meaſures of things, whereby we know what belongs to us, and what to others; ſo as we may not diſturb or interrupt others in the enjoyment of their own, nor be interrupted by them; and what each man may lawfully do or not do.

LAW, *Vindictive*, is that branch by which the puniſhments to be inflicted on thoſe who violate the laws, are determined.

The diſtributive and vindictive are not two ſpecies of laws, but two parts of the ſame law. For if a law ſay no more than "Whatever you catch in your net, in the ſea, ſhall be your's," it is in vain; for though another take from you what you have caught, it is ſtill your's; in regard, in the ſtate of nature, where all things are common, your's and another's are the ſame thing. So that what the law defines to be your's, was your's before that law, and will be your's after it, though poſſeſſed by another.—A law, therefore, is but an empty ſound, unleſs it determine the thing to be your's in ſuch a ſenſe as to forbid every body elſe from diſturbing you in the poſſeſſion of it. But ſuch prohibition will be vain, unleſs there be a penalty annexed to it. A law, therefore, muſt contain both theſe parts, that which prohibits, and that which puniſhes. The firſt whereof, which is called *diſtributive*, is prohibitory, and ſpeaks to all; the latter, called *vindictive* or *penal*, is mandatory, and ſpeaks only to the public officers. Whence it follows, that to all civil laws there is annexed a penalty, either implicitly or explicitly; and where that puniſhment is not aſcertained, either by writing or by example, it is ſuppoſed to be arbitrary, and to depend on the pleaſure of the legiſlator: for that is no law, which may be violated impune.

Civil laws, conſidered with regard to the different manners of promulgating them, are of two kinds; *ſcriptæ* and *non ſcriptæ*, or *written* and *unwritten*.

LAWS, *Written*, are thoſe which require either the voice, or ſome other ſign of the legiſlator's will to become laws. The written laws of England conſiſt of ſtatutes, acts, or edicts, made by the king's majeſty, by and with the advice and conſent of the lords ſpiritual and temporal, and commons, in parliament aſſembled. The oldeſt of theſe now extant is the famous "magna charta," as contained in parliament 9 Hen. III. See MAGNA *Charta* and STATUTES.

LAWS, *Unwritten*, are ſuch as need no other promulgation beſides the voice of nature, or natural reaſon; of which kind are all natural laws.

Hence it appears, that though the natural laws be deſcribed in the writings of the philoſophers, they are not therefore to be called *written* laws; nor are the writings of lawyers, laws, for want of the ſupreme authority; nor the *reſponſa prudentum*, or opinions of judges, laws, excepting ſo far as they are allowed by the ſupreme power to paſs into uſe; and then they are called *leges ſcriptæ*, written laws; not becauſe of their uſe, but becauſe of the will of the ſupreme power, which is argued from their paſſing into uſe.

The unwritten law of England includes not only "general cuſtoms," as the *common law*, properly ſo called; but alſo the "particular cuſtoms" of certain parts of the kingdom; and likewiſe thoſe "particular laws," that are by *cuſtom* obſerved only in certain courts and juriſdictions. When theſe parts of the municipal law of England are called "leges non ſcriptæ," we are not to underſtand that theſe laws are at preſent merely *oral*, or communicated from the former ages to the preſent ſolely by word of mouth. Indeed, during an age of profound ignorance of letters, all laws were entirely traditional, becauſe the nations among which they prevailed had but little idea of writing. Thus the Britiſh as well as the Gallic Druids committed all their laws, as well as learning, to memory; and it is ſaid of the primitive Saxons here, as well as their brethren on the continent, that "leges ſola memoria et uſu retinebant." But with us, at preſent, the monuments and evidences of our legal cuſtoms are contained in the records of the ſeveral courts of juſtice, in books of reports and judicial deciſions, and in the treatiſes of the learned ſages of the profeſſion, preſerved and handed down to us from the times of higheſt antiquity. But theſe parts of our law may be fitly ſtyled "leges non ſcriptæ," becauſe their original inſtitution and authority are not ſet down in writing, as acts of parliament are, but they receive their binding power, and the force of laws, by long and immemorial uſage, and by their univerſal reception throughout the kingdom. In like manner as Aulus Gellius defines the "jus non ſcriptum" to be that, which is "tacito et illiterato hominum conſenſu et moribus expreſſum." See Common *Law* and Custom.

Having conſidered the *civil* law in its more general acceptation, as denoting the ſtatutes and ordinances of every ſtate for its own good government, we ſhall refer for the ſtatement of its more ſpecial acceptation to the article Civil *Law*.

Laws, *Canon* or *Eccleſiaſtical*, in a more extenſive ſenſe, denote laws relating to the worſhip, diſcipline, and government of the church. For an account of that which is by way of eminence called *canon law*, ſee Canon *Law*.

There is another diviſion of the law of England beſides that which we have above ſtated, more large and particular; as into the prerogative or crown law; the law and cuſtom of parliament; the common law; the ſtatute law; reaſonable cuſtoms; the law of arms, war, and chivalry; eccleſiaſtical or canon law; civil law, in certain courts and caſes; foreſt law; the law of marque and repriſal; the law of merchants; the law and privilege of the ſtannaries, &c. But this large diviſion may be reduced to the common diviſion; and all is founded on the law of nature or reaſon, and the revealed law of God, as all other laws ought to be. 1 Co. Inſt. 11.

Law is alſo applied to the ſeveral policies of ſtates and people, or the maxims and rules they have agreed upon, or received from their magiſtrates, whereby to live in peace and mutual ſociety.

The laws of the twelve tables were the ancient laws of the Romans, for which the Decemviri were ſent into Greece, and which ſerved them for the ground-work of all their juriſprudence.

The celebrated laws of the more modern days, are thoſe of the Angli, the Werini, or Thuringi; of the Boii, or Bavarians; thoſe of the Burgundi, Germans, Danes, and Norwegians; of the Franks, the Friſons, the Lombards, the Gothic laws, the Martina, or Mercian law; the laws of the Saxons, Scots, Sicilians, Viſigoths; the laws of Oleron, the Molmutin law, and the Salic law.

Law, *Lex*, among the firſt Romans properly ſignified an ordinance of the people, made at the requeſt of a magiſtrate, particularly a conſul.

Theſe ordinances differed from the plebiſcita and ſenatus conſulta, and even from other ordinances made at the requeſt of any other magiſtrate beſide a conſul, though thoſe too bore the name of laws.

Thus, though Aquilius and Falcidius were only tribunes when they made their requeſt, yet we ſtill ſay, the *Aquilian* law, the *Falcidian* law, &c.

The ſeveral laws of the Romans are diſtinguiſhed, 1. By the name of him at whoſe requeſt they were paſſed; as the *Cornelian* law, the *Julian* law, &c. 2. By the matter or ſubject of the law; and hence came the terms, *teſtamentary* laws, as the *Furian*, *Voconian*, &c. *judiciary* laws, *Agrarian* laws, &c.

3. Sometimes by the crimes againſt which they were made. For inſtance: the laws touching *poiſoning*, *parricides*, &c. the laws of *concuſſion*, *peculate*, &c.

The Codex and Authenticæ are the laws and conſtitutions of the Roman emperors; and the Digeſt is a compilation, made by the emperor Juſtinian's order, of the ſeveral opinions and judgments of the moſt learned in the Roman law; to which he gave the ſanction of laws, as appears by the epiſtle prefixed to the work; and it is this that properly conſtitutes the Roman law. See Civil *Law*.

The *lex talionis*, or *law of like for like*, is the moſt ancient and equitable law in the world. It was obſerved by the Hebrews.

Law has alſo a more ſpecial ſignification, wherein it is taken for that which is lawful with us, and not elſewhere: as "tenant, by the courteſy of England."

Thus we alſo ſay, to *wage law* (*vadiare legem*), and to *make* or *do law* (*facere legem*). See Wager, and Make.

Law *of Arms*, is that law which gives precepts how rightly to proclaim war, to make and obſerve leagues, to attack the enemy, and to puniſh offenders in the camp.

Common things concerning arms and war are under the cognizance of the conſtable and marſhal of England. 13 R. II.

Law, *Aſſignee by*. See Assignee.

Law, *Covenant of*. See Covenant.

Laws *of Eſtates*, ſuch acts and regulations as relate to their natures and managements. See Estate, and Farm.

Law, *Foreſt*. See Forest.

Law, *Frank*. See Frank.

Law *of Honour*, denotes a ſyſtem of rules, conſtructed by people of faſhion, and calculated to facilitate their intercourſe with one another; and for no other purpoſe. Nothing is adverted to by the law of honour but what tends to incommode this intercourſe; and hence it only preſcribes and regulates the duties betwixt equals, omitting ſuch as relate to the Supreme Being, as well as thoſe which we owe to our inferiors. For which reaſon, profaneneſs, neglect of public worſhip or private devotion, cruelty to ſervants, rigorous treatment of tenants or other dependants, want of charity to the poor, injuries done to tradeſmen by inſolvency or delay of payment, with numberleſs examples of the ſame kind, are accounted no breaches of honour; becauſe a man is not a leſs agreeable companion for theſe vices, nor the worſe to deal with, in thoſe concerns which are uſually tranſacted between one gentleman and another. Again, the law of honour, being conſtituted by men occupied in the purſuit of pleaſure, and for the mutual conveniency of ſuch men, will be found, as might be expected from the character and deſign of the law-makers, to be, in moſt inſtances, favourable to the licentious indulgence of the natural paſſions. Thus it allows of fornication, adultery, drunkenneſs, prodigality, duelling, and of revenge in the extreme; and lays no ſtreſs upon the virtues oppoſite to theſe. Paley's Principles of Moral and Political Philoſophy, vol. i.

Law, *Inſurance of*. See Insurance.

Law, *Intendment of*. See Intendment.

Law *Language* was formerly, in this kingdom, Norman or law French; and in this barbarous dialect were all public proceedings written and recorded. Nothing could be a more humiliating and ignominious badge of tyranny and foreign ſervitude; being introduced under the auſpices of William the Norman, and his ſons; and thus the ironical obſervation of the Roman ſatiriſt came to be literally verified, that

"Gallia cauſidicos docuit facunda Britannos." (Juven. xv. 111.) This continued till the reign of Edward III., when by ſtat. 36 Ed. III. c. 15, it was enacted, that for the future all pleas, &c. ſhould be conducted in the Engliſh tongue; but entered and enrolled in Latin. The practiſers, however, being uſed to the Norman language, which was more familiar to them, continued to take their notes in law French; and when theſe notes were publiſhed, under the denomination of reports, they were printed in that barbarous dialect; which, joined to the additional terror of a Gothic black letter, has occaſioned many ſtudents to throw away their Plowden and Littleton, without venturing to attack a page of them. But in reality, ſays Blackſtone, on a nearer acquaintance, they would have found nothing formidable in the language; which differs in its grammar and orthography as much from the modern French, as the diction of Chaucer and Gower does from that of Addiſon and Pope. Beſides, as the Engliſh and Norman languages were concurrently uſed by our anceſtors for ſeveral centuries, the two idioms have naturally aſſimilated, and actually borrowed from each other; for which reaſon the grammatical conſtruction of each is ſo very much the ſame, that an Engliſhman (with a week's preparation) would underſtand the laws of Normandy, collected in their "grand coutumier," as well, if not better, than a Frenchman bred within the walls of Paris.

The Latin, which ſucceeded the French for the entry and enrolment of pleas, and which continued in uſe for four centuries, anſwers ſo nearly to the Engliſh, that it has been generally imagined to be totally fabricated at home, with little more art or trouble than by adding Roman terminations to Engliſh words. Whereas, in reality, it is a very univerſal dialect ſpread throughout all Europe at the irruption of the northern nations, and particularly accommodated and moulded to anſwer all the purpoſes of the lawyers with a peculiar exactneſs and preciſion. Theſe northern nations, or rather their legiſlators, though they reſolved to promulge their laws in the Latin tongue, have frequently intermixed in it ſome words of a Gothic original; which is more or leſs the caſe in every country of Europe, and ought not, therefore, to be imputed as any peculiar blemiſh in our Engliſh legal Latinity. The truth is, that which is generally denominated law Latin, is in reality a mere technical language, calculated for eternal duration, and eaſy to be comprehended both in preſent and future times; and on thoſe accounts beſt ſuited to preſerve thoſe memorials which are intended for perpetual rules of action. As to the objection of locking up the law in a ſtrange and unknown tongue, this is of little weight with regard to records, which few have occaſion to read, but ſuch as do, or ought to, underſtand the rudiments of Latin. The learned Blackſtone ſuggeſts, that the terms of the "law are not more numerous, more uncouth, or more difficult to be explained by a teacher, than thoſe of logic, phyſics, and the whole circle of Ariſtotle's philoſophy, nay even of the politer arts of architecture and its kindred ſtudies, or the ſcience of rhetoric itſelf." The technical Latin continued in uſe from the time of its firſt introduction till the time of the ſubverſion of our ancient conſtitution under Cromwell, when, among many other innovations in the law, the language of our records was altered and turned into Engliſh. But, at the reſtoration of king Charles, this novelty was no longer continued; the practiſers finding it very difficult to expreſs themſelves ſo conciſely or ſignificantly in any other language but the Latin. Thus it continued without any ſenſible inconvenience till about the year 1730, when it was again thought proper that the proceedings at law ſhould be done into Engliſh; and it was accordingly ſo ordered by ſtatute 4 Geo. II. c. 26. This proviſion was made, according to the preamble of the ſtatute, that the common people might know and underſtand what was alleged or done for and againſt them, in the proceſs and pleadings, the judgment and entries in a cauſe. Several inconveniences aroſe from this alteration; ſo that in two years it was found neceſſary to make a new act, 6 Geo. II. c. 14, which allows all technical words to continue in the uſual language, and has thereby almoſt defeated every beneficial purpoſe of the former ſtatute. Blackſt. Com. b iii.

Law, *Marine*, denotes that law which ſerves to regulate the intereſts of navigation and maritime commerce. (See Navigation, and Commerce.) This law has undergone various alterations and improvements, in conſequence of the extenſion of naval intercourſe between different nations for the purpoſes of commerce. Several codes have been formed by different ſtates primarily for the regulations of navigation, and for defining the authority of the maſters and other officers of ſhips, and the duty and rights of the ſeamen; and afterwards for the regulation of maritime contracts. The earlieſt ſyſtem of marine law, which hiſtory records, was that compiled by the Rhodians, after they had, by their commerce and naval victories, obtained the ſovereignty of the ſea, about 900 years before the Chriſtian era. Theſe laws exiſt at preſent only in a detached and imperfect ſtate, as they have been preſerved and incorporated in other ſubſequent inſtitutions of a ſimilar nature. It has been ſuppoſed by ſome that the Rhodian laws were adopted by the Romans during the firſt Punic war, when they firſt became a naval power; but others affirm that they were incorporated with the Roman law by Juſtinian and others. As for the Phœnicians, Carthaginians, Athenians, Corinthians, and other maritime ſtates of antiquity, it does not appear whether they had any marine laws of their own inſtitution. If they had any, they have not been tranſmitted to our times. The firſt code of modern ſea-laws was compiled, ſays ſerjeant Marſhall, about the time of the firſt cruſade, towards the end of the 11th century, by the people of Amalfi, who had then become conſiderable for their commerce and maritime power. It is not improbable that the code conſiſted principally of the Rhodian inſtitutions, which were found ſtill in force in the countries bordering upon the Mediterranean; and being collected into one regular ſyſtem, were generally received, for a conſiderable time, as law in thoſe countries. In proceſs of time, other ſtates, as they acquired importance and diſtinction, formed new collections of marine laws, in which the old inſtitutions were altered and modified to ſuit the improvements of the times, or their own particular intereſt. But when inconveniences were found to ariſe from a diverſity of rules pertaining to a ſubject that had been long regulated by one general ſyſtem, which was regarded as part of the law of nations, it became neceſſary for the different maritime ſtates to form a new code out of all theſe diſcordant materials, which was done, as Grotius informs us, (De Jure Bell l. iii. c. 1 § 5. n. 6) by the authority of almoſt all the ſovereigns of Europe. This new digeſt was denominated "Conſolato del Mare." It was firſt publiſhed, by order of the ancient kings of Aragon, in the Catalan tongue, and therefore probably compoſed at Barcelona, the capital of Aragon. In the 13th century this code was revived as law in Italy, the Greek empire, France, and Germany; and Vinnius ſays, that moſt of the marine laws in Spain, Italy, France, and England are borrowed from it. It ſeems to have been conſidered as a branch of the public law, and its regulations are ſtill of very high authority in every maritime ſtate of Europe. The next collection of ſea-laws in point of time, as well as of celebrity, is that of

Oleron. (See Oleron.) This was ſucceeded by a collection of the ordinances made by the "Merchants and maſters of the magnificent city of Wiſbuy, in the iſland of Gothland, formerly very famous for its commerce, but now reduced to an obſcure and inconſiderable town." Many of the regulations contained in this code of laws are preciſely the ſame with thoſe of Oleron. Theſe laws were for ſome ages, and indeed ſtill remain, in great authority in the northern parts of Europe. In 1597, the deputies of the Hanſeatic league, in a general aſſembly at Lubeck, drew up a ſyſtem of laws relating to navigation, for the uſe of their confederacy, to which, in 1614, they added ſeveral new ordinances. But the moſt complete and comprehenſive ſyſtem of this kind is the famous ordinance of the marine of Louis XIV. publiſhed in 1681. This excellent code was compiled and arranged by a very maſterly hand, under the inſpection of Colbert, the celebrated miniſter of that prince, upon an attentive reviſion of all the ancient ſea-laws of France and other countries, with the aſſiſtance of the moſt learned men of the time, and upon conſultation with the different parliaments, the courts of admiralty, and the chambers of commerce in France It forms a ſyſtem of whatever experience and the wiſdom of ages had pronounced to be moſt juſt and convenient in the marine inſtitutions of the maritime ſtates of Europe. Notwithſtanding new regulations, ſuggeſted by motives of national intereſt, it has hitherto been eſteemed a code of great authority upon all queſtions of maritime law. From this ordinance, and from the elaborate and uſeful commentary of Valin, lord Mansfield is ſaid to have derived much of his extenſive and accurate acquaintance with the principles of marine. Marſhall's Law of Inſurance, vol. i. See Insurance.

Law *of Marque*, a law by which thoſe who are driven to make uſe of it, take the goods, or ſhipping of the party that has done them wrong, and of whom they cannot get ordinary juſtice, whenever they can take him within their own bounds or precincts. 27 Edw. III. cap. 17.

Law, *Martial*. See Martial.

Law *Merchant*, a ſummary ſort of law, originally differing from the common law, though now adopted, and become a part of the laws of the kingdom. This decides the cauſes of merchants on the general rules which obtain in all commercial countries; and that often, in matters relating to domeſtic trade, as, for inſtance, with regard to the drawing, the acceptance, and the transfer, of inland bills of exchange. (Co. Litt. 172. Lord Raym. 181 1562.) One point of it conſiſts in this, that if there be two joint merchants of wares, and one of them dies, his executor ſhall have the moiety; which is not allowed in the caſe of others, not merchants. See Custom.

The law of merchants not being founded in the particular inſtitutions, or local cuſtoms of any particular country, but conſiſting of certain principles which general convenience has eſtabliſhed to regulate the dealings of merchants with each other in all countries, may be conſidered as a branch of public law.

Laws *of Molmutius*. See Molmutin *Laws*.

Laws *of Oleron*. See Oleron.

Law *of Parliament*. See Parliament.

Law, *Poynings'*. See Poyning.

Law, *Releaſe in*. See Release.

Law, *Salic*. See Salic.

Law, *Spiritual*, is the eccleſiaſtical or canon law, allowed and authorized in this realm, ſo far as it is not againſt the common law, nor againſt the ſtatutes and cuſtoms of the kingdom. And according to ſuch eccleſiaſtical laws, the ordinary and other eccleſiaſtical judges proceed in caſes within their cognizance.

Law *Staple*, the ſame with law merchant.

Law *Suit*. See Suit.

Law, *Sumptuary*. See Sumptuary.

Law, *Surrender in*. See Surrender.

Laws, *By*. See By-Laws

Laws, *Cock-pit*. See Cockpit.

Laws *of the Stage*. See Stage.

Law is alſo uſed figuratively in ſpeaking of the rules or order wherein any thing is performed.

Thus we ſay, the laws of motion, the laws of mechanics, the laws of fluids, the laws of chance, of a game, &c. laws of friction, of reſiſtance, of deſcent of bodies, &c. laws of elaſticity, rarefaction, reflexion, refraction, &c.; all which ſee under their proper heads.

Law, in *Scripture Hiſtory*, one of the three diviſions of the Old Teſtament, comprehending Geneſis, Exodus, Leviticus, Numbers, Deuteronomy. See Canon.

Law *Day*, *Lagedayum*, in our old *Law Writers*, was any day of open court, and commonly uſed for the courts of a county or hundred. It is alſo called *view of frank-pledge*, or *court-leet*. "Et quieti ſint de ſectis comitatuum & hundredorum noſtrorum, de viſu franci plegii & laudavorum, &c."

LAWA, in *Geography*, a town of the iſland of Borneo, ſituated on a river of the ſame name. N. lat. 0° 40′. E. long. 110° 42′.

LAWEND, in the military language of the Ottoman empire, the appellation of cavalry, called alſo Delibaches. (See Delibaches.) From *Lawend* we have formed *Laventi*. Their arms are ſhort ſabres, piſtols, muſkets, and lances. They wear a kind of cap, which is a long cylinder of black felt, nine or ten inches high, and without any projecting rim. Their ſaddles are made in the Engliſh manner, of a ſingle ſkin, ſtretched upon a wooden tree; in the reſt of their accoutrements and clothing, they reſemble the Mamlouks. Their ragged clothes, their ruſty arms, and their horſes of different ſizes, give them the appearance of banditti more than of ſoldiers; and, in reality, they have firſt diſtinguiſhed themſelves under the former character, nor have they much changed their habits by adopting their ſecond occupation. Almoſt all the cavalry in Syria are Turkmans, Curds, or Caramanians; who, after exerciſing the trade of robbers in their own country, ſeek employment, as well as an aſylum, near the perſon of the pacha. Throughout the empire, their troops are, in like manner, formed of plunderers, who roam from place to place. From want of diſcipline, they retain their former manners, and are the ſcourge of the country, which they lay waſte, and of the peaſants, whom they often pillage by open force. Volney's Travels, vol. ii.

LAWER Kirk, in *Geography*, a town of Scotland, in the county of Perth; 15 miles S.E. of George Town.

LAWES, William, in *Biography*, the eldeſt ſon of Thomas Lawes, a vicar-choral of the cathedral church of Saliſbury, and a native of that city, was placed early in life under Coperario, for his muſical education, at the expence of the earl of Hertford. His firſt preferment was in the choir of Chicheſter, but he was ſoon called to London, where, in 1602, he was ſworn a gentleman of the chapel royal; which place, however, he reſigned in 1611, and became one of the private, or chamber-muſicians, to Charles, then prince, and afterwards king. Fuller ſays, "he was reſpected and beloved of all ſuch perſons as caſt any looks towards virtue and honour;" and he ſeems well entitled to this praiſe. He manifeſted his gratitude and loyalty to his royal maſter by taking up arms in his cauſe againſt the parliament.

liament. And though, to exempt him from danger, lord Gerrard, the king's general, made him a commiſſary in the royal army, yet the activity of his ſpirit diſdaining this intended ſecurity, at the ſiege of Cheſter, 1645, he loſt his life by an accidental ſhot. The king is ſaid, by Fuller, to have been ſo affected at his loſs, that though he was already in mourning for his kinſman lord Bernard Stuart, killed at the ſame ſiege, his majeſty put "on *particular* mourning for his dear ſervant William Lawes, whom he commonly called the father of muſic."

His chief compoſitions were fantaſias for viols, and ſongs and ſymphonies for maſques. Though his brother Henry, in the preface to the Choice Pſalmes for three voices, which they publiſhed jointly, boaſts that "he compoſed more than thirty ſeveral ſorts of muſic for voices and inſtruments, and that there was not any inſtrument in uſe in his time but he compoſed for it as aptly as if he had only ſtudied that." In Dr. Aldrich's Collection, Chriſt-church, Oxon, there is a work of his called Mr. William Lawes's Great Conſort, "wherein are ſix ſetts of muſicke, ſix books." His Royal Conſort for two treble viols, two viol da gambas, and a thorough-baſe, which was always mentioned with reverence by his admirers in the 17th century, is one of the moſt dry, aukward, and unmeaning compoſitions we ever remember to have had the trouble of ſcoring. It muſt, however, have been produced early in his life, as there are no bars, and the paſſages are chiefly ſuch as were uſed in queen Elizabeth's time. In the muſic-ſchool at Oxford are two large manuſcript volumes of his works in ſcore, for various inſtruments; one of which includes his original compoſitions for maſques, performed before the king, and at the inns of court.

His anthem for four voices, in Dr. Boyce's ſecond volume, is the beſt and moſt ſolid compoſition that we have ſeen of this author; though it is thin and confuſed in many places, with little melody, and a harmony in the chorus, p. 201, which we are as unable to underſtand, or reconcile to rule, or to our own ears. He muſt have been conſiderably older than his brother Henry, though they frequently compoſed in conjunction. We are, however, unable to clear up this point of primogeniture: Henry's name is placed firſt in the title to Choice Pſalmes, publiſhed in 1648, in the preface to which he ſays, "as to that, which is my part in this compoſition, it takes precedence of order only, not of worth." And yet he ſays of his own tunes juſt before, "they had their birth at the ſame time as his." Beſides the pſalms at the end of ſir William Davenant's maſque, called "The Triumphs of the Prince d'Amour," 1635, it is ſaid, that "the muſick of the ſongs and ſymphonies were excellently compoſed by Mr. William and Mr. Henry Lawes, his majeſty's ſervants."

Several of the ſongs of William Lawes occur in the collections of the time, particularly in John Playford's Muſical Companion, part the ſecond, conſiſting of dialogues, glees, ballads, and airs, the words of which are in general coarſe and licentious. The dialogue part, which he furniſhed to this book, is a ſpecies of recitative, wholly without accompaniment: and the duet at laſt, which is called a chorus, is inſipid in melody, and ordinary in counterpoint. His boaſted canons, publiſhed by his brother Henry at the end of their pſalms, as proofs of his great abilities in harmony, when ſcored, appear ſo far from finiſhed compoſitions, that there is not one of them totally free from objections, or that bears the ſtamp of a great maſter.

LAWES, HENRY, the brother of William, was likewiſe a diſciple of Coperario. By the cheque-book of the chapel royal, it appears that he was ſworn in Piſteller, in January, 1625, and, in November following, gentleman of the chapel; after this, he was appointed clerk of the cheque, and one of the public and private muſicians to Charles I. William and Henry Lawes were at this time in ſuch general favour, that though the kingdom was divided into factions, and were not only varied more in their principles, but diſputed them with more violence than at any other period of our hiſtory, there was but one opinion concerning the abilities of theſe muſicians. Yet as the reputation of Henry was ſtill higher, and more firmly eſtabliſhed than that of his brother, it ſeems to require more ample diſcuſſion. We have examined with care and candour all the works which we could find of this compoſer, which are ſtill very numerous, and are obliged to own ourſelves unable, by their excellence, to account for the great reputation which he acquired, and the numerous panegyrics beſtowed on him by the greateſt poets and muſicians of his time. His temper and converſation muſt certainly have endeared him to his acquaintance, and rendered them partial to his productions; and the praiſe of ſuch writers as Milton and Waller is durable fame. Tallis, Bird, or Gibbons, who were all infinitely ſuperior to Lawes, never had their abilities blazoned by contemporary poets or hiſtorians of eminence. Fenton, the editor of Waller's works, tells us, that "the beſt poets of his time were ambitious of having their verſes ſet to muſic by this admirable artiſt;" and, indeed, he not only ſet ſome of the works of almoſt every poet of eminence in Charles I.'s reign, but of young noblemen and gentlemen who ſeem only to have tried their ſtrength on the lyre for his uſe, and of whoſe talents for poetry no other evidence remains than what is to be found in Lawes's publications.

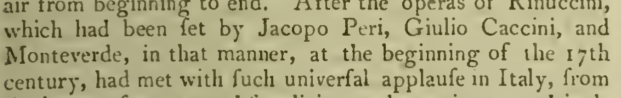
Waller has more than once beſtowed his fragrant incenſe on this muſician. Peck ſays, that "Milton wrote his Maſque at the requeſt of Lawes;" but whether Milton choſe Lawes, or Lawes Milton for a colleague in Comus, it equally manifeſts the high rank in which he ſtood with the greateſt poets of his time. It would be illiberal to cheriſh ſuch an idea; but it *does* ſometimes ſeem as if the twin-ſiſters, Poetry and Muſic, were mutually jealous of each other's glory: "the leſs intereſting my ſiſter's offspring may be," ſays Poetry, "the more admiration will my own obtain." Upon aſking ſome years ago, why a certain great prince continued to honour with ſuch peculiar marks of favour an old performer on the flute, when he had ſo many muſicians of ſuperior abilities about him? We were anſwered, "becauſe he plays *worſe* than himſelf." And who knows whether Milton and Waller were not ſecretly influenced by ſome ſuch conſideration? and were not more pleaſed with Lawes for not pretending to embelliſh or enforce the ſentiments of their ſongs, but ſetting them to ſounds leſs captivating than the ſenſe.

But *bad* as the muſic of Lawes appears to us, it ſeems to have been *ſincerely* admired by his contemporaries in general. It is not meant to inſinuate that it was pleaſing to poets *only*, but that it was *more* praiſed by them than any other muſic of the ſame time. Though that of Laniere, Hilton, Simon Ives, Dr. Child, and others, ſeems preferable; and the poets, whoſe praiſe is fame, perhaps taught others to admire.

The time was now come for ſimplifying harmony and purifying melody in England, as well as in Italy; and the beginning of this enterprize was not fortunate here any more than in that country: harmony and contrivance were relinquiſhed without a compenſation. Simplicity, indeed, was attained; but devoid of accent, grace, or invention. And this accounts for the ſuperiority of church muſic over ſecular at this period in every part of Europe, where canon, fugue, rich harmony, and contrivance, were ſtill cultivated; while the firſt attempts at air and recitative were aukward, and the baſes thin and unmeaning. Indeed, the compoſers of this kind of muſic had the ſingle merit to boaſt of affording the ſinger an opportunity of letting the words be perfectly well underſtood; as their melodies, in general, conſiſted of no more notes than ſyllables, while the treble accompaniment, if it ſubſiſted, being in uniſon with the voice-part, could occaſion no embarraſſment or confuſion.

But there ſeems as little reaſon for ſacrificing muſic to poetry, as poetry to muſic; and when the ſentiments of the poem are neither enforced nor embelliſhed by the melody, it ſeems as if the words might be ſtill better articulated and underſtood by being read or declaimed, than when drawled out in ſuch pſalmodic ayres as thoſe of Henry Lawes and his contemporaries. It has, however, been aſked "whoever reads the words of a ſong but the author?" And there are certainly many favourite ſongs, which nothing but good muſic and good ſinging could ever bring into notice. There are, however, poems, we will not call them ſongs, on ſubjects of wit and ſcience, which muſt ever be enfeebled by muſic; while others, truly lyric, and confined to paſſion and ſentiment, travel quicker to the heart, and penetrate more deeply to the ſoul by the vehicle of melody, than by that of declamation. But we want not to ſet up one art againſt another, or to give a preference to ſinging over declamation; but to aſſign to each its due place and praiſe. There are paſſages in our beſt plays which could never be ſung by the fineſt performer that ever exiſted, to ſo much effect as they have been ſpoken by a Garrick or a Siddons; while in Metaſtaſio's charming dramas, there are lines and ſtanzas, by which an audience has been often more completely enrapt, when well ſet and well ſung by a mellifluous and touching voice, than by the moſt exquiſite declamation of the greateſt actors that ever exiſted. Though Henry Lawes ſeverely cenſures the admirers of Italian muſic in his preface, yet his firſt cantata, "Theſeus and Ariadne," is both in poetry and muſic, an imitation of the famous ſcene in Monteverde's opera of "Arianna," which was afterwards formed into a ſingle heroic ſong, entirely like this, in ſtilo recitativo, without any air from beginning to end. After the operas of Rinuccini, which had been ſet by Jacopo Peri, Giulio Caccini, and Monteverde, in that manner, at the beginning of the 17th century, had met with ſuch univerſal applauſe in Italy, from the lovers of poetry and ſimplicity, and enemies to madrigals and muſic of many parts, this kind of compoſition had many imitators, not only in Italy, but throughout Europe. All the melodies of Henry Lawes remind us of *recitative* or *pſalmody*, and ſcarce any thing like an air can be found in his whole book of Ayres. As to his knowledge and reſources in counterpoint, we are certain that they were neither great nor profound. His works were chiefly publiſhed under the title of "Ayres and Dialogues," of which he printed three ſeveral books, the firſt in 1653; the ſecond in 1655; and the third in 1658. Beſides theſe, many of his ſongs and dialogues were publiſhed by Playford in collections, entitled "Select Muſical Ayres and Dialogues," by Dr. Wilſon, Dr. Charles Colman, Nicholas Laniere, and others. Though moſt of the productions of this celebrated muſician are languid and inſipid, and equally devoid of learning and genius, we ſhall point out one or two of them that ſeem the moſt meritorious.

Book the Firſt, p. 11.



is one of the moſt pleaſing airs that we have ſeen of this author. We ſhould inſert another of his ſongs entire, in the muſical plates, had we room; "A Lover once I did eſpy;" not ſo much on account of the beauty of the melody and harmony, though it is one of the beſt in thoſe particulars, as for the ſingularity of the meaſure, which is ſuch as ſeldom occurs. Harry Carey's ballad "Of all the girls that are ſo ſmart, &c." which is a ſlower kind of hornpipe, reſembles it the moſt of any air which we can recollect. "Little love ſerves my turn," p. 18. of the ſame collection, is the gayeſt air which we have ſeen of H. Lawes. His other moſt pleaſing ballads are thoſe beginning, "If when the ſun," p. 18, and Ben Johnſon's ſong, "Still to be neat, ſtill to be dreſſed;" ſee Playford's Collection. But the beſt of all his ſongs ſeems "Come from the dungeon to the throne," p. 167. of Playſair's ſecond part; and "Amidſt the myrtles as I walk," is pleaſing pſalmody.

The tunes which he ſet to Sandys's excellent verſion of the pſalms, as well as thoſe to the Choice Pſalmes of the ſame paraphraſe, which were compoſed by Henry Lawes and his brother, in a kind of anthem or motet ſtyle, though uſhered into the world, in 1648, by ſuch innumerable panegyrics in rhyme, are ſo far from being ſuperior to the ſyllabic pſalmody of their predeceſſors who clothed Sternhold and Hopkins in Narcotic ſtrains, that they ſeem to poſſeſs not only leſs pleaſing melody, but leſs learned harmony, than may be found in anterior publications of the ſame kind. And this ſeems to be the opinion of the public: as they were never adopted by any vociferous fraternity, or admitted into the pale of a ſingle country church, that we have been able to diſcover, ſince they were firſt printed. One of theſe, firſt publiſhed by Henry, to the ſeventy-ſecond pſalm, has, indeed, long had the honour of being jingled by the chimes of St. Lawrence Jewry, ſix times in the four-and-twenty hours, in a kind of *Laus perpetua*, ſuch as was eſtabliſhed in Pſalmody iſland, mentioned in the General Hiſtory of Muſic, vol. ii. p. 9.

During the civil war, Henry Lawes ſupported himſelf by teaching ladies to ſing; however, he retained his place in the chapel royal, and, at the Reſtoration, compoſed the coronation anthem. Yet he did not long ſurvive this event, for, in October, 1662, he died, and was buried in Weſtminſter Abbey.

LAWFUL. See Unlawful.

Lawful *Naam*. See Naam.

LAWING *of Dogs*, a phraſe uſed in our ancient law-writers. Thus, maſtiffs muſt be lawed every three years, Crompton Juriſd. fol. 163, that is, three claws of the fore-foot ſhall be cut off by the ſkin, or the ball of the fore-foot cut out. See Expeditation.

LAWLESS Court, a court held on King's hill at Rochford in Eſſex, every Wedneſday morning next after Michaelmas day, at cock-crowing; at which court they whiſper, and have no candle, nor any pen and ink, but a coal. He that owes ſuit of ſervice there, forfeits double his rent every hour he is miſſing.

This court is called lawleſs, becauſe held at an unlawful hour; or, perhaps, *quia dicta ſine lege*; becauſe opened without any form. It is mentioned by Camden; who ſays, this ſervile attendance was impoſed on the tenants, for conſpiring, at the like unſeaſonable time, to raiſe a commotion.

Lawless *Man*, *ex-lex*. See Outlaw.

LAWN, in *Gardening*, an open ſpace of ſhort graſs-ground, in the front of a reſidence, or in a garden, park, or other pleaſure-ground. Theſe, when extended in the principal fronts of habitations, add conſiderably to the neatneſs and grandeur of their appearance, by laying them open, and admitting more extenſive proſpects. Where there is a ſufficient ſcope of ground, they ſhould be as large as the nature of the ſituation will admit, always being planned in the moſt conſpicuous parts immediately joining the houſes, and extended outward as far as convenient, allowing width in proportion; having each ſide or verge bounded by elegant ſhrubbery compartments in a varied order, ſeparated in ſome parts by intervening ſpaces of graſs-ground, of varied dimenſions, and ſerpentine gravel-walks, gently winding between and through the plantations, for occaſional ſhady, ſheltered, and private walking; or ſimilar walks carried along the fronts of the boundary plantations, and immediately joining the lawns, for more open and airy walking in; and in ſome concave ſweeps of the plantations there may be receſſes and open ſpaces both of graſs and gravel, of different forms and dimenſions, made as places of retirement, ſhade, &c.

Though the uſual ſituations of lawns are thoſe juſt mentioned; yet if the nature of the ground admit, or in caſes where there is a good ſcope of ground, they may be continued more or leſs each way; but always the moſt conſiderable on the principal fronts, which, if they be to the ſouth, or any of the ſoutherly points, they are the moſt deſirable for the purpoſe.

With reſpect to the dimenſions, they may be from a quarter of an acre, or leſs, to ſix or eight acres, or more, according to the extent and ſituation of the ground. Sometimes lawns are extended over ha-has, to ten, twenty, or even to fifty or ſixty acres, or more. But in theſe caſes they are not kept mown, but eaten down by live ſtock.

The form muſt be directed by the nature of the ſituation; but it is commonly oblong, ſquare, oval, or circular. But in whatever figure they are deſigned, they ſhould widen gradually from the houſe outward to the furtheſt extremity, to have the greater advantage of proſpect; and by having that part of them within the limits of the pleaſure-ground, bounded on each ſide by plantations of ornamental trees and ſhrubs, they may be continued gradually near towards each wing of the habitation, in order to be ſooner in the walks of the plantations, under ſhade, ſhelter, and retirement. The terminations at the farther ends may be either by ha-has to extend the proſpect, or by a ſhrubbery or plantation of ſtately trees, arranged in ſweeps and concave curves. But where they extend towards any great road, or diſtant agreeable proſpect, it is more in character to have the utmoſt verge open, ſo as to admit of a grand view from and to the main reſidence.

But the ſide-boundary verges ſhould have the plantations rurally formed, airy, and elegant, by being planted with different ſorts of the moſt ornamental trees and ſhrubs, not in one continued cloſe plantation, but in diſtinct ſeparated compartments and clumps, varied larger or ſmaller, and differently formed, in a ſomewhat natural imitation, being ſometimes ſeparated and detached leſs or more, by intervening breaks, and open ſpaces of ſhort graſs, communicating both with the lawns and interior diſtricts; and generally varied in moderate ſweeps and curves, eſpecially towards the lawns, to avoid ſtiff, formal appearances, both in the figure of the lawns and plantations. In planting the trees and ſhrubs, which ſhould be both of the deciduous and evergreen kinds, where intended to plant in diſtinct clumps, either introduce the deciduous and evergreens alternately in ſeparate parts, or have ſome of both interſperſed in aſſemblage; in either method, placing the lower growth of ſhrubs towards the front, and the taller backwards, in proportion to their ſeveral ſtatures, ſo as to exhibit a regular gradation of height, that the different ſorts may appear conſpicuous from the main lawns. They may be continued backwards to a conſiderable depth, being backed with trees and ſhrubs of more lofty growth. The internal parts of the plantations may have gravel or ſand walks, ſome ſhady, others open; with here and there ſome ſpacious ſhort graſs openings, of different dimenſions and forms.

It is ſeldom that extenſive lawns in parks or paddocks, &c. have any boundary plantations cloſe to what may be conſidered as a continuation of them beyond the pleaſure-ground, but are ſometimes dotted with noble trees, diſperſed in various parts, at great diſtances, ſo as not to obſtruct the view; ſome placed ſingly, others in groups by twos, threes, fives, &c. and ſome placed irregularly, in triangles, ſweeps, ſtraight lines, and other different figures, to cauſe the greater variety and effect, each group being diverſified with different ſorts of trees, all ſuffered to take their natural growth. Where ſmall, theſe kinds of openings ſhould always be kept perfectly neat, by being often poled, rolled, and mown, but where they are of large extent, this is ſcarcely ever the caſe. See Grass, Ground, and Turfing.

Lawns, in *Commerce*. See Cambric.

LAWOROW, in *Geography*, a town of Auſtrian Poland, in Galicia; 24 miles W. of Lemberg.

LAWRENCE, Peter Joseph, in *Biography*, an engineer, was born in Flanders in the year 1715. He diſtinguiſhed himſelf, when he was only eight years old, by a conſiderable turn for mechanics. Cardinal Polignac being ſhewn a machine that he had at that early age conſtructed, predicted that he would one day arrive at eminence in the ſcience of practical mathematics. Before he had attained to manhood, he had executed drains in different parts of Flanders and Hainault, which till that time had been deemed impracticable. He conſtructed many curious and very ingenious ſluices and locks for rivers and canals; and he invented machines that were found of great utility in fortification, and a carriage on which the coloſſal ſtatue of Lewis XV. was brought to Paris with great eaſe. He contrived engines, which at once cleared mines of their water, and, at the ſame time, raiſed the metallic ores. He formed a junction of the Scheldt and the Somme, which he effected by a ſubterraneous canal, three leagues in length, the level of which was 45 feet above the ſource of the Scheldt, and 15 feet below the bed of the Somme. The various mechanical inventions and undertakings of M. Lawrence have been celebrated in a poem by Delille, intitled, "The Treaſury of Parnaſſus."

LAWSONIA, in *Botany*, dedicated by Linnæus to the honour of John Lawſon, a native of North Britain, who viſited Carolina, and publiſhed an account of his voyage, with much information concerning the plants of that country, at London in 1709, in quarto.—Linn. Gen. 191. Schreb. 257. Willd. Sp. Pl. v. 2. 344. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 354. Juſſ. 331. Lamarck. Illuſtr. t. 296. (Alcanna; Gærtn. t. 110.)—Claſs and order, *Octandria Monogynia*. Nat. Ord. *Calycanthemæ*, Linn. *Salicariæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, four-cleft, ſmall, permanent. *Cor.* Petals four, ovato-lanceolate, flat, ſpreading. *Stam.* Filaments eight, thread-ſhaped, the length of the petals, and ſtanding in pairs between them; anthers roundiſh. *Piſt.* Germen ſuperior, roundiſh; ſtyle ſimple, as long as the ſtamens, permanent; ſtigma capitate. *Peric.* Berry dry, globoſe, pointed, of four cells. *Seeds* numerous, angular, with a ſpongy coat.

Obſ. Gærtner, who juſtly eſteems the fruit to be rather a dry berry than a capſule, chuſes to call the genus *Alcanna*, a word corrupted from *Al Henna*, the Arabian appellation of the firſt ſpecies.

Eſſ. Ch. Calyx four-cleft. Petals four, regular. Stamens approaching each other in four pairs. Berry dry, ſuperior, of four cells, with many ſeeds.

1. L. *inermis.* Henna, or Smooth Lawſonia. Linn. Sp. Pl. 498. Suppl. 219. (L. alba; Lamarck. Dict. v. 3. 106. L. ſpinoſa; Haſſelq. It. 464. Alhenna, ſive Henna Arabum; Walth. Hort. 3. t. 4. Rauwolf. It. 60. t. 7.)—Thorns none. Leaves obovate, acute. Segments of the calyx as long as its baſe.—Native of various parts of the Levant. Miller is ſaid in the Hortus Kewenſis to have cultivated it in 1759, but it is never preſerved long, even in a ſtove, by our gardeners. The writer of this article obtained ſeeds in 1787 at Paris, from M. Desfontaines, who had brought them from Barbary. Theſe vegetated at Chelſea, and in ſome other gardens, producing ſhrubby plants of a humble ſtature, which in the enſuing autumn and winter were laden with flowers, whoſe delicate aſpect, and exquiſite ſcent, attracted the admiration of all who ſaw them. The habit of this ſpecies is not unlike Privet, but the *leaves* are more obovate, and of a lighter green. The *flowers* are yellowiſh-white, with purpliſh ſtamens, and grow in oppoſite cluſters about the tops of the branches. Haſſelquiſt in his travels, Engliſh edition 246, ſays, "the leaves are pulverized, and made into a paſte with (hot) water. They (the Egyptians) bind this paſte on the nails of their hands and (ſoles of their) feet, keeping it on all night. This gives them a deep yellow, which is greatly admired by the eaſtern nations. The colour laſts for three or four weeks, before there is occaſion to renew it. The cuſtom is ſo ancient in Egypt, that I have ſeen the nails of the mummies dyed in this manner. The powder is exported in large quantities yearly, and may really be reckoned a valuable commodity. The Arabians call it *Chenna.* The dried flowers afford a fragrant ſmell, which women who have conceived cannot bear."

2. L. *ſpinoſa.* Prickly Lawſonia. Linn. Sp. Pl. 498. (Cyprus, Alcanna; Rumph. Amboin. v. 4. 42. t. 17. Mail-anſchi; Rheede Hort. Mal. v. 1. 73. t. 40. Pluk. Phyt. t. 220. f. 1.)—Branches becoming ſpinous. Leaves obovate, with a ſmall point. Segments of the calyx as long as its baſe.—Native of the Eaſt Indies. It differs from the former, of which many have not unjuſtly thought it a variety, in having the permanent lateral branches hardened into a ſpine at their extremities. The *fruit* anſwers to Gærtner's deſcription of a dry berry rather than a valvular capſule. The *leaves* ſeem to vary in ſhape. Rumphius ſays they are uſed to dye the nails in the iſland of Celebes, &c., and that the Malay women are particularly fond of the flowers, with which they deck their perſons and ſtrew their beds. Haſſelquiſt's own ſpecimen, called in his travels, by Linnæus, *L. ſpinoſa,* proves not to be this plant but the former. Indeed, as we have before hinted, they are moſt probably but one ſpecies.

3. L. *coccinea.* Scarlet Lawſonia. Branches becoming ſpinous. Leaves elliptic-obovate, acute. Segments of the calyx twice as long as its baſe.—Sent from Banda by the late Mr. Chriſtopher Smith, as "a *Lawſonia* with ſcarlet flowers." It is very nearly related to the laſt, and we find nothing to diſcriminate this, our ſpecimen being but imperfect, except a difference in the relative proportions of the parts of the *calyx,* of the certainty or conſtancy of which we have ſome doubt.

One might ſuppoſe this plant to be the *L. purpurea,* Lamarck. Dict. v. 3. 107, Willdenow's n. 2; but on turning to the *Poutaletſje,* Rheede Hort. Mal. v. 4. 117. t. 57, cited for it, which Linnæus very erroneouſly quotes for *L. inermis,* the plant of Rheede will be found widely different from every *Lawſonia,* as Juſſieu well obſerves, p. 332. The flowers are monopetalous and tetrandrous, with an inferior germen, and this great French botaniſt ſuſpects it may be a *Peteſia.* Of its belonging to his order of *Rubiaceæ* there can be little doubt. The *L. purpurea,* therefore, of which Lamarck had ſeen only leaves, and Willdenow nothing, falls to the ground.

4. L.? *Acronychia.* Broad-leaved Lawſonia? Linn. Suppl. 219. Forſtr. Prodr. 27. (Acronychia lævis; Forſt. Gen. 27. t. 27.)—Leaves obovate, on long ſtalks. Petals inflexed at the point. Stamens fringed.—Gathered by the Forſters in New Caledonia. A ſmooth *ſhrub,* with round *branches.* *Leaves* oppoſite, an inch or two long, obovate, obtuſe, broad, entire, ſlightly revolute, veiny, ſmooth. *Footſtalks* half an inch long, ſtraight, channelled, ſmooth, united to the leaf by a joint. *Cluſters* axillary, forked, much ſhorter than the leaves. *Calyx* with very ſmall, rounded, pale-edged ſegments. *Petals* linear-oblong, hooked inward at the point. *Stamens* fringed at the baſe, ſcarcely ſo long as the corolla. The *fruit* is poſitively deſcribed by Forſter as "an inflated capſule of *four valves.*" This character, and the totally different form of the petals and calyx, perſuade us that the ſpecies in queſtion ought to ſtand as a genus by itſelf, as Forſter originally made it.

Lawsonia, in *Gardening,* contains plants of the exotic tree kind for the ſtove, of which the ſpecies are the ſmooth Lawſonia (L. inermis), and the prickly Lawſonia (L. ſpinoſa).

Method of Culture.—Theſe two plants may be raiſed by ſowing the ſeeds in pots of light mould, in the early ſpring, and plunging them in the bark bed of the ſtove. When the plants have acquired a few inches growth, they ſhould be removed into ſeparate ſmall pots filled with light ſandy earth, replunging them in the bark-bed, and giving a little water, with proper ſhade. They afterwards may be placed ſo as to have pretty free air, but be conſtantly kept in the ſtove at all ſeaſons.

They afford a variety among other ſtove plants.

LAWYER, (*legiſta, legiſperitus, juriſconſultus,*) by the Saxons called *lahman,* is a counſellor, or one learned in the law; and lawyers, ſuch as counſellors, attornies, &c. are within the act 3 Jac. I. againſt extortion; but it has been held only to extend to officers. See Counsellor, Attorney, &c.

LAX, in *Geography,* a town of Switzerland, in the Valais; 33 miles E. of Sion.

LAXA, a town of the iſland of Lewis, ſituated on a bay, on the eaſt coaſt; 9 miles S.S.W. of Stornamay.—Alſo, a town of Peru, in the dioceſe of La Paz; 20 miles S.W. of La Paz.

LAXATIVE Medicines, are thoſe purgative or cathartic ſubſtances, which operate gently, without producing any conſiderable diſcharge from the mucous glands and exhalants of the inteſtines; ſuch as manna, magneſia, rhubarb, the neutral ſalts in ſmall doſes, ſulphur, electuary of ſenna, &c. For an account of the operation and uſe of theſe medicines, ſee Cathartics.

LAXATOR, in *Anatomy,* a name applied to two muſcles of the oſſicula auditus. The *laxator tympani major* is the externus mallei of Albinus; the laxator minor is ſimply laxator tympani of that anatomiſt. The exiſtence of the latter muſcle is doubted by ſome. See the article Ear, where they are deſcribed by the names of Albinus.

LAXEMBURG, in *Geography,* a town of Auſtria; 7 miles S. of Vienna.

LAXEY Bay, a bay on the eaſt coaſt of the Iſle of Man, in the Iriſh ſea, which affords a ſhelter from weſterly winds, in about 7 to 10 fathom water. The cape at the ſouthern extremity is called "Laxey Point."

LAXIOR Toga. See Toga.

LAXMANNIA, in *Botany*, a name originally given by Forſter, in his *Genera*, t. 47, to a ſyngeneſious tree of St. Helena, which Solander conſidered as a *Bidens*, but which George Forſter in his *Plantæ Atlanticæ*, 56, ſubſequently referred to *Spilanthus*. We have not diſcovered it in Willdenow, nor can we aſcertain what Schreber decided concerning this plant; but the latter has adopted the name for another genus, of which we are now to ſpeak. It is deſigned to commemorate the Rev. Eric Laxmann, a native of Finland, Profeſſor at Peterſburg, who made many botanical diſcoveries in Siberia, and died in 1796.—Schreb. 800. Mart. Mill. Dict. v. 3. (Cuminoſma; Gærtn. t. 58.)—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Aurantia*; Juſſ.

Gen. Ch. *Cal.* Perianth inferior, very ſmall, of one leaf, bell-ſhaped, in four roundiſh ſegments, permanent. *Cor.* Petals four, longer than the calyx, linear, coriaceous, equal, ſpreading, inflexed at the point, marked on the upper ſide with a triply villous line. *Stam.* Filaments ſix, linear in their lower part, awl-ſhaped upwards, ſtraight, ſpreading, rather ſhorter than the corolla; anthers roundiſh, incumbent. *Piſt.* Germen ſuperior, roundiſh, very hairy; ſtyle ſhorter than the ſtamens, thick, angular; ſtigma ſimple, obtuſe, furrowed. *Peric.* Berry nearly globoſe, of four cells lined with a membrane. *Seeds* ſolitary, oblong, compreſſed.

Eſſ. Ch. Calyx four-cleft, inferior. Petals four, linear, downy on the upper ſide. Berry with four cells. Seeds ſolitary.

1. L. *Cuminoſma.* Globoſe Ankænda. (Cuminoſma Ankænda; Gærtn. Sem. v. 280. t. 58. f. a—H.)—Fruit globoſe, ſlightly depreſſed. Petals twice the length of the calyx.—Native of Ceylon. Of this we know nothing but from Gærtner, who confounds its ſynonyms with the following, though he diſtinguiſhes it as a ſpecies by the ſhape of the *fruit*, and relative proportions of the *calyx* and *petals*.

2. L. *Ankænda.* Pointed Ankænda. (Cuminoſma baccis ovato-acuminatis; Gærtn. v. 1. 281. Jamboliſera; Linn. Zeyl. 58, excluding the ſynonyms. Ankænda; Herm. Muſ. Zeyl. 23. Perin-Panel; Rheede Hort. Mal. v. 5. 29. t. 15.)—Fruit ovate, pointed. Petals many times longer than the calyx.—Native of Ceylon and Malabar. A *ſhrub* about four feet high, with round, ſmooth, leafy *branches*. *Leaves* oppoſite, without ſtipulas, ſtalked, four or five inches long, and nearly two in breadth, obovate, entire, veiny, ſmooth and ſhining, full of pellucid dots. *Panicles* axillary, ſtalked, repeatedly three-cleft, corymboſe. *Flowers* greeniſh-white. *Berry* ovate, pointed, dark-green, with an aromatic flavour of Cumin.

Mr. Dryander in Tr. of Linn. Soc. v. 2. 232, has well illuſtrated the ſynonymy of this plant, which Linnæus had confounded with the Jambolana, or Jamboloins of Acoſta, a ſpecies of *Calyptranthes*; ſee that article. This miſtake is ſuppoſed to have ariſen from the tickets of *Madan* and *Ankænda* in Hermann's herbarium having been changed.

LAY, Allampi, or *Alampou*, in *Geography*, a town of Africa, in the kingdom of Ningo, on the Gold Coaſt.

Lay, or *Lai*, the title of the moſt ancient kind of ſongs in the French language. It was not till the reign of Philip Auguſtus that ſongs became common in that country. Gautier de Coincy, an eccleſiaſtic of St. Medard de Soiſſons, compoſed a conſiderable number, which are ſtill preſerved in MS. among his other writings. "Lays were a kind of elegies," ſays M. l'Eveque de la Ravaliere, (Ancienté des Chanſons, tom. i. p. 225.) "filled with amorous complaints. The origin of this ſpecies of compoſition is ſuch as rendered it neceſſarily plaintive: as the word *lai* is imagined to have been derived from *leſſus*, Latin, which ſignifies complaints and lamentations. However there are ſome lays which deſcribe moments of joy and pleaſure more than ſorrow or pain; and others upon ſacred ſubjects.

Chaucer, who frequently uſes the word lay, confines it wholly to ſongs of complaint and ſorrow:

> "And in a lettre wrote he all his ſorwe
> In manere of a complaint or a lay,
> Unto his faire freſhe lady May."
>
> Cant. Tales, v. 9754.

> "He was diſpeired, nothing dorſt he ſay,
> Sauf in his ſonges ſomwhat wold he wray
> His wo, as in a general complaining;
> He ſaid, he loved, and was beloved nothing.
> Of ſwiche matere made he many layes,
> Songes, complaintes, roundels, virelays—"
>
> Tran. t. 11255.

> "Thus end I this complaining or this lay."
>
> Ibid.

In Spencer's time, however, its acceptation was more general, and as frequently applied to ſongs of joy as ſorrow:

> "To the maiden's ſounding timbrels ſung
> In well attuned notes, a joyous lay."
>
> Fairy Queen.

Shakſpeare and Milton uſe it likewiſe indiſcriminately for every kind of ſong.

Lai ſeems a word purely Francic and Saxon: it is neither to be found in the Armoric language, nor in the dialect of Provence. The French poeteſs Marie, who in the time of St. Louis, about the middle of the thirteenth century, tranſlated ſeveral tales from the Armoric language of Bretagne, calls them lais; but the term is of much higher antiquity. After its adoption by the Engliſh poets, it ſoon became a generical term in poetry for every ſpecies of verſe, as ſong is now: but both theſe words ſtill retain their particular acceptation as well as generical; for by a ſong is underſtood a ſhort poem ſet to a tune, and this was the particular meaning of lay, in the laſt century, among our muſical writers.

Tales and ſongs, ſays the editor of ancient Fabliaux et Contes François, were the moſt common and ancient ſpecies of poetry. The French, naturally gay, chearful, and ſportive, were more attached to this ſpecies of compoſition than any other nation, and communicated this love for lyric poetry to their neighbours. They muſt have been in poſſeſſion of a great number of theſe ſongs and tales, becauſe in all ſocial meetings the cuſtom was for every one preſent either to ſing a ſong or tell a ſtory, as appears by the end of the fable of the prieſt, "qui ot Mere à force," where we read theſe verſes:

> "A ceſt mots feniſt cis fabliaux
> Que nous avons en rime mis,
> Pour conter devant nos amis."

And according to John li Chapelain, in his ditty of the Sacriſtain of Clugny, it was cuſtomary for a bard to pay his reckoning with a ſtory or a ſong.

> "Uſage eſt en Normandie,
> Que qui hebergiez eſt, qu'il die

Fable ou chanſon a ſon oſte
Ceſte coſtume pas n'en oſte
Sire Jehans li Chapelains.'

"In Normandy a ſong or tale
Is current coin for wine or ale;
Nor does the friendly hoſt require
For bed and board a better hire."

In the thirteenth century the ſongs in vogue were of various kinds; moral, merry, and amorous: and at that time, melody ſeems to have been little more than plain-ſong, or chanting. The notes were ſquare, and written on four lines only, like thoſe of the Romiſh church, in the clef of C, without any marks for time. The movement and embelliſhments of the air depended on the abilities of the ſinger. The compaſs of modern muſic is much extended ſince by the cultivation of the voice; for it was not till towards the end of St. Lewis's reign that the fifth line began to be added to the ſtave. The ſinger always accompanied himſelf on an inſtrument in uniſon. Poeſie du Roi de Navarre, tom. ii.

LAY, in *Agriculture*, a term applied to ſuch land as is in the ſtate of graſs, or ſward. This ſort of ground is frequently diſtinguiſhed into ſuch as has been long in the ſtate of ſward, and ſuch as is newly laid down to graſs, or into old and new lays. The proper method of managing the latter is of great importance to the farmer, and which, Mr. Young thinks, ſhould be by keeping them perfectly free from all ſorts of ſtock for the following autumn and winter after their being laid down, when, in the ſpring, they will afford a flow of young graſs highly valuable for ſheep, with which they ſhould only be well ſtocked, and kept down then, and during the whole of the ſummer: "nothing," in his opinion, "being more pernicious than mowing a new lay, as directed by certain authors. They may," he ſuppoſes, "have ſucceeded in ſpite of ſuch bad management, but never by it." The moſt ſuitable method of managing theſe new lays, under different circumſtances, will be deſcribed in ſpeaking of laying lands down to the ſtate of ſward or graſs. See LAYING *down to Graſs*.

It may be obſerved, that the treatment neceſſary for old lays muſt vary much, according to their nature and the particular circumſtances under which they are placed, as will be ſhewn under the management of meadow and paſture lands, as well as in conſidering the nature of graſs. See GRASS-*Ground*, MEADOW, and PASTURE.

It has alſo been obſerved, that, on many farms, there are often "tracts of barren lays, from moſs, poverty, neglect, and bad herbage, upon which a very great improvement may be made by a ſingle ploughing in Auguſt. For this purpoſe, a ſtrong four-horſe plough muſt be uſed with a ſkim-coulter; then going over it twice, in different directions, with the ſcarifier, ſo as not to diſturb the flag; harrowing it once, and immediately ſowing a quarter of a peck of cole-ſeed, two buſhels of cock's foot, and one buſhel of Yorkſhire white *per* acre; adding ſome of whatever ſeeds may be procured at the moment cheaply." It is then adviſed to be left "unfed and untouched till the March following; in which month, and through April, it ſhould be loaded well with ſheep: the uſe will then be very great. Keeping ſheep feeding it heavily through the year, the cole will be killed, and you will have a paſture worth treble what it was before. The expence is ſaid to be ſmall, and the improvement rapid." Various modes of improving land, in the ſtates here deſcribed, will be explained under the heads above mentioned.

And the ſame writer alſo thinks, that, by December, old lays will be wet enough to begin to break them up; "a work that ſhould not be done while the land is dry; for it will not then turn up in clean well-cut furrows. Ploughing graſs-land is, it is ſaid, a very good piece of huſbandry, when they are worn out and over-run with moſs and other rubbiſh, or hide-bound. To keep land under ſuch unprofitable turf is bad management. It ſhould, by all means, be broken up, and kept in a courſe of tillage for three or four years, and then laid down again: by which conduct, four times the profit will ariſe that could be gained from keeping it in lay."

LAY-*Brother*, among the *Romaniſts*, a pious, but illiterate perſon, who devotes himſelf, in ſome convent, to the ſervice of the religious.

The lay-brother wears a habit different from that of the religious, nor ever enters into the choir, or the chapter. He is not in any orders, nor does he make any vow, excepting of conſtancy and obedience.

Theſe lay-brothers make the three vows of religion.

In the nunneries are alſo lay-ſiſters, who never enter the choir, &c. and who are only retained for the ſervice of the convent.

The inſtitution of lay-brothers began in the eleventh century. The perſons on whom this title was conferred were ſuch as were too ignorant to become clerks, and who therefore applied themſelves wholly to bodily labour.

It ſeems to have taken its riſe from hence, that the laity in thoſe days had not, for the generality, the leaſt tincture of learning; whence alſo thoſe came to be called *clerks*, by way of diſtinction, who had ſtudied a little, and were able to read.

In ſome orders they are only retained by a civil contract, which, however, binds them for life; in other orders they are to paſs through four years of probation, as among the Jacobins; or ſeven, as among the Feuillants. The Capuchins admit none before nineteen years of age. The Jeſuits call them *coadjutors*.

LAY-*Canons*. See CANON.

LAY-*Communities*. See COMMUNITY.

LAY-*Corporation*. See CORPORATION.

LAY-*Fee*, *feodum laicum*, land held in fee from a lay-lord, by the common ſervices to which military tenure was ſubject, as diſtinguiſhed from the eccleſiaſtical holding in *frank-almoign*, diſcharged from thoſe burdens.

LAY *the land*, in *Sea Language*. See LAND.

LAY-*patronage*. See PATRONAGE.

LAYS, *ſide*. See SIDE-*lays*.

LAY, *vaunt*. See VAUNT-*lay*.

LAYAU, in *Geography*, a town of the iſland of St. Vincent, on the W. coaſt, in a bay at the mouth of a river, to both of which it gives name. N. lat. 13° 8'. W. long. 61° 18'.

LAYBACH, a town and capital of Carniola, on a navigable river of the ſame name, dividing it in ſuch a manner, that part of the town lies in Upper, and the other in Lower Carniola. The citadel is ancient and has a church; it is inhabited by a conſtable, who has the title of burggrave, and 12 ſoldiers. Laybach is the ſee of a biſhop, who is a prince of the empire. The town contains, beſides the cathedral, ſeveral churches, and about 500 houſes; 28 miles N.E. of Trieſte. N. lat. 46° 12'. E. long. 14° 30'.

LAYCOCK, or LACOCK, a pariſh, formerly a market-town of Wiltſhire, England, is ſeated in a fine, fertile valley, on the weſtern bank of the river Avon, three miles from Chippenham, and 95 weſt of London. In the year 1800 this place contained 147 houſes, and 1408 inhabitants. Here was formerly an abbey of large extent, and rich endowment. A large pile of the old buildings ſtill remains in their former monaſtic ſtyle; particularly the cloiſter, kitchen, cellars, gallery, &c.; with the fiſh-ponds and terrace walk. At the S.E. angle of the building is a tower, which contains, among other records, an original copy of the Magna Charta. See Blackſtone's "Diſſertation on Magna Charta," &c. Some account of the abbey, with a view of the cloiſters, is publiſhed in "The Architectural Antiquities of Great Britain," vol. ii.; and a full deſcription of the place, and other objects in the vicinity, will be found in Britton's "Beauties of Wiltſhire."

LAYDE', a town of Africa, in the country of the Foulis, on the Senegal; 45 miles S.E. of Goumel.

LAYER, in *Building*. See COURSE.

LAYER, in *Gardening*, the young ſhoot or branch of ſuch trees as are capable of being raiſed by being laid into the ground. It is the part which is placed in the earth in order to ſtrike root, and from the new plant layers are made from different kinds of ſhoots and young branches, according to their natures and habits of growth.

LAYERING, the act of placing layers into the ground. This is performed in different ways, as may be ſeen under the proper head. See LAYING.

LAYES, or LEYES, a term uſed in many parts of England for ſuch paſture ground as has been formerly tilled and ſown.

LAYING, in *Gardening*, the proceſs or operation of placing layers in the ſoil. It is a method adapted to moſt ſorts of trees and ſhrubs, and many herbaceous plants. It is effected by laying branches and young ſhoots of trees and plants in the earth, from two or three to five or ſix inches deep, leaving their tops out, that the part laid in the earth may emit roots, and become a plant. The layers, when well rooted, ſhould be ſeparated from the parent, and planted in the nurſery, or other proper place, to acquire due ſtrength and ſize, for the purpoſes for which they are deſigned. And they require different lengths of time for becoming rooted, from a few months to two or more years.

There are great numbers of ſhrubs and trees that are capable of being increaſed by layers, but the practice is more particularly applicable to the ſhrubby kind; as their branches grow near the ground, convenient for being laid down. It may, however, be practiſed with ſucceſs on fruit-trees and foreſt-trees, when their branches are ſituated low enough for being laid, though the varieties of many fruit-trees are better propagated by grafting and inoculation. The vine and fig, however, often admit of being increaſed by layers; and foreſt-trees, for the continuance of varieties; as the plants raiſed in this method continue exactly the ſame as the parent plant from whence they were raiſed. This is a certain method to continue any approved variety, as well as to increaſe ſuch ſhrubs or trees as do not produce ſeeds here, and which cannot be eaſily obtained. It is likewiſe an expeditious and eaſy mode of propagation; as by it many new plants are often raiſed in a few months, which would take two or three years to bring them to the ſame ſize from ſeed. In many ſorts it is ſo eaſy that all the ſhoots of any branch ſituated near the ground, or convenient for laying down, may be made diſtinct plants.

It may be noticed that, for all ſorts of the tree or ſhrub kinds, it is generally performed on the young ſhoots of the preceding ſummer, which ſhould be laid down in ſpring or autumn; but ſometimes on ſhoots of the ſame year, in ſummer, eſpecially in the hard-wooded evergreen trees and ſhrubs, that do not ſtrike root readily in the older wood. Many ſorts of trees that have their wood of a looſe ſoft texture often grow pretty freely by layers of them, of two or ſeveral years growth.

But in herbaceous plants capable of being propagated by layers, ſuch as carnations, pinks, double ſweet-williams, &c. the young ſhoots of the ſame year, laid down in June and July, are commonly the moſt ſucceſsful.

In regard to the ſeaſon for performing this ſort of work, in moſt ſorts of trees and ſhrubs, it is autumn and ſpring, though it may be performed at almoſt any time of the year.

Many kinds of under-ſhrubby and herbaceous plants alſo ſucceed, if layed any time in ſpring or ſummer till the end of June; though that and the following month are the moſt ſucceſsful for the herbaceous tribe, as carnations and others uſually propagated by laying, as they then root the ſame ſeaſon in from three or four to five or ſix weeks, ſo as to be proper for tranſplanting.

When it is intended to lay trees or ſhrubs that naturally run up to ſtems, without furniſhing any conſiderable quantity of lower branches for laying, a ſufficient number of ſtrong plants ſhould be ſet in the nurſery, at proper diſtances, and headed down in the autumn or ſpring after, within a few inches of the ground, that they may throw out a good quantity of young ſhoots the following ſummer, near the earth, ſo as to be convenient for laying down in the ſucceeding autumn; or, by waiting another year many more ſhoots for the purpoſe of layers will be provided, by the firſt ſhoots throwing out many lateral ones, each of which when layed will form a plant. And on the layers being rooted, and all cleared away, the ſtool remaining will furniſh another crop of ſhoots for laying next year, and the ſame in ſucceſſion for many years.

Where layers are wanted from trees that are grown up, and whoſe branches are at a diſtance from the ground, a temporary ſtage or ſcaffold is erected, on which pots or tubs of mould are placed to receive the layers.

The general method of merely laying the branches or ſhoots in the earth, is practiſed for all ſorts; but previous to laying, they are often prepared in different ways to facilitate their rooting, according as the trees of different natures require; as by ſimple laying, twiſting, ſlitting, cutting the bark, piercing the ſhoot, wiring, and other modes.

Simple Laying.—This is merely laying the ſhoots in the earth, as directed below, without any previous preparation of twiſting, ſlitting, &c. and is ſufficient for a great number of trees and ſhrubs of the ſoft-wooded kinds; but for ſuch as do not readily root by this ſimple method, recourſe muſt be had to ſome of the following ways.

Twiſting the Layer.—By giving the ſhoot a gentle twiſt in the part deſigned to be laid in the ground, it greatly promotes and facilitates the emiſſion of fibres from the bruiſed part.

Slitting or tonguing the Layer.—This is the moſt univerſal and ſucceſsful mode, where any preparation of the ſhoot is neceſſary to promote its rooting; it is performed by ſlitting the ſhoot at a joint underneath, up the middle, half an inch or an inch or more long, according to the ſize and nature of the layer, forming a ſort of tongue nearly the ſame as directed for carnation layers; laying that part in the earth, and raiſing the top upright, or rather pointing inwards, ſo as to ſeparate the tongue of the ſlit from the other part, and keeping the ſlit open, as directed below.

Cutting the Bark of the Layer.—This is performed by cutting the bark all round at a joint, taking out ſmall chips all the way below the cut, and laying that part in the earth, by which it readily emits roots.

Piercing the Layer.—This is done by thruſting an awl through the ſhoot, at a joint, in ſeveral places, laying that part in the ground, by which it will emit fibres from the wounds more readily.

Wiring the Layer.—This is by twiſting a piece of wire hard round the ſhoot at a joint, and pricking it with an awl on each ſide of the wire in ſeveral places, laying it in the earth, by which it breaks out into roots at the confined and wounded parts; often proving ſucceſsful in ſuch trees and ſhrubs as do not readily emit fibres by the other methods.

It may be obſerved that by ſome of theſe methods almoſt all ſorts of trees and ſhrubs may be propagated.

Method of Laying.—The general method of laying all ſorts of trees or plants, either by ſimple laying, or any of the other methods, is the following.

The ground about each plant muſt be dug for the reception of the layers, making excavations in the earth to lay down all the ſhoots or branches properly ſituated for the purpoſe, pegging each down with a hooked ſtick, laying alſo all the proper young ſhoots on each branch or main ſhoot, fixing each layer from about three or four to ſix inches deep, according to their length, though ſome ſhorten their tops down to an eye or two only above the earth, raiſing the top of each layer ſomewhat upright, eſpecially the ſlit or tongued layers, to keep the ſlit part open. As all the layers of each plant or ſtool are thus layed, all the mould ſhould be levelled in equally in every part, cloſe about every layer, leaving an even ſmooth ſurface, with the top of each layer out.

It ſometimes happens that the branches of trees are ſo inflexible as not to be eaſily brought down for laying; in which caſe they muſt be plaſhed, making the gaſh or cut on the upper ſide; and when they are grown too large for plaſhing, or the nature of the wood will not bear that operation, they may be thrown on their ſides, by opening the earth about the roots, and looſening or cutting all thoſe on one ſide, that the plant may be brought to the ground to admit of the branches being laid down into the earth.

Where layers are to be made from green-houſe ſhrubs, or other plants in pots, the work ſhould generally be performed in pots, either in their own, or others placed for that purpoſe.

After laying in either of the above methods, there is no particular culture neceſſary, except in the heat of ſummer giving occaſional waterings to keep the earth moiſt about the layers, which will greatly forward them, and promote a good ſupply of roots againſt autumn, when thoſe that are properly rooted ſhould be taken off and tranſplanted.

The layed branches or ſhoots ſhould be examined at the proper ſeaſon, October and November, and thoſe that are rooted be cut from the mother plant, with all the root poſſible, planting them out in nurſery rows a foot or two aſunder, according to their nature of growth, there to remain till of due ſize for their ſeveral purpoſes; but thoſe of the tender kinds muſt be potted, and placed among others of ſimilar nature and growth.

When the layers are all cleared from the ſtools or main plants, the head of each ſtool, when to be continued for furniſhing layers, ſhould be dreſſed; cutting off all decayed and ſcraggy parts, digging the ground about them, working ſome freſh mould cloſe about their heads, to refreſh and encourage their producing a freſh ſupply of ſhoots for the following year's laying down. This ſort of care preſerves them many years.

LAYING-*down to Graſs*, in *Agriculture*, the means of bringing ſuch land as has been under the plough into the ſtate of graſs or ſward. This is a part of huſbandry which is of much importance to the farmer, and which requires much care and attention to accompliſh it in a proper manner, under different circumſtances of ſoil, climate, ſituation, and preparation of the ground. It is well known by practical farmers that ſome ſorts of ſoil are much more difficult to be brought into the ſtate of good graſs or ſward than others, and that, when this point has been accompliſhed, ſome are much more profitable and advantageous than others, as affording a much better, and more laſting herbage. In ſome places, too, the buſineſs of bringing the land into the ſtate of ſward, after it has been in that of arable cultivation, is effected with the greateſt eaſe and facility: the ground, on being left in an unploughed condition, from its natural tendency to the production of herbage, returns to the ſtate of ſward, almoſt without trouble, ſeed, or expence; while in others, all the art of the moſt careful agricultor is found inſufficient for accompliſhing the purpoſe. It has been ſtated by Mr. Davis, that "after twenty years fruitleſs expectation and expence, the landholders have frequently been obliged to reſtore the land again to a ſtate of tillage." But beſides this diſpoſition or tendency in ſoils for taking on the growth and eſtabliſhment of graſs crops, there are other circumſtances to be attended to in bringing them to the ſtate of graſs or ſward, after they have been under the plough; ſuch as thoſe of their poſſeſſing neither too much nor too little moiſture, and that of their having a ſufficient ſtaple or depth of mould for the full and ſecure eſtabliſhment of the graſs plants. As where the ſoils are too wet, or too retentive of moiſture, they will ſuſtain much injury, if not be wholly deſtroyed, during the winter ſeaſon, when there is much rain and froſt, as well as be quickly ſuperſeded by plants of the coarſe aquatic kind, ſuch as the ruſh, &c. And where they are too dry, the graſſes will be liable to be deſtroyed by heat during the ſummer months, by the little moiſture which they contain being thus carried away, and of courſe leave their places to be ſupplied by other ſorts of coarſe plants, ſuch as thoſe of the moſs, fern, and heath kinds, according to the nature of the ground. A good depth of mould or ſoil is likewiſe requiſite, in order that the roots of the graſs plants may penetrate or run down to ſuch a depth below the ſurface, as to be in a great meaſure out of danger from the effects of heat and evaporation in the ſummer ſeaſon. On theſe as well as other accounts, it is therefore better that the lands intended for graſs, eſpecially where they are to be kept in a permanent ſtate of ſward, ſhould incline in ſome meaſure to a ſtate of moiſture, or be in ſuch a degree retentive of it, as to preſerve that ſtate of humidity which is neceſſary for the healthy and vigorous growth of the plants, withot endangering the deſtruction of their roots by putrefaction, from its ſtagnating in too large a proportion about them. It is chiefly on this principle, it is added, that the more light, thin, dry, deſcriptions of ſoil are better ſuited for the production of grain, or the occaſional practice of convertible huſbandry, than for that of permanent graſs or ſward.

And there are ſtill other circumſtances connected with the nature of the ſoils, which are neceſſary to be particularly attended to in the laying of lands down to the ſtate of graſs, as thoſe of properly adapting the graſs plants to their qualities, ſome ſorts of graſſes being much more impatient of wet than others, conſequently more proper for the drier ſorts of lands; ſome more capable of reſiſting the effects of heat and drought, and of courſe more ſuitable for the thinner and more porous kinds of ſoil: while others delight in a moiſt or wet ſoil, and are incapable of being grown with any ſucceſs, on ſuch as are of a dry quality. They likewiſe differ much in reſpect to their hardneſs; ſome reſiſting the effects of cold much more effectually than others, and of courſe more adapted to high expoſed ſituations. Beſides theſe, they vary in other reſpects, ſome ſucceeding to the moſt advantage in ſoils of the clayey kind, others in thoſe of a loamy quality, while others delight in thoſe of a ſandy nature, a few in thoſe of the calcareous kind, and ſome in thoſe which partake much of the nature of peat.

In addition to theſe different natural propenſities, there are ſome graſſes that have the property of riſing to a great height in the ſtem, and of courſe affording a large coarſe produce, while others are more limited in this reſpect, but ſpread and extend themſelves more in a lateral direction, affording a leſs proportion of produce, but which is of a finer quality. The former, with certain reſtrictions, would ſeem better adapted to the purpoſe of hay, though the latter may be applied to the ſame uſe, where the fineneſs of quality is preferred to quantity of produce. There are likewiſe ſome ſorts of graſſes that contain much larger proportions of ſaccharine matter in their compoſitions than others, as well as more leaves and fewer flower ſtems; and which, from the avidity with which they are fed upon by different ſorts of live ſtock, and the ſucceſs that attends their being thus conſumed in the improvement of ſuch ſtock, would appear to poſſeſs the largeſt proportion of nouriſhment; and of courſe to be the moſt proper for being introduced where the lands are intended for the purpoſe of grazing, or fattening animals by means of vegetable food in its graſſy ſtate. And further, there is another property of graſſes in which they differ conſiderably; and which is of ſo much conſequence as to require being regarded in the laying of lands to the ſtate of ſward. This is that of early growth, which is a circumſtance of vaſt importance in a grazing point of view, as there is in general a great deficiency of graſs for the ſupport of ſtock in the early part of the ſpring. See *Practical* AGRICULTURE.

It is the opinion of Mr. Curtis, that in the forming of good meadows, or other graſs-lands, there ſhould be a combination of theſe different circumſtances, as it is chiefly by the firſt, or the quantity of produce, that the cultivator is enabled to ſupport his live ſtock, and pay his rent; of courſe no expence in labour or manure is ſpared to obtain it by the prudent farmer. It does not, however follow, that this ſhould be ſolely regarded, or that to attain it the coarſeſt ſorts of plants ſhould be cultivated; nor will the graſſes that are recommended merely for their being reliſhed by cattle, or for the ſweetneſs of their foliage, if they are found to be deficient in the quantity of produce, fully anſwer the views of the farmer or grazier, as, to conſtitute a good meadow or paſture, an abundant produce is neceſſary, And that, though animals prefer ſome ſorts of food to others, it is not poſſible to indulge the live ſtock that is to be ſupported conſtantly with the fineſt and moſt delicate hay or herbage. Beſides, it is not improbable but that the productive graſſes may in ſome caſes be highly nutritious, or that cattle may eat as eagerly the herbage or hay made from the coarſe as the fine graſſes. And cattle are frequently known to thrive on food to which they are habituated by neceſſity, though at firſt they could ſcarcely be prevailed on to eat it. It is ſuggeſted, that in making experiments, perſons are apt to conclude too haſtily from the appearance which a plant aſſumes on its being firſt planted or ſown; as the moſt inſignificant plant or vegetable will often make a great ſhow, when its fibres have freſh earth to ſhoot into: "but the trial comes when the object of the experiment has been in a meadow or paſture ſeveral years, when its fibres, from long growth, are matted together, and it meets with powerful neighbours, to diſpute every inch of ground with it:" if "it then continue to be productive, it muſt have merit." It is well known, that "lucern, when left to itſelf, is ſoon overpowered; and if broad-leaved clover, which is undoubtedly a perennial, the firſt year be ſown, a great crop is produced; but let the field be left to itſelf, and the clover, like the lucern, will yearly diminiſh,—not becauſe it is a biennial, as has been often ſuppoſed, but becauſe plants hardier, or more congenial to the ſoil, uſurp its place: this ſhews, "that at the ſame time that a good plant is introduced, it ſhould be a powerful one, and ſuch as is able to keep poſſeſſion, and continue to be productive." Further, that "in reſpect to the property of cattle's thriving on the food they eat, it is unqueſtionably of great conſequence; and it is to be regretted, that our knowledge of the moſt nutritient kinds of herbage is ſo confined: but of thoſe plants which have been in cultivation, we are enabled to ſpeak with ſome certainty: it is well known, that "clover, lucern, ſaintfoin, tares, and ſeveral other ſimilar plants, have a great tendency to fatten cattle; but what natural graſſes, or other plants, which have not been ſubjected to ſeparate culture, have this particular tendency, and in what degrees, remains to be aſcertained by the teſt of experiment." But, "that as leguminous plants are in general found to agree with cattle, it may be reaſonably concluded, that a certain quantity of them may be proper and beneficial in paſtures. It is well known that certain paſtures are more diſpoſed to fatten animals than others: but how far this depends on ſituation, and their particular produce, remains to be aſcertained." With reſpect to the property of early growth, it is ſuggeſted that the "want of early herbage in the ſpring is the general complaint of farmers and graziers in all the beſt graſs diſtricts of the kingdom: thoſe plants, therefore, which are found to ſhoot at an early period, and to put forth early foliage, eſpecially when it is ſuch as is grateful to cattle, muſt be deſerving of great attention. As far as graſſes have to do in this buſineſs, thoſe mentioned hereafter may effect all that can be expected in this way: much muſt, however, depend on ſeaſons; if the winter ſhould be ſevere, or north-eaſterly winds prevail in the ſpring months, graſſy herbage will be backward, in ſpite of all that can be done; but in order to counteract the bad effects of ſuch ſeaſons as much as poſſible, paſtures and graſs-lands ſhould be warmly ſituated, and not drenched too much with moiſture, being ſheltered by thick hedges, and divided into ſmall incloſures." But where early paſturage is the great object of the farmer, there are other plants that may deſerve a place among them, ſuch as thoſe mentioned below. And that "though early herbage is highly valuable for paſturage, it is not leſs ſo for the purpoſes of hay; as by the middle of May at the lateſt, a meadow of this ſort would be fit for cutting; and the ſecond hay-making begin by the time that hay-making uſually takes place in other caſes; and by this means the double advantage be obtained, of a larger produce, and leſs riſk in ſecuring or making it."

It is ſtated in a late work on Practical Agriculture, that "on the principles that have been already explained, there can be little doubt but that by a judicious and due attention to the different circumſtances and uſes for which graſs-lands are intended, as well as to the ſelecting and mixing of the beſt and moſt proper graſs-ſeeds, and adapting them to the particular nature and circumſtances of the ſoils, after they have been brought into a ſuitable condition for receiving them, thoſe grounds which have been in a ſtate of tillage may be laid down to the ſtate of ſward, in a much better and more beneficial manner than has been the caſe under the indiſcriminate uſe of ſuch as were in, or which have ſown themſelves on the lands from the contiguous paſtures." It has "been long ſince remarked as extraordinary, by Mr. Stillingfleet, that cultivators ſhould have neglected to make a proper advantage of plants of ſuch importance, and which, in moſt ſituations, conſtitute the principal food of live ſtock, from the want of properly diſtinguiſhing and ſelecting ſuch as are the moſt advantageous and uſeful under different circumſtances of the land." Some have likewiſe contended, that "the beſt graſs-ſeeds cannot be collected at too high a rate; as it is poſſible, by ſuch means, to render lands, which are ſuited for the production of graſs, much more valuable than can be done by the common modes of laying them down."

It cannot, however, but be confeſſed that much difficulty has "been thrown in the way of introducing the moſt proper ſorts of graſſes, in laying lands down to ſward, from their near reſemblance to each other, in many inſtances, requiring the niceſt diſcernment to diſtinguiſh them, and from the want of other means of procuring them."

It has been ſtated by Mr. Curtis, in his tract on Graſſes, that "if graſs-lands, ſuch as downs, paſtures, and meadows, be carefully examined, they will all, except ſuch as have been recently laid down with rye-graſs or clover, be found much in a ſtate of nature, replete with an indiſcriminate mixture of plants, ſome of which produce cattle food of a good kind, others ſuch as is of a very indifferent deſcription; ſome affording good crops, while others ſcarcely yield any thing at all." And in the ſyſtem of Practical Agriculture it is ſuggeſted as ſufficiently obvious, "that by a careful attention to the procuring of the beſt and moſt ſuitable ſorts of graſs-ſeeds, and applying them according to the principles which have been given above, much ſuperiority may be attained in the forming of paſture, or other ſorts of graſs-lands." See GRASS.

Method of Preparation of the Land.—The proper preparation of land for graſs-ſeeds is a part of management, according to the ſame writer, "that is of vaſt importance to the ſucceſs of forming good graſs-lands, but which has been much neglected in the practice of laying them down. From the ſmallneſs of the ſeeds, and the fibrous nature of the roots of the graſs-plants in moſt caſes, it is evident that lands which are intended for being laid down to the ſtate of ſward, whatever their quality may be in reſpect to ſoil, ſhould conſtantly be brought into as fine a ſtate of pulverization and mellowneſs as poſſible, before the ſeeds are put in: as where the contrary is the caſe, from the lumpineſs of the ſurface mould, the ſeeds can neither be ſown with ſo much regularity, vegetate in ſo equal a manner, or extend their roots, and eſtabliſh themſelves at firſt ſo perfectly in the land, they are of courſe more liable to be deſtroyed by hot ſeaſons coming on afterwards. It is probable that in this way much new laid down graſs-land is greatly injured the firſt ſummer, eſpecially when it turns out to be hot and dry. The neceſſary fineneſs of mould may be obtained in different modes, according to the nature of the lands. In the more ſtiff and heavy ones, by ploughing before winter, and leaving them to be expoſed to the action of froſts and other cauſes during that ſeaſon; having recourſe to ſevere harrowing, and occaſional rolling, in the early ſpring months; and by the frequent interpoſition of ſuch ſorts of crops, in the courſes that precede thoſe of graſs, as have a tendency, from the peculiar nature of their roots, to looſen and render the ſoils fine, ſuch as thoſe of the bean, cabbage, rape, and clover kinds. The lighter ſorts of land may be brought into a proper condition for the reception of graſs-ſeeds, by repeated ploughing and harrowing, or ſcuffling, and the frequent introduction, in the previous crops, of ſuch ſorts of green fallow crops as have a power, by the great degree of ſhade and ſtagnation which they afford, as well as by the culture which they require while growing, of bringing the ſoil into a fine friable ſtate. Theſe are turnips, potatoes, tares, ſaintfoin, and others of a ſimilar deſcription." It has been contended by Mr. Cloſe, "that where the graſs-ſeeds are to be put into the ground with grain crops in the ſpring, the tillage ſhould be performed with more than ordinary attention; which, in the caſe of turnips, will depend greatly upon their being conſumed at ſuch an early period as will admit of the ground being thoroughly broken down and reduced; for if there be much delay, and the ſeaſon prove unfavourable, a bed of mould, ſufficiently looſe and mellow, will not be procured for the reception of the ſeeds: and when grown with ſpring corn, the lands ſhould be ploughed over three times; and where the firſt of theſe earths can be given early enough to be influenced by the vernal froſts, it will be found to be much more beneficial." The uſe of the harrow and the roller will be occaſionally neceſſary, after the different ploughings, according to the nature and ſtate of the land. "But when the ſowing is executed in Auguſt, the ſame degree of attention is not believed by the Rev. Mr. Young to be ſo neceſſary, as the time and ſeaſon afford ſo full an opportunity of bringing the ground into ſuitable order, that the moſt inattentive cultivator can ſcarcely experience any other difficulty than what originates from an unuſual wetneſs of ſeaſon."

In the Syſtem of Practical Agriculture noticed above, it is mentioned that, "beſides this fineneſs of preparation in the ſoils, it is neceſſary that the method of cropping and application of manure in the preceding courſes be ſuch as to leave them in a ſtate of high fertility and richneſs; as no good graſs-land can be ſuppoſed to be produced, where the lands have been worn out and exhauſted by the previous crops:—a practice which has, however, been too general in the returning of arable lands to the condition of graſs. Mr. Marſhall has, he ſays, indeed very juſtly obſerved, that the want of proper condition in the lands at the time of their being laid down to ſward, added to thoſe of improper ſorts of graſſes and bad ſeeds, is the chief cauſe of their not ſucceeding." According to ſome cultivators, "manure ought to be applied with every other crop, and always with that which immediately precedes the graſs. This is," he ſays, "a practice that ſhould be adopted as much as poſſible." And "in order to have graſs-lands of the beſt kind, it is likewiſe of great utility to have them ſo managed in the preparation, as to be rendered perfectly clean and free from all ſorts of weeds; as by their riſing with greater rapidity than the ſown graſs-plants, they are often liable to ſhade and deſtroy them, or greatly injure their growth."

And it has been adviſed by Mr. Billingſley, "in reſtoring old worn-out lands to the ſtate of good paſture, to clear the land from injurious weeds by means of a full winter and ſummer fallowing; or, inſtead of the latter, by a crop of potatoes, well manured for, and kept in a perfectly clean ſtate by attentive culture while growing, ſucceeded by winter vetches fed off in the early ſpring." And "in all the more light ſorts of ſoil, it is unqueſtionably the moſt beneficial practice to bring the ground into that ſort of fine tilth, which is proper for the reception of graſs-ſeeds, by a judicious mixture of green crops of different ſorts with thoſe of the corn kind, according to the nature of the ſoil." The moſt appropriate methods of combining and intermixing theſe with each other are fully explained in conſidering the modes of cropping different ſorts of ground. See *Courſe of* CROPS, and *Rotation of* CROPS.

Further: "when the lands have been, by theſe methods, brought into a good ſtate of fertility, and reduced into a ſufficiently mellow and friable condition of mould, the ſurface ſhould be made as fine, looſe, and even as poſſible"

And that " where the grounds are much inclined to moiſture, the ridges may be preſerved, which ſhould be of conſiderable breadth, with very ſlight furrows; but in the more light and porous deſcriptions of land, the whole ſhould be laid as even as poſſible, without any ridges or furrows. In the former caſes, in ſome diſtricts, they prefer making the ridges ſix, eight, or more yards in breadth; which, when the land is to be under the ſcythe, is in a much better ſtate for being mown; and if for paſture, there will be leſs danger of the animals being injured by being caſt in the furrows. But in the latter, the ſurface will not only be more agreeable in its appearance, but be more advantageous for all the purpoſes of graſs management," when thus laid down.

Moſt proper natural Graſſes.—In reſpect to the kinds of natural graſſes, the circumſtances that have been obſerved above render it ſufficiently plain, that the proper choice and application of graſſes muſt be a matter of great conſequence, in the laying down lands to the ſtate of ſward or herbage.

In fact, it is, according to the author of Practical Agriculture, " a buſineſs attended with uncommon difficulty, from the number of trials that have been yet made being very inadequate for affording the means of fully deciding upon their properties, advantages, and uſes, in many caſes, as well as from their habits, and the ſoils to which they are the beſt ſuited, being often very imperfectly known; and alſo from the great trouble and inconvenience of obtaining their ſeeds genuine, and in a proper ſtate of healthy vegetation."

But it is ſuggeſted that the plants of the natural graſs kind, which have been found by experienced cultivators moſt uſeful in the different intentions already mentioned, are " the ſweet-ſcented vernal graſs, meadow fox-tail graſs, ſmooth-ſtalked meadow graſs, rough-ſtalked meadow graſs, meadow feſcue graſs, hard feſcue graſs, tall feſcue graſs, creſted dog's-tail graſs, ray or rye graſs, Yorkſhire white, cock's-foot graſs, tall oat graſs, timothy graſs, yarrow, burnet, white clover, trefoil, cow graſs, rib graſs, and a few others;" moſt of which will be found uſeful in laying lands to graſs, under different circumſtances of ſoil, ſituation, moiſture, and dryneſs. See GRASS, and theſe ſeveral heads.

The Rev. Mr. Young, in the third volume of Communications to the Board of Agriculture, adviſes the varying of graſs-ſeeds, according to the nature of the ſoil, in this way:

Soils and Seeds.

Clay.	Loam.	Sand.	Chalk.	Peat.
" Cow-graſs.	White clover.	White clover.	Yarrow.	White clover.
Cock's-foot.	Ray.	Ray.	Burnet.	Dog's-tail.
Dog's-tail.	York white.	York white.	Trefoil.	Cock's-foot.
Feſcue.	Feſcue.	Yarrow.	White clover.	Rib.
Fox-tail.	Fox-tail.	Burnet.	Saintfoin.	York white.
Oat-graſs.	Dog's-tail.	Trefoil.		Ray.
Trefoil.	Poa.	Rib.		Fox-tail.
York-white.	Timothy.			Feſcue.
Timothy.	Yarrow.			Timothy."
	Lucerne.			

With regard to the proportions or quantities which are neceſſary per acre, it is hinted, that " in ſituations where women and children are fully employed, it may be difficult to procure large quantities gathered by hand: in ſuch places a man muſt be content with what can be bought. Creſted dog's-tail is ſo very generally to be thus procured, that he cannot but ſuppoſe it in a good meaſure at command. However, without adverting to this point, he may remark, that from the lands which he has laid down to graſs to a conſiderable extent, and in which he has uſed every one of theſe plants largely except the poa, and that on a ſmaller ſcale, he is inclined to think that the quantities ſtated below may be ſafely employed."

Soils and Seeds.

Clay.

Seeds.		Subſtitutes.	
" Cow-graſs	5lb.		
Trefoil	5lb.		
Dog's-tail	10lb.	Yorkſhire white	2 buſh.
Feſcue	1 buſh.	Timothy	4lb.
Fox-tail	1 do.	Do.	4 do.; or,
		Yorkſhire white	1 buſh.

Loam.

Seeds.		Subſtitutes.	
White clover	5lb.		
Dog's-tail	10 lb.	Ray	1 peck;
Ray	1 peck.	Rib-graſs	4lb.
Feſcue	2 do.	Yorkſhire white	
Fox-tail	3 do.	Timothy	4lb.
Yarrow	2 do.	Cow-graſs	5lb.

Sand.

Seeds.		Subſtitutes.	
White clover	7lb.		
Trefoil	5lb.		
Burnet	6lb.		
Ray	1 peck.		
Yarrow	1 buſh.	Ray	1 peck. Rib 4lb.

Chalk.

Seeds.		Subſtitutes.	
Burnet	10lb.		
Trefoil	5 lb.		
White clover	5 lb.		
Yarrow	1 buſh.	Ray	1 buſh.

Peat.

Seeds.		Subſtitutes.	
White clover	10lb.		
Dog's-tail	10 lb.	Yorkſhire white	6 pecks.
Ray	1 peck.		
Fox-tail	2 do.	Rib	5lb.
Feſcue	2 do.	Cow-graſs	4lb.
Timothy	1 do."		

Method of ſowing Graſs-ſeeds.—In reſpect to the time and manner of ſowing graſs-ſeeds, they are different in practice according to the preparation and the particular circumſtances of the land. The moſt uſual period of putting in graſs-ſeeds has been the ſpring, at the time the grain crops are ſown: but where the land has been brought to a ſuitable ſtate of preparation by means of green and other fallow crops, the latter end of the ſummer, as about Auguſt, has been the more general time. In the former caſe they are moſt commonly put in with the grain crops; but in the latter without any other ſort of crop. The author of the Syſtem of Practical Agriculture remarks, that "there has been much diverſity of opinion among agricultural writers with regard to the ſuperior utility of theſe different ſeaſons of introducing the ſeeds, as well as with regard to their being ſown with or without other ſorts of crops. The advantages of the autumnal over thoſe of the vernal ſowings are contended to be, thoſe of the graſs-plants being leſs expoſed to danger from the ſhade, cloſeneſs, and choking, that muſt neceſſarily occur at the latter ſeaſon, there being leſs riſk of ſtocking the ground with noxious weeds in caſe of the ſeeds of hay-chambers being indiſcriminately ſown; their being put in upon a better preparation and more mellow and fertile ſtate of the land; their growth being more ſtrong and vigorous from their not being robbed of their proper nouriſhment by other exhauſting crops, and the great ſuperiority of the hay produce: while, on the contrary, it is maintained in ſupport of the vernal ſowings, that beſides their being leſs precarious, ſhade is neceſſary in the early growth of the graſs-plants to protect them from the effects of heat; the moiſture is better preſerved in the ſoil for their ſupport; ſmall annual weeds more effectually prevent it from riſing to injure them; and the loſs the farmer muſt ſuſtain from the want of grain crop guarded againſt."

But in regard to the objection on the ground of weeds being produced, Mr. Cloſe has remarked, that "ſowing rubbiſh in Auguſt is not of ſo great importance as in the ſpring. In the former ſeaſon all the annual ſeeds vegetate, and if the beginning of the winter be mild, they will bloſſom; but they cannot perfect their ſeeds, and thus ſtock the land with noxious weeds.

Upon which the firſt of theſe writers obſerves, that "though ſome of the arguments urged on both ſides of this controverted point may be objected to, the autumnal ſowings not preventing the perennial weeds from riſing and ſhedding their ſeeds in the following ſummer, nor the great cloſeneſs of grain crops being without injury to the growth of the young graſs-plants; there are facts which render it probable that each method may have advantages under particular circumſtances. In the more ſouthern diſtricts, where the ſeverity of the winter ſeaſon is later in its approach, the autumnal ſeaſon may frequently be made uſe of with advantage, after fallow crops, for ſowing graſs-ſeeds, eſpecially in caſes where the lands are in too rich a condition for the ſucceſsful growth of corn. But in the more northern parts of the kingdom, and expoſed ſituations, where the froſt ſets in at an early period, it may be in general the moſt adviſable practice to put the ſeeds in, in the vernal months, with ſuitable crops of the grain kind." And the Rev. Mr. Young has obſerved, that "graſs-ſeeds anſwer almoſt equally well in either method: he prefers, however, the Auguſt ſowing without corn, though the ſucceſs of his trials in the different ſeaſons has not juſtified any deciſive concluſion." It is even admitted, that "in moory and mountainous ſituations, where the ſnows come early, autumnal ſowings are not adviſable, or to be performed later than the very early part of Auguſt; the vernal ſeaſon with oats, for being cut young for ſoiling or hay, is conſtantly to be preferred." Mr. Dalton, in Yorkſhire, after trying other methods, alſo recommends the autumnal ſeaſon without corn as the moſt adviſable. And the Rev. Mr. Cloſe ſtates, that "a friend of his, wiſhing to procure good meadow or paſture around his houſe, fallowed the land for barley; but the ſpring proving wet, and the ſoil being a ſtrong loam, he could only put half of it in order for that crop, which was ſown and laid with clover and rye graſs. The other part was fallowed and ſown in Auguſt with the ſweepings of hay-chambers. The barley was a good crop, and the clover and rye-graſs were probably equal to the firſt year's cut of hay. The ſecond year the artificial graſſes began to fail; worſe the third, fourth, and fifth; the ſixth year, after having received two dreſſings, the ſpontaneous product of the ſoil began to give a fleece over the ſurface of the land. About ten years after theſe lands were ſown, Mr. Cloſe ſaw this field, when the part ſown in Auguſt was worth at leaſt fifteen ſhillings per acre more than the part which had been ſown with artificial graſſes in the barley. Thus from actual experiments, numbers of which he could adduce, he concludes that ſowing the ſweepings of hay-chambers in Auguſt, is preferable to ſowing any artificial graſſes in the ſpring with any crop of corn. Suppoſe the corn worth five pounds per acre, the difference in the produce of hay or ſeed in the ſecond, third, fourth, and fifth years, would more than counterbalance this; and the proprietor would find a permanent improvement in his land of from fifteen to twenty ſhillings per acre." Mr. Young thinks, the beſt ſeaſon in the whole year for this purpoſe is Auguſt, and the only one admiſſible for it on ſtrong, wet, and heavy ſoils, in forty years' experience having never failed at that period. It is ſtated in the Syſtem of Practical Agriculture already noticed, that "on comparative experiments being made with corn in the ſpring months, and without it in Auguſt, the latter was found by much the beſt mode by different cultivators." But that in the experiment of an accurate agricultor, mentioned by the Rev. Mr. Young, in his paper in the communication to the board, "in comparing different methods of vernal ſowings, in which four acres were ſown with ſeeds alone, on peaſe and buck-wheat ploughed in the preceding autumn; five acres with barley, and five more with the ſeeds put in alone without corn or manure: the portions ſown alone were over-run with weeds, and only preſerved from being ſmothered and deſtroyed, by being eaten down by a dairy of cows." And others, after repeatedly trying the experiment of ſowing in the ſpring with corn, and the autumn without, and from long and extenſive practice, conclude, "that, even if we were to have no regard to any other circumſtance, except the graſs crop alone, it would be always beſt to ſow it with ſome kind of grain; but when we conſider likewiſe the loſs that the farmer thus ſuſtains for want of a crop of grain, the practice of ſowing alone muſt be looked upon as highly pernicious to the farmer."

And he ſuppoſes, that it is probably in this laſt reſpect that the greateſt diſadvantage of the practice conſiſts, as without it the farmer can derive no immediate recompenſe for his great expence of tillage and preparation of the land."

In caſes where the vernal ſowing with other ſorts of crops is had recourſe to, barley is that, according to Mr. Cartwright, which is moſt uſually recommended, and "there ſeems to be no queſtion that barley is in general the fitteſt grain to be ſown with graſs-ſeeds. The ſame tilth which anſwers for the one is requiſite for the other. Barley has a diſpoſition to looſen the texture of the ground in which it grows; a circumſtance highly favourable to the vegetation of graſs-ſeeds, which require a free and open ſoil to extend their roots in; the tender and delicate fibres of which have much difficulty in contending with the reſiſtance of a ſtubborn ſoil. And this points out the reaſon why graſs-ſeeds ſo frequently fail on ſtrong land not in a proper ſtate of cultivation. In the choice of barley, that ſort ſhould be preferred which runs leaſt to ſtraw, and which is the ſooneſt ripe." But the writer of the Syſtem of Practical Agriculture obſerves, that as from the graſſy nature of the ſtem, and the large ſize of the ear in this ſort of grain, a conſiderable degree of cloſeneſs and ſhade muſt conſtantly be kept up, it ſhould never be ſown ſo thickly as in other caſes where there are no graſs-ſeeds. Some object to ſowing graſs-ſeeds with barley on other principles, as thoſe of its drawing its nouriſhment from the ſurface, which is alſo the caſe with the graſs-plants, and that in conſequence they muſt be greatly retarded in their growth from the want of due ſupport. Where the land is in a proper ſtate of preparation and tillage, if ſown with oats, they will be apt to become ſo luxuriant as to greatly injure, if not wholly deſtroy, the young graſs-plants by the cloſeneſs of their ſhade. In ſome caſes they, however, ſucceed tolerably with this ſort of crop. On the ſtronger kinds of land the ſowing of graſs-ſeeds has been found to anſwer well with thin crops of beans. In an experiment of this kind, it is ſtated that Mr. Dalton found that the beans did not "rob, but ſheltered and nouriſhed the graſs-plants, the plan anſwering beyond expectation."

It is ſuggeſted, that in order to effect the purpoſes of diſtribution and perfect vegetation in the moſt complete manner, the ſeedſman ſhould "be accuſtomed to the buſineſs, and the ſeeds, as being of different weights, be as little mixed with each other as poſſible. It is much better to have more caſts than to blend the ſeeds together for the ſake of diſpatch. For all the ſmaller ſorts of ſeeds, it has been ſuppoſed by the Rev. Mr. Young, preferable to deliver them by means of the Norfolk turnip trough, which has lately been adapted to clover and ray-graſs. And this operation ſhould always be performed as ſoon after the land has been ploughed as poſſible, as under ſuch circumſtances the ſeeds vegetate in a much more quick and vigorous manner. But it ſhould never be attempted in ſuch a wet ſtate of the land as produces any great degree of tenacity or adheſiveneſs in the mould, as in ſuch circumſtances the ſeeds would be apt to come up in a tufty unequal manner. Nor for the ſame reaſon ſhould the lighter ſorts of graſs-ſeeds ever be ſown in windy weather; as the delivering them in an equal and regular manner is a point of conſequence to the forming of good graſs-land. In the covering in of the ſeeds, the author juſt mentioned obſerves, that care ſhould be taken that none are left in an expoſed ſtate on the ſurface of the ground, as where that is the caſe many of them will be deſtroyed or picked up by birds, and the ſward appear patchy. This buſineſs is executed in the moſt complete manner by a pair of light ſhort-tined harrows at one timing. The practice of employing buſh-harrows is improper, as in that way the ſeeds are liable to be drawn into lumps. In all the lighter and more ſpongy deſcriptions of land, it may be advantageous to paſs a light roller over the ſurface immediately after the ſeeds have been well harrowed in." And "in caſes where the tenants and not the proprietors of the land are to lay them down to graſs, it may be the moſt adviſable practice for the latter to procure the ſeeds, but at the expence of the former, eſpecially where they have a ſufficient intereſt in ſuch lands; as, without this precaution, from their general propenſity to keep the ground under the plough, and their indifference in reſpect to the obtaining of the moſt proper ſorts of ſeeds, there may be danger of the buſineſs being improperly performed."

Proper Management after being laid down.—It may be remarked, that the proper conducting of this buſineſs is a matter of conſiderable importance, and a point upon which much of the ſucceſs of forming good graſs-land muſt in moſt circumſtances depend. It is adviſed by ſome, as ſoon as the crop with which the ſeeds have been ſown has been removed, to have recourſe to rolling the land with a moderately heavy roller, when it is in ſuch a ſtate of dryneſs as juſt to admit the impreſſion of the implement; as by this proceſs, from the mould being preſſed cloſely about the roots of the plants, their early growth may be much benefited, and the danger of drought in ſome meaſure obviated. The practice is, however, in the opinion of others, the moſt neceſſary in the more light and porous deſcriptions of land. There are ſtill others, likewiſe, who recommend the application of manure at this period, in order to promote the growth and ſupport of the young graſs-plants; a point which would ſeem quite unneceſſary where the above mode of preparation has been had recourſe to. The writer of the Syſtem of Practical Agriculture, however, ſtates that "as the ſurface of ſuch grounds as have been newly laid down to the ſtate of ſward is, from the previous tillage which they require, extremely tender, and readily broken into holes for ſome time even in the drier deſcriptions of land, the turning-in of the cattle with the view of feeding them down muſt, in moſt caſes, be highly prejudicial by the treading which they cauſe. The beſt practice is, therefore, probably to ſuffer no ſort of ſtock to be put upon ſuch lands till the ſpring after their being laid down; or where the farmer finds it abſolutely neceſſary to turn upon the lands, the lighteſt ſort of ſtock ſhould conſtantly be ſelected for the purpoſe." And "it has been obſerved by the Rev. Mr. Young, that the advantage of feeding ſuch lands during the autumn and winter ſeaſons, is ſcarcely matter of any conſequence, as the ſpring feed for ſheep, where it is omitted, is of ſo much greater utility, a very early paſturage being in this way afforded for ewes and lambs." Mr. A. Young is alſo decidedly of the ſame opinion in his Farmer's Calendar.

There are much diverſity and contradiction in the opinions of experienced cultivators as to the future management in different ſtates and circumſtances of the lands, ſome ſupporting the ſuperiority of keeping the ground cloſely fed down by ſheep or neat cattle, while others conſider mowing or feeding as preferable. "There ſeems little reaſon to doubt but that feeding by ſome ſort of ſtock is a much better practice than thoſe of either mowing or feeding; the chief difficulty is in reſpect to the ſort of ſtock that is the moſt proper. On the dry and more firm ſorts of ground, a mixed ſtock may be the moſt advantageous, as neat cattle and ſheep, as in that way the new paſture may be fed down in the moſt regular manner; but on thoſe that are of a more open, porous, and leſs firm quality, ſheep, by their eating ſo cloſely, may do much harm, eſpecially in the firſt years of the new lay, by pulling up the young and imperfectly eſtabliſhed graſs-plants. Several inſtances of this kind have been noticed in ſuch ſoils. In lands that are more inclined to moiſture, the conſuming of the produce by neat cattle muſt conſtantly be liable to do miſchief, except in very dry ſeaſons; they muſt of courſe be principally fed down by ſheep. And in all caſes where the new lay is chiefly conſtituted of the more coarſe ſort of graſſes, ſheep would ſeem to be the moſt proper kind of ſtock, as the graſſes are thereby conſtantly becoming more fine and ſweet. Many facts of this nature have been noticed by cultivators. The ſweetneſs of the paſturage on many ſheep-downs has been remarked to depend more on their being kept cloſely fed down than any other circumſtances, as on being neglected in this reſpect it becomes coarſe, and is rejected."

Syſtem of Practical Agriculture.—It has been well obſerved by the Rev. Mr. Young, in a valuable paper, in the third volume of Communications to the Board, that "ſheep-feeding not only ameliorates by enriching the ſoil, and fining the herbage, but alſo by deſtroying weeds." And Dr. Dickſon has "been aſſured by a very extenſive and experienced cultivator in Somerſetſhire, that under this ſort of management, not only many coarſe graſſes, but other ſorts of plants become fine, and eagerly fed upon by animals." It is ſtill farther ſtated, that "Dr. Wilkinſon, who has been much in the habit of comparing different practices, adviſes the grazing conſtantly with ſheep, and for the firſt ſix years never to permit the ſcythe to touch the lays;" but this is certainly longer than is neceſſary to preclude the ſcythe in many ſorts of ſoil. And the Rev. Mr. Young has remarked in addition, "that it is not merely the firſt year that feeding with ſheep is the beſt practice on new lays, but it may be ſo managed the ſecond, and if it extend to the third it is the better: and though there is not any neceſſity for adhering to it any longer, it has been found to anſwer well in his practice, four, five, or even ſix years; and in general it may be concluded, that the more the land is fed with ſheep, the greater the improvement will be. But in this management the impoveriſhing abſurd ſyſtem of removing the animals to be folded in other places, is not to form any part of the practice."

In the Agricultural Report of the North Riding of Yorkſhire it is ſuggeſted, that "it has been long the practice in that diſtrict, with the moſt improved cultivators, to have recourſe to the method of ſheep-feeding for ſome time after laying the lands down to graſs, as two years or more. Where ray graſs and white clover are intended to remain ſome years, it is found by ſome advantageous to eat them the firſt year by the ſheep, in cloſing, thickening, and rendering them more permanent." Theſe facts are all in evidence of the great propriety and utility of the practice of feeding new graſs-lands. It muſt, however, be obſerved, that in order to render the practice perfectly ſafe and beneficial, the new lays ſhould not be fed during the autumn, or the ſtock turned into them at too early a period in the ſpring. "Nor ſhould they be too heavily ſtocked, or the ſtock kept in the paſtures too long, eſpecially when it conſiſts principally of ſheep, as they may do much harm by paring and eating the plants ſo cloſely down as immediately to kill them, or expoſe their roots too much to the deſtructive effects of drought. And in caſes where the graſſes have run up much to ſtem, if the lands be ſufficiently ſtocked with plants, it may be an uſeful method to cut them over, by means of a ſtrong ſcythe, before their ſeeds are formed, as by this means they will become more ſtrong and vigorous; but, in the contrary circumſtances, they are better left for the purpoſe of providing a more abundant ſupply of young graſſes, as the benefit obtained in this way will more than counterbalance the injury ſuſtained by the running up of the old plants." But the author of the Syſtem of Practical Agriculture ſtates, that "though the practice of feeding new laid graſſes in the firſt years appears to be the moſt advantageous and proper mode of management, eſpecially for lands intended for paſture, there are many caſes in which they may be mown with great ſucceſs. This practice is perhaps always the moſt beneficial and proper, and indeed the only one that can be adopted, in ſuch ſoils as poſſeſs any great degree of moiſture; as, under ſuch circumſtances, the feeding them down with any ſort of live ſtock muſt, in moſt ſeaſons, be injurious to the ſward. And, beſides, where the object and intention of the farmer is chiefly hay, the graſs-plants, by being kept cloſely eaten down by live ſtock for a conſiderable length of time before the ſcythe is applied, may, from their becoming thereby diſpoſed to a low and lateral ſpreading growth, be afterwards more unfit for the production of hay crops. Several facts of this nature are related by writers on huſbandry. In one caſe, where different diviſions of land of the ſame kind were laid down in the ſame manner, on one of them being kept in the ſtate of paſture, and the other alternately mown and paſtured; after ſome years, both being ſhut up for hay, that which had been paſtured afforded a much inferior produce to the other. The ſame thing has happened in other caſes of old paſtures being converted into hay lands, even when the moſt favourable ſeaſon prevailed." It is conſequently concluded, that "on theſe principles, it may be a more judicious practice to manage lands deſigned for hay, without having them for any great length of time, previouſly to their being mown, fed down cloſely with ſtock; as in this way a larger produce of hay may be afforded." And it is ſuppoſed, that "where the new lays are mown the firſt year after being laid down, which is not a method to be recommended, it is an excellent practice to apply a moderate coat of manure over them in the autumn, eſpecially when the ſtate of the land and the ſeaſon is ſuch, in reſpect to dryneſs, as to admit of its being done without injuring the ſurface ſward; as by this means the graſs-plants not only become more ſtrong and vigorous, but better eſtabliſhed in the ſoil, and of courſe bear cutting with much leſs injury."

But as it may be the caſe ſometimes, though ſeldom, where theſe modes are fully attended to, that the farmer may fail either in part or wholly of producing a good lay; it has been obſerved, that, "in the firſt caſe, it is the beſt practice to have recourſe to ſowing freſh ſeeds, which ſhould be performed in the early part of the ſpring, when the weather is in a moiſt ſtate; the ſeeds being adviſed by ſome to be trodden in by putting ſheep upon the land, either indiſcriminately, or by very open folding, as the uſe of the roller will not be effectual, and that of harrowing cannot be practiſed without injury." It is ſtated that a large cultivator at Enfield found advantage from putting the ſeeds in before the manure was applied in the new lays, which are ſometimes too haſtily ploughed up. By either method, the ſward of ſuch lays may often be much thickened, as well as benefited in other reſpects. And that, in caſes where the graſſes have run up much to ſtem, if the lands be ſufficiently ſtocked with plants, it may be beneficial to cut them over, by means of a ſharp ſcythe, before their ſeeds are formed; as by this means they will be more ſtrong and vigorous, and the lands be leſs injured: but, under the contrary circumſtances,

ſtances, they are better left for the purpoſe of providing a more abundant ſupply of young graſſes, as the benefit obtained in this way more than counterbalances the injury ſuſtained by the old plants being left upon the land. But that where there is a complete failure from particular cauſes, the moſt adviſable method is, where the ſeeds have been put in, in the ſpring, with grain crops, to take off theſe crops as ſoon as they admit of it; and, after giving the land one ploughing, to harrow in directly freſh ſeeds, which ſhould be accompliſhed as early in the beginning of Auguſt as it can be performed; and a roller may be applied over the land, when in a ſuitably dry condition, about October. But that where the latter end of ſummer has been the time of ſowing, it is adviſed "that the land ſhould have three ploughings performed upon it in the early ſpring months, when the weather is ſufficiently dry, and the graſs-ſeeds be again put in with the crop of buck-wheat in May, which, though it is not a ſuitable crop for the heavy wet ſorts of land, ſometimes anſwers well in dry ſeaſons; and in wet ones, as affording but little ſeed, may be mown when in bloſſom as green food for the cows." From the land not being much robbed of its fertility in this way, it may be a beneficial practice.

The application of manure to new laid down graſs lands is ſeldom abſolutely neceſſary: yet where they have not been returned to the ſtate of ſward under that degree of fertility and preparation which has been inculcated, it may, in many inſtances, be had recourſe to with great advantage and improvement; as it is perhaps one of the beſt methods of preſerving a good cloſe ſtate of graſs or ſward, when properly employed. Mr. Maxwell ſtates, in the third volume of Communications to the Board, that "though in general no manure will be wanted till the land has been mown for hay, there can be no doubt but that great additional improvement will be produced, where manure of any ſort can be applied;" and that "the oftener the land is manured, the greater will be the improvement." Where lands have been laid to ſward or graſs with grain crops, the application of ſlight dreſſings of manure in the following autumn may be of much utility in fixing and encouraging the growth of the young graſs-plants, as has been ſeen; but in other caſes, the latter end of the ſummer following, or very early in the autumn, are ſuppoſed by ſome to be the moſt beneficial and proper periods for the purpoſe: "but as at theſe times, in many inſtances, much loſs of manure may be ſuſtained both by evaporation and the waſhing of heavy rains and ſnows, it may be a better and more adviſable practice to perform the buſineſs in the early ſpring months, eſpecially where the lands are to be conducted under the ſcythe; as in this way the enriching material will be ready to exert its influence at the moment the young plants begin to ſend forth their new ſhoots, and thus not only afford more aſſiſtance in thickening and invigorating the new ſward, but be leſs in danger of being uſeleſsly diſſipated and waſted." But "where manure cannot be ſpared for repeatedly dreſſing new graſs lands, as the graſſes are often, eſpecially on lands not ſuited to their growth, liable to decline and become thin, in ſome inſtances, it is ſuppoſed, from the ſown graſſes diſappearing before the ſpontaneous ones have attained ſufficient vigour and ſtrength; but more generally, probably, from the grounds not having been in a proper ſtate of fertility, or fineneſs of ſurface mould, at the time the ſeeds were put in; or the particular unfavourableneſs of the ſeaſon, about the cloſe of the third ſummer after their being ſown. It is believed by the Rev. Mr. Young, to be a better practice to defer the uſe of manure till that time, on ſuch lays as are paſtured; and when they are under the ſcythe, till the hay crop has been taken from the ground. We have no doubt of the ſucceſs of the application of dung top dreſſings at theſe periods, though they muſt evidently be made uſe of in a leſs economical manner than at a later ſeaſon in the autumn, or an earlier one in the ſpring. And it is the moſt common opinion, that all the finer and more ſoluble kinds of top dreſſings are applied with the greateſt benefits in the very early ſpring months, as about the latter end of February, or the beginning of the following month. The differences in the effects of theſe ſorts of manure have perhaps not yet been fully aſcertained, under different circumſtances of application."

With the view of encouraging and ſupporting the growth of the natural graſſes, when the ſown ones decline, as about the third year, an experienced cultivator at Enfield, who ſeems to favour the opinion of manure being the moſt uſefully laid on land early in the autumn, or on hay lands immediately after the crops have been taken off, ſtates that "he has uſed coal-aſhes with great ſucceſs, to the amount of three chaldrons *per* acre. He has laid of this manure on graſs land above fifty chaldrons in a year. About eight years ago, he laid down a field of twelve acres with broad clover principally, intending it to ſtand only for two years. In the ſummer it was mown twice; next year it was grazed: the clover was but weak. As he had particular reaſons for altering his mind, and for wiſhing to continue it in graſs, he reſolved to try the effects of grazing it with ſheep. On the fourth year it looked ſo very bad, the clover almoſt entirely diſappearing, that he was tempted to plough it up. He, however, reſolved to continue the grazing, and to give it a dreſſing of three chaldrons *per* acre of coal-aſhes. The next year he obſerved the white clover and natural graſſes beginning to form a cloſe turf; and the field is now an excellent piece of ſward, without the aid of any hay-ſeeds." And it appears from the further trials of the ſame cultivator, that the following ſubſtances have much effect, not only in promoting the growth and rendering the herbage more fine and ſweet, but in renovating the ſward:—the ſcrapings of the road, ſand drift, fold-yard liquor, and watering; and that the effects of other manures would ſeem to be chiefly in promoting the luxuriance of the graſſes, and of courſe to be principally advantageous in increaſing the quantity of produce; ſuch as "tallow-chandlers' graves, when uſed in proportion of a ton an acre; and night-ſoil, when laid on to about three horſe cart loads the acre. And that in fixing, producing, and rendering the white clover more permanent, marle, or ſtrong cold land, and coal-aſhes, on wet ſoils, have been highly beneficial. On the drier clayey lands in Cornwall, "ſea-ſand has been found to mellow the clay, and make them hold the graſſes." And on what are termed ſtone braſh lands, the uſe of marle is often found of great utility, when applied in the latter part of the ſummer of the firſt year of the lay. But it is neceſſary, to the ſucceſs of this ſort of application, that the ground be well covered with graſs before it is applied; as where the ſurface is much expoſed, the marle is liable to plaiſter and cake together, and the young graſs-plants to be, in conſequence, expoſed to much injury from the heat of the ſummer. This ſubſtance ſeems to bring up the beſt ſort of natural graſſes; but in time it ſinks below the reach of vegetation. About thirty cart-loads are ſufficient for the acre. And chalk, on the deep loamy clays, was found by Mr. Davis an uſeful application the firſt year on new lays, in the proportion of about twenty loads to the acre. On the more ſandy ſorts of land, clayey marle may be of great advantage in eſtabliſhing the graſs; and on peaty or moory lands, marle and other ſimilar materials will be found of advantage in rendering them more compact, and better ſuited for preſerving the graſſes; as well as ſand and road-ſtuff, for fining the herbage, and rendering it more palatable to the ſtock.

Though "ſoot has been much uſed as a top-dreſſing, it has not been found that its effects laſt beyond the firſt year. It has been tried to the amount of ſixty buſhels *per* acre, at 8*d.* *per* buſhel; perhaps it ſhould be uſed in larger quantity. Lime is nearly as dear, and of that 160 buſhels have been uſed *per* acre on arable land. Soot ſhould perhaps be laid on to that amount. Sugar-bakers' ſcum has been uſed with great ſucceſs to the amount of two loads an acre, at half a guinea *per* load, which has been found a ſtrong warm manure, highly ſerviceable on cold land, its effects being permanent. Lime is alſo found uſeful on the more friable red loamy ſoils, by fixing and rendering them more cloſe, to keep the vegetation more to the ſurface, as well as to promote the growth of the natural graſſes, and prevent their roots from being injured by the heat of the ſun. And woollen rags, though not generally uſed as manure on graſs-land, when chopped ſmall, have been ſpread with advantage on young clovers before winter, to the amount of about 10 cwt. *per* acre," being uſeful in protecting and nouriſhing the young graſs-plants in their more tender growth, but they are ſlow in producing their beneficial effects.

On applying, in order to compenſate for an immediate crop of hay, and to thicken the ſward on one part of a field, rotten dung about eight tons to the ſtatute acre, on another part woollen rags chopped at the rate of 100 ſtones to an acre; and on a third a rich marle in the proportion of about 80 tons to the ſtatute acre; Dr. Campbell found, on comparing their effects two years afterwards, that "the dung had produced the greater luxuriance. The woollen rags had a ſuperior verdure, a deeper green: but as they had not yet been properly incorporated with the land, by the graſs growing over them, their ultimate produce could not be aſcertained." An acre of land may, it is ſuppoſed, "be manured by this means for about 3*l.* effectually, ſhould they be found to anſwer the purpoſe." The ſame is the caſe with "the marle, which having covered the ground into which it is not yet carried down by the rains, and the graſs not having grown through, it has at preſent rather done harm than good." On this account, he ſuppoſes that "marle is long in producing its beneficial effects, and the return of which cannot be looked for in leſs than two or three years."

It is evident from theſe facts, that different effects may be produced on graſs-lands by the application of different ſorts of ſubſtances or materials to them in the manner of top-dreſſings after they have been laid down to graſs; and that "where fine herbage is the principal object in view, coal aſhes and compoſts of the earthy kind formed from ſand, mud, ſcrapings of roads, and other ſimilar materials, intimately blended and incorporated with ſuitable proportions of well rotted dung, may be the moſt beneficial applications;" alſo that "the liquor of fold yards and watering may be uſeful in the ſame intention as well as thoſe of reſtoring the graſs-plants or ſwards, and promoting the luxuriance of the crops." But that "where the increaſe of produce is chiefly aimed at, good dung in a well reduced ſtate, tallow-chandlers' graves, night ſoil, chopped rags, ſoot, ſcum of ſugar, and other ſubſtances of the more animal kind, are the moſt effectual and proper." While in the intention "of eſtabliſhing, preſerving, rendering durable the different graſſes, marle, lime, chalk, the folding of ſheep, and other ſubſtances and practices of the ſame ſort, will be the moſt proper for producing ſuch effects." And that in "rendering the lands more firm and ſolid, the three laſt ſubſtances may perhaps be employed with the greateſt ſucceſs and advantage." See MANURE and GRASS *Land.*

LAYING-*out Homeſtalls.* See HOMESTALL and FARM *Buildings.*

LAYING-*out Lands*, the manner of diſtributing the land of a farm or an eſtate. See FARM.

LAYING-*out Roads*, in *Rural Economy*, the mode of planning and laying out the lines of roads. See ROADS.

LAYING-*down*, or *Laying off*, in *Ship Building*, delineating the ſhip to its full ſize from the given draught upon the mould-loft floor, for the purpoſe of making the moulds by which the ſeveral parts of the ſhip is provided.

LAYING, in *Ropemaking*, the cloſing of the ſtrands together, to compoſe the rope.

LAYING-*hook*, the hook on which the ſtrands are all hung together for laying or cloſing.

LAYKAN, in *Geography*, a ſmall iſland in the Eaſt Indian ſea, near the S.W. coaſt of Celebes. S. lat. 5° 52′. E. long. 119° 51′.

LAYMAN, a perſon not engaged in any order of eccleſiaſtics: accordingly, in the diſtribution of the people, *laity* is oppoſed to the *clergy*, and may be divided into three diſtinct ſtates, *viz.* the *civil*, the *military*, and the *maritime.*

LAYMAN, among *Painters*, a little ſtatue, or model, either of wax or wood, whoſe joints are ſo made, that it may be put into any attitude, or poſture. Its chief uſe is for the caſting and adjuſting draperies, for the clothing of figures.

Some call it, after the French, *manequin*, q. d. *a little man.*

LAYMABAMBA, in *Geography*, a town of Peru, in the juriſdiction of Chacapayas.

LAYMOU, a town on the S. coaſt of the iſland of Ceram.

LAYR. See LAIR.

LAZA, in *Geography*, a town of Spain, in Galicia; 18 miles E.S.E. of Orenſe.

LAZANILLA, a town of the iſland of Cuba; 40 miles E.N.E. of Spiritu Santo.

LAZARE BUEY, a town of Spain, in New Caſtile; eight miles from Toledo.

LAZARETTO, a ſmall iſland in the Mediterranean, near the N. coaſt of the iſland of Candy, formerly uſed by the Venetians as a lazaretto, but now deſerted.

LAZARETTO *Vecchio, Il*, a ſmall iſland in the neighbourhood of Venice, formerly called "St. Maria of Nazareth," from a church of that name built by Auguſtin Hermits in 1249. Since the year 1422, all ſhips coming from the Levant, are to perform quarantine in this iſland, for which purpoſe it was provided with the neceſſary inns, which were rebuilt and enlarged in 1565. Here all the ſhips and merchandize are cloſely inſpected, under the direction of a deputation of the ſenate.

LAZARETTO, or *Lazar-houſe*, a public building, in manner of an hoſpital, for the reception of poor ſick.

LAZARETTO, in ſome countries, is an edifice appointed for perſons coming from places ſuſpected of the plague, to perform quarantine. See QUARANTINE.

This is uſually a large building, at a diſtance from any city, whoſe apartments ſtand detached from each other, &c. where ſhips are unladen, and their crew is laid up for forty days, more or leſs, according to the time and place of their departure.

We are indebted to John Howard, eſq., the moſt diſtinguiſhed philanthropiſt, who has appeared in this or any other country, and whoſe ſervices in the cauſe of humanity can never be forgotten, (ſee his biographical article,) for a particular account of all the principal lazarettos in Europe, with plans of the buildings, a detail of their chief regulations, and very important and uſeful hints for their improvement. With this view he determined, towards the end of the year 1785, notwithſtanding the expence and danger which he thus incurred, to viſit them in perſon. Accordingly, the firſt lazaretto which he inſpected was that at Marſeilles, which is ſituated on an elevated rock near the city, at the end of the bay, fronting the ſouth-weſt, and commanding the entrance of the harbour. This is a ſpacious building, and its ſituation renders it very commodious for the great trade which the French carry on in the Levant. Within the lazaretto is the governor's houſe, a chapel, in which divine ſervice is regularly performed, and a tavern, from which perſons under quarantine may be ſupplied with neceſſaries. In order to prevent any communication, that is not allowed by the regulations of the eſtabliſhment, there is a double wall round the lazaretto; and at the gate there is a bell for calling any perſon within this incloſure; and by the number and other modifications of the ſtrokes, every individual knows when he is called. At Genoa, whither Mr. Howard next proceeded, the lazaretto is ſituated on the ſea-ſhore, near the city, detached from other buildings, and encompaſſed by a double wall. Another lazaretto, belonging to the Genoeſe, ſtands on a riſing ground at Varignano, near the gulf or noble port of Specia. At Leghorn there are three lazarettos; one of which is new, having been erected in the year 1778. The lazaretto at Naples is very ſmall; that at Meſſina lies on an iſland near the city. At Naples there are two kinds of quarantine performed; one by ſhips with clean bills of health, and the other by ſhips with foul bills. The firſt, called the petty quarantine, laſts 18 days, and the ſhips which perform it lie at the entrance of the port near the health-office. The other, called the great quarantine, is performed at a lazaretto, ſituated on a peninſula near the city. The health-office at Zante is in the city at the water ſide. The old lazaretto is diſtant about half a mile from the city, and ſituated on a riſing ground near the ſea. There is another called the new lazaretto, which is appropriated to a numerous body of peaſants, who paſs over to the Morea to work in harveſt time; on their return, they perform here a ſeven days' quarantine; and other perſons perform 14 days' quarantine in the old lazaretto. The lazaretto at Corfu is finely ſituated on a rock ſurrounded with water, about a league from the city. The lazaretto of Caſtel-Nuovo, in Dalmatia, is on the ſhore, about two miles from the city; at the back of it there is a delightful hill, which belongs to a convent of friars. Perſons in quarantine, after a few days, are allowed to walk there, and divert themſelves with ſhooting, &c. In order to obtain the moſt complete and ſatisfactory information by performing the ſtricteſt quarantine, our author determined to go to Smyrna, and there to take his paſſage to Venice in a ſhip with a foul bill. He was thus enabled to give a particular account of his reception and accommodation in the new lazaretto of this city, which is chiefly aſſigned to Turks and ſoldiers, and the crews of thoſe ſhips which have the plague on board; and this he thought to be the more neceſſary, as the rules and tariffs of the other lazarettos in Europe have been evidently formed from thoſe eſtabliſhed at Venice. The city of Venice has two lazarettos, appropriated to the expurgation of merchandize ſuſceptible of infection, coming from ſuſpected parts, and for the accommodation of paſſengers in performing quarantine; as alſo for the reception of perſons and effects infected in the unhappy times of peſtilence. The old lazaretto is two miles, and the new about five miles diſtant from the city, both on little iſlands, ſeparated from all communication, not only by broad canals ſurrounding them, but alſo by high walls; they are of large extent, being about 400 geometrical paces in circumference. Of theſe Mr. Howard has given a particular deſcription, with an account of the regulations, and mode of government to which they are ſubject, and a plan of the old lazaretto. At Trieſte there are two lazarettos; one new, but both clean, and a contraſt to thoſe which our author had ſeen at Venice. Of the new one he has given a plan. It is ſurrounded, at the diſtance of about 20 yards, by a double wall, within which are ſeparate burying places for Roman Catholics, Greeks, and Proteſtants. Mr. Howard cloſes his account of the principal lazarettos in Europe, with the outlines of a proper lazaretto, and an engraved ſketch of a plan for its conſtruction. He has alſo ſubjoined, in minute detail, various pertinent remarks reſpecting quarantines and lazarettos in general; together with obſervations on the importance of a lazaretto in England, in its connection with the advantages which our commerce might derive from it. See "An Account of the principal Lazarettos in Europe, &c." by John Howard, F.R.S. Warrington 1789, 4to.

By 39 & 40 Geo. III. c. 80. § 23. is is enacted, that if any ſound perſon ſhall enter any lazaret, he ſhall perform quarantine; and if he ſhall return from thence (unleſs duly licenſed), or ſhall eſcape, or attempt to eſcape, he ſhall be guilty of felony without benefit of clergy. See QUARANTINE.

LAZARETTO, a name given to an hoſpital ſhip, which is for the reception of the ſick, or perſons ſuppoſed to be infectious. It is alſo the name of a place parted off at the fore part of the lower deck in ſome merchant ſhips, for the conveniency of laying up the proviſions, ſtores, &c. neceſſary for the voyage.

LAZAREVA, in *Geography*, a town of Ruſſia, in the government of Irkutſk, on the Lena; 32 miles S.W. of Kirenſk.

LAZARI MORBUS, a name given by ſome writers to the elephantiaſis.

LAZARIA, in *Geography*, a town of Portugal, in the province of Beira; ſix miles S.E. of Lamego.

LAZAROLE, in *Botany*. See MEDLAR.

LAZARUS, ST. or LAZARO, a military order, inſtituted at Jeruſalem by the Chriſtians of the Weſt, when they became maſters of the Holy Land; whoſe buſineſs was, to receive pilgrims under their care, guard them on the roads, and defend them from the inſults of the Saracens.

Some ſay, this order was inſtituted in 1119.

The knights of this order, being driven out of the Holy Land in 1253, followed St. Lewis into France; who, in return for the ſervices they had done him in the Eaſt, confirmed the donations made to them by his predeceſſors, put them into poſſeſſion of ſeveral houſes, commanderies, and hoſpitals, which he had built and endowed with ample privileges, and procured from Alexander IV. in 1255 a bull, confirming the order, and giving them permiſſion to obſerve the rule of St. Auguſtine. In the year 1490, pope Innocent VIII. ſuppreſſed their order, and united them to the order of St. John of Jeruſalem; but the bull iſſued for that purpoſe was not received in France. In 1572, pope Gregory XII. united thoſe of the order in Italy with that of *St. Maurice*, (which ſee,) then newly inſtituted by Emanuel Philibert, duke of Savoy. And, in 1608, this order was united in France to that of our Lady of mount Carmel, which had been inſtituted by Henry IV., and it obtained ſome new advantages from Louis XIV. The knights of St. Lazarus, and thoſe of our Lady of mount Carmel, are allowed to marry, and, at the ſame time, to poſſeſs penſions charged upon eccleſiaſtical livings. The badge of this order is a croſs (like that of Malta) of eight points, made of pure gold, edged with white enamel; the middle, or nucleus, of the croſs is enamelled crimſon, and on it is the image of the bleſſed virgin and child proper; the reverſe has the middle enamelled green, on which is the figure of St. Lazarus; between the rays of the croſs are four fleurs-de-lis, and on each of the points a ſmall gold ball. The croſs is faſtened to a broad crimſon ribbon, and is worn either on the breaſt or ſcarf-wiſe.

Lazarus, *Fathers of St.*, called alſo *Lazarites*, a name given to certain regular clerks of a congregation inſtituted in France, in the ſeventeenth century, by M. Vincent.

They take the denomination from a houſe in the Fauxbourg St. Denis of Paris; they have a ſeminary in Paris, called the ſeminary *des bons enfans*. The vows they make are ſimple, and may be diſpenſed with on occaſion.

LAZICA, in *Ancient Geography*, a country of Aſia, S. of the Phaſis, and N. of Armenia. This country was inhabited by a tribe of people called *Lazi*, who have to this day preſerved their name, and are known among the Turks under the denomination of *Lazas*, and their country is called the country of the Lazas, or the province of Trebizond. In the time of Pliny, Arrian, and Ptolemy, the Lazi were a particular tribe on the northern ſkirts of Colchos. In the age of Juſtinian, they ſpread, or at leaſt reigned, over the whole country. At preſent they have migrated along the coaſt towards Trebizond, and compoſe a rude ſea-faring people, with a peculiar language. As the ſtrength of the Roman empire was gradually impaired, the Romans ſtationed on the Phaſis were gradually withdrawn or expelled about the beginning of the 2d century of the Chriſtian era; and the tribe of the Lazi, whoſe poſterity (as we have ſaid) ſpeak a foreign dialect, and inhabit the ſea coaſt of Trebizond, impoſed their name and dominion on the ancient kingdom of Colchos. Their independence, however, was ſoon invaded by a formidable neighbour, who had acquired, by arms and treaties, the ſovereignty of Iberia. The dependent king of Lazica received his ſceptre from the Perſian monarch, and the ſucceſſors of Conſtantine acquieſced in this injurious claim, which was proudly urged as a right of immemorial preſcription. In the beginning of the ſixth century (A.D. 522.) their influence was reſtored by the introduction of Chriſtianity. After the deceaſe of his father, Zathus was exalted to the regal dignity by the favour of the great king; but the pious youth abhorred the ceremonies of the Magi, and ſought, in the palace of Conſtantinople, an orthodox baptiſm, a noble wife, and the alliance of the emperor Juſtin. The king of Lazica was ſolemnly inveſted with the diadem, and his new patron ſoothed the jealouſy of the Perſian court, excuſing the revolt of Colchos, by the venerable names of hoſpitality and religion. The common intereſt of both empires impoſed on the Colchians the duty of guarding the paſſes of mount Caucaſus, where a wall of 60 miles is now defended by the monthly ſervice of the muſqueteers of Mingrelia. But this honourable connection was ſoon corrupted by the avarice and ambition of the Romans. Degraded from the rank of allies, the Lazi were inceſſantly reminded, by words and actions, of their dependent ſtate. At the diſtance of a day's journey beyond the Apſarus, they beheld the riſing fortreſs of Petra, which commanded the maritime country to the ſouth of the Phaſis. Inſtead of being protected by the valour, Colchos was inſulted by the licentiouſneſs, of foreign mercenaries; the benefits of commerce were converted into baſe and vexatious monopoly; and Gubazes, the native prince, was reduced to a pageant of royalty by the ſuperior influence of the officers of Juſtinian. Diſappointed in their expectations of Chriſtian virtue, the indignant Lazi repoſed ſome confidence in the juſtice of an unbeliever, and after a private aſſurance that their ambaſſadors ſhould not be delivered to the Romans, they publicly ſolicited the friendſhip of Choſroes. The ſagacious monarch diſcerned the uſe and importance of Colchos, and meditated a plan of conqueſt. His ambition was fired by the hope of launching a Perſian navy from the Phaſis, of commanding the trade and navigation of the Euxine ſea, of deſolating the coaſt of Pontus and Bithynia, of diſtreſſing, perhaps of attacking, Conſtantinople, and of perſuading the barbarians of Europe to ſecond his arms and counſels againſt the common enemy of mankind. Accordingly he led his troops to the frontiers of Iberia; they were conducted by Colchian guides through the woods and along the precipices of mount Caucaſus; and a narrow path was formed into a ſafe and ſpacious highway, for the march of cavalry and even of elephants. Gubazes laid his perſon and diadem at the foot of the king of Perſia; his Colchians imitated the ſubmiſſion of their prince, and after the walls of Petra had been ſhaken, the Roman garriſon prevented, by a capitulation, the impending fury of the laſt aſſault. But the Lazi ſoon diſcovered that their impatience had urged them to chooſe an evil more intolerable than the calamities which they ſtrove to eſcape. The monopoly of ſalt and corn was effectually removed by the loſs of thoſe valuable commodities; the authority of a Roman legiſlator was ſucceeded by the pride of an oriental deſpot, who beheld, with equal diſdain, the ſlaves whom he had exalted, and the kings whom he had humbled, before the footſtool of his throne. The adoration of fire was introduced into Colchos by the zeal of the Magi; their intolerant ſpirit provoked the fervour of Chriſtian people; and the prejudice of nature or education was wounded by the impious practice of expoſing the dead bodies of their parents, on the ſummit of a lofty tower, to the crows and vultures of the air. The Lazi were alſo apprized that Nuſhervan had given ſecret orders for aſſaſſinating their king, for tranſplanting them into ſome diſtant land, and for fixing a faithful and warlike colony on the banks of the Phaſis. In theſe circumſtances the Colchians, apprized of the ruin that awaited them, ſolicited the clemency and ſuccour of Juſtinian; who, from motives of policy, determined to expel the Perſians from the coaſt of the Euxine. The ſiege of *Petra* (which ſee) was immediately undertaken. Thus commenced the Colchian or Lazic war, A.D. 549. Notwithſtanding ſome ſplendid advantages obtained by the troops of Juſtinian, the Perſians occupied the paſſes of Siberia; Colchos was enſlaved by their forts and garriſons; they devoured the ſcanty ſuſtenance of the people; and the prince of the Lazi fled into the mountains. At length, the prudence of Choſroes relinquiſhed the proſecution of the Colchian war, under a perſuaſion that it is impoſſible to reduce, or at leaſt to hold a diſtant country againſt the wiſhes and efforts of its inhabitants. The fidelity of Gubazes ſuſtained trials of the moſt rigorous kind; he patiently endured the hardſhips of a ſavage life, and rejected, with diſdain, the ſpecious temptations of the Perſian court. The king of the Lazi had been educated in the Chriſtian religion; his mother was the daughter of a ſenator; he had ſerved 10 years a ſilentiary of the Byzantine palace; and the arrears of an unpaid ſalary were a motive of attachment and of complaint. The lieutenants of Juſtinian prejudiced the emperor againſt him; perſuaded him that a ſecond defection was meditated; an order was iſſued to ſend the king priſoner to Conſtantinople, and a treacherous clauſe was inſerted in it, that he might be lawfully killed in caſe of reſiſtance; and Gubazes, without arms, or ſuſpicion of danger, was ſtabbed in the ſecurity of a friendly interview. In the firſt moment of rage and deſpair, the Colchians would have ſacrificed their country and religion to the gratification of revenge; but the counſel of the wiſer men among them prevailed; and the emperor, anxious to avoid the imputation of ſo foul a murder, commiſſioned a judge of ſenatorial rank to enquire into the conduct and death of the king of the Lazi; and ſome ſatisfaction was granted to an injured people by the ſentence and execution of the meaner criminals. After 20 years of deſtructive though feeble war, Choſroes was perſuaded to renounce his claim to the poſſeſſion or ſovereignty of Colchos and its dependent ſtates. Gibbon's Decl. &c. of Rom. Emp. vol. vii. See COLCHIS, MINGRELIA, and TREBIZOND.

LAZISE, in *Geography*, a town of Italy, in the Veroneſe, on the E. bank of lake Garde, with a harbour, a cuſtom-houſe, and a caſtle; five miles W. of Verona.

LAZIVRAD, in *Natural Hiſtory*, one of the oldeſt names by which we find the lapis lazuli expreſſed in authors.

LAZULI LAPIS, or LAPIS LAZULI; *Azure Stone*, Jam.; *Laſurſtein*, Wern.; *Lazulite* of Haüy and Delameth. (not of Werner); *Pierre d'Azur*, Broch.; *Lazulite outremer*, Brong.; *Lazurus orientalis*, Linn.

The colour of this mineral is azure blue, generally perfect, but alſo paſſing into Berlin blue and ſmalt blue, ſeldom into ſky blue: ſome varieties ſhew a ſlight tint of greeniſh-blue.

It occurs generally maſſive, in rolled pieces and diſſeminated; alſo indiſtinctly cryſtallized. The regular cryſtal form mentioned by Lhermina, and other French mineralogiſts, is that of the garnet dodecahedron; but whether this be the primitive or a ſecondary form, or whether it belong at all to the real azure ſtone, is as yet undecided.

Its internal luſtre is gliſtening and glimmering. Fracture uneven, fine-grained.

Fragments indeterminately angular, more or leſs ſharp-edged, and ſlightly tranſlucent on the edges.

It ſcratches glaſs, and is eaſily frangible.

Specific gravity of the Perſian, (according to Briſſon and Blumenbach,) 2.771; 2.896, (Kirwan); of the Siberian 2.945, (Briſſon).

It is infuſible before the blowpipe; but at a ſtill higher degree of heat its natural colour gives way to a bluiſh-grey, and it runs into a whitiſh enamel. Klaproth obtained a dark-coloured, ſemitranſparent, glaſſy globule, covered with grains of iron. If previouſly calcined it forms a jelly with acids. This latter obſervation was firſt made by Marggraf, who, as early as the year 1788, publiſhed an analyſis of the lapis lazuli, in which he ſhewed that its colour is by no means produced by copper; his analyſis has been confirmed by Klaproth, who found alſo alumine as a conſtituent part, which had been overlooked by his celebrated predeceſſor. Its compoſition, as determined by Klaproth, is the following:

Silica	46	
Alumine	14.50	
Carbonate of lime	28	
Gypſum	6.50	
Oxyd of iron	3	
Water	2	
	100	Klapr. Beitr. i. p. 196.

The reſult of an analyſis given by M. M. Clement and Deſormes, differs from the preceding: they obtained

Silica	34
Alumine	33
Sulphur	3
Soda	22
Loſs	8
	100

They conſider theſe conſtituents as eſſential, and look upon the 0.024 of lime, and the 0.015 of iron, which they have ſometimes found, as accidental ingredients. Theſe chemiſts have alſo obſerved ſome peculiarities in the characters of the earth, mentioned as pure ſilica in the above analyſis. This diſcrepancy in the reſults of the analyſes points out the neceſſity of ſubmitting the lapis lazuli to new chemical examination, which may throw light on the nature of the matter that produces the vivid and intenſe colour of this ſubſtance.

But little is known reſpecting the geognoſtic ſituation of this mineral. We ſee it diſſeminated in, and mixed with, a ſcaly cryſtalline lime-ſtone; alſo with quartz, and moſt frequently with iron pyrites. The Siberian azure ſtone (which is diſtinguiſhed from that called the Perſian by its leſs vivid colour) is ſaid to be the production of a vein near the lake Baikal in Siberia, where it is accompanied with feldſpar, garnets, and pyrites.

The fineſt azure-ſtone is found in China, Great Bucharia, and Siberia. The true lapis lazuli has not yet been found in Europe, except buried under the ruins of Rome. That mentioned by Tournefort, as occurring near Ergeron in Armenia, is probably a blue copper-ore; and that which, as Mr. Pennant ſtates, is found in great quantities in the iſland of Hainan, in the Chineſe ſea, (whence it is ſent to Canton, where they employ it in china painting,) may likewiſe turn out to be different from the true lapis lazuli.

M. Patrin was informed by a dealer in ſtones, whom he met at Ekaterineburg in Siberia, and who had been in Bucharia, that the lapis lazuli occurred there in granite; not in veins, but diſſeminated in all ſorts of proportion: but that it was extremely rare to find maſſes, as thick as one's head, in which the blue generally predominated over the white and the grey. The blocks examined by Patrin had the appearance of being rolled: but he was informed they were taken from the quarry, and that their roundneſs was owing to their friction againſt each other in the carriage; though ſometimes they were found by chance as boulders in torrents, and that theſe were of the moſt vivid blue.

According to Laxmann, who reſided ſeveral years in Eaſtern Siberia, rolled pieces of lapis lazuli are found on the ſhore of the lake Baikal, in a kind of gulf to the ſouthward, called the Koultouk; but he ſearched in vain for the mountains from which theſe blocks had been detached, and he could obtain no information on this ſubject from the Buret Tartars who inhabit that ſavage country. Patrin.

We have omitted mentioning Perſia among the countries that furniſh this valuable ſubſtance, becauſe a traveller well verſed in the ſtudy of precious ſtones denies its ever having been found there. "In the copper-mines of Perſia," ſays Tavernier, "veins of lazur have been found; which colour is much uſed in the country for painting flowers on the ceilings and roofs of apartments. Before theſe were diſcovered, the Perſians had no other lazur than the real kind which comes from Tartary, and is exceedingly dear. The Perſian lazur is a ſort of copper-ore, which, when pounded and ſifted, forms a fine paint, which appears very bright and pleaſant.

After this diſcovery, the Perſians were no longer permitted to purchaſe the Tartarian lapis lazuli; and Mahomet Beg iſſued an order that painters ſhould not uſe any but Perſian blue. This prohibition, however, did not long continue: for the Perſian pigment would not ſtand the effects of the atmoſphere like the real kind, but, in the courſe of time, became dark and of a diſmal colour. Sometimes it was full of ſcales, and would not adhere to the end of a ſoft hair bruſh; on which account it was ſoon neglected as a pigment, and the lapis lazuli of Tartary again introduced.

The lapis lazuli is ſuſceptible of taking a good poliſh, and is therefore uſed for various ornamental and other purpoſes, ſuch as the engraving of gems. (See Gems.) The variety containing diſſeminated pyrites, which the ignorant frequently miſtake for gold, is preferred for moſaic and other inlaid work, &c. Moſt profuſely it was uſed for the laſt-mentioned purpoſe, in the magnificent marble palace which Catherine II. built at Peterſburg for Orlof, her favourite, and which has ſome apartments completely lined with lapis lazuli brought from Great Bucharia.

Maſſes that contain much quartz are leſs eſteemed by the lapidaries, and particularly by thoſe who prepare from it the *ultramarine*, a beautiful blue colour, ſo called becauſe it was originally brought from the trading towns of the Levant. See Ultramarine.

Pliny diſtinctly deſcribes the lapis lazuli, but as a variety of ſapphire.

The lapis lazuli was formerly reckoned of ſome uſe in medicine: it was prepared by calcining and waſhing it ſeveral times; which done, it made an ingredient in the famous confection of alkermes.

The alchemical writers have given us proceſſes for magiſteries, tinctures, and elixirs of lapis lazuli, but they are wholly out of uſe.

The method of making the Venetian counterfeit lapis lazuli is this; melt in a pot, in a glaſs-houſe furnace, equal quantities of the faireſt lattimo, and the whiteſt cryſtalline glaſs; when this is in fuſion, mix into it, by ſmall parcels at a time, the blue ſmalt uſed by the painters; make frequent proofs of the colour, and when it is right let the whole ſtand twelve hours, and then work it. If the metal riſe in the pot, put in a piece of leaf gold to keep it down. This makes a fine pale blue ſubſtance, repreſenting the plain blue parts of the natural lapis lazuli. Neri's Art of Glaſs, p. 117.

A counterfeit lapis lazuli may be alſo made by fuſing ten pounds of either of the compoſitions for hard glaſs (ſee *Colouring of* Glass) with an ounce and a half of zaffer, and half an ounce of magneſia, till a very deep tranſparent blue glaſs be produced. When the maſs is cold, powder it, and mix with it three quarters of a pound of calcined bones, horn, or ivory, by grinding them together: then fuſe this mixture with a moderate heat, till the ingredients are thoroughly incorporated, and form the melted maſs into cakes by pouring it on a clean bright plate of copper or iron. In order to give it veins of gold, mix gold powder with an equal weight of calcined borax, and temper them with oil of ſpike: let the cakes be painted with this mixture with freſh veins as are deſired, and then put into a furnace of a moderate heat.

LAZULITE, or Lasulite of Werner (not that of Haüy, for which ſee the preceding article); *Azurite*, Jameſon; *Siderite*, Tromſdorff.

Colour indigo blue, from which it paſſes into ſmalt blue.

Is found maſſive, diſſeminated, and cryſtallized, as it would appear, in four-ſided and ſix-ſided priſms. Mr. Bernhardi obſerved the ſame forms in the variety from Salzburg, but alſo the regular octahedron with truncated edges, paſſing into the regular rhomboidal dodecahedron. In general, the cryſtals are very indiſtinct and ſmall; and they occur always imbedded.

It is gliſtening and ſhining, and of rather reſinous luſtre.

Longitudinal fracture imperfectly foliated, croſs fracture uneven. Fragments indeterminately angular. Its hardneſs is inferior to that of common feldſpar.

It is brittle, eaſily frangible, and not particularly heavy.

The chemical characters of lazulite, which diſtinguiſh it from blue iron earth, are, according to Klaproth, firſt, its crumbling before the blowpipe into a whitiſh earthy maſs; ſecondly, its giving a clear light wine yellow, glaſſy pearl, with borax, and a tranſparent white pearl with ſalt of phoſphor; and, laſtly, its not being operated upon either by acids, or cauſtic alkali.

Klaproth found the variety from Vorau, near Wieneriſch Neuſtadt, in Stiria, to be compoſed of ſilex, alumine, and iron, but could not, from the ſmallneſs of the quantity he operated upon, aſcertain their proportions. An analyſis of the ſame, by Heim, gave 0.65 alumine, and 0.30 iron.

Tromſdorff's analyſis of the variety from Salzburg has given the following reſults:

Silex	10
Alumine	66
Magneſia	18
Lime	2
Oxyd of iron	2.5
Loſs	1.5
	100

Gehlen's Journal.

Mr. Tromſdorff thinks that alumine and magneſia muſt be conſidered as the eſſential parts of this mineral ſubſtance; hence Mr. Bernhardi is inclined to refer it to the ſpinelle ruby, with which Haüy has already united the ceylanite, or pleonaſt, and which the lazulite reſembles alſo with reſpect to its cryſtallization. But is not the hardneſs of the latter much inferior to that of ſpinelle?

To the above two localities where the lazulite has been found, we may add that of Krieglach; for, indeed, the ſubſtance known by the name of *blue feldſpar of Krieglach* appears to agree in all its characters with thoſe of Stiria and Salzburg. In all theſe places it is found in, and grown together with, white quartz, imbedded in a kind of mica ſlate.

LAZZI, a denomination given by the Saxons to that rank of people who were born to labour, and being of a more ſervile ſtate than our ſervants, becauſe they could not depart from their ſervice without leave of the lord, but were fixed to the land where born and in the nature of ſlaves: hence the word *lazzi*, or *lazy*, ſignifies thoſe of a ſervile condition. See Edhiling.

LE *roy le veut*,
Le *roy s'adviſera*, } See Le Roy.

LEA, in *Ancient Geography*, a ſmall iſland of the Ægean ſea. Pliny.

Lea, in *Geography*, a river of England, which riſes in Bedfordſhire, paſſes by Hertford, Ware, &c. and falls into the Thames a little below London.

Lea *of Yarn*, is uſed in ſome parts of England for a certain quantity of yarn. At Kidderminſter it ought to contain two hundred threads, on a reel four yards about. Stat. 22 & 23 Car. II.

LEACH-Brine, a word uſed by the Engliſh ſalt-workers to expreſs the brine which runs out from the ſalt, when it ſtands in the baſket to drain, immediately after being taken out of the pan; and alſo the liquor left in the pan, when no more ſalt will ſhoot. This is alſo called the *mother-brine*, and *littern*. In the German ſalt-works they always throw this liquor away. In our brine-ſalt works in Cheſhire they always preſerve it, and add it to the next boiling; and in the Newcaſtle, and other ſea-water ſalt-works, they ſave it for the making the bitter purging ſalt, called *Epſom-ſalt*.

LEAD, in *Mineralogy*, *Plumbum*, Lat.; *Plomb*, Fr.; *Bley*, Germ.; *Saturnus*, Alchem. The colour of lead is of a blueiſh-white; when tarniſhed, it becomes yellowiſh-white, then blueiſh, and at laſt blueiſh-black. Luſtre, when untarniſhed, 3; hardneſs, 5; and ſpecific gravity ſomewhere between 11 and 12. According to Briſſon, it was 11.352; and a ſpecimen tried by Gellert, which was found at Freyburg, was eſtimated at 11.445. Next to gold, platina, and mercury, it is the heavieſt metal, being upwards of eleven times heavier than an equal bulk of water. (See *Specific* Gravity.) The heavieſt is reckoned the beſt. It ſtains paper and the fingers. Next to tin, it is the moſt fuſible of all the metals. It is ſoluble in moſt of the acids, though more readily ſo in the nitrous diluted than the others. By expoſure to the moiſt atmoſphere, it ruſts or oxyds. It is malleable and unelaſtic, and its oxyd is eaſily fuſible into a tranſparent yellow glaſs. Having given this general deſcription, we ſhall now conſider the ſeveral combinations under which it is found in nature.

Ores of Lead.

Sp. 1. *Lead Glance*. *Bleiglanz*. This ſpecies contains two ſubſpecies: (1) *Common lead-glance*, the colour of which is of a lead-grey, of different kinds of intenſity; in ſome varieties it inclines to a blackiſh caſt. The lead-grey frequently contains the greateſt proportion of ſilver. It ſometimes preſents ſuperficially an irideſcent tarniſh. It occurs maſſive, diſſeminated, in membranes, in angular pieces, and in grains; ſometimes it is met with reticulated, ſpecular, corroded, and amorphous; ſeldom cylindrical, but often cryſtallized. The cryſtalline form exhibits ſeveral varieties: 1, in the ſhape of a cube, in which the planes are either ſtraight or ſpherical convex; 2, the cube having angles more or leſs deeply truncated; 3, the cube having its edges and angles truncated at the ſame time, but of theſe the latter the moſt deeply; 4, octahedron, either perfect or truncated on all its angles; 5, octahedron having its angles and edges truncated at the ſame time; 6, rectangular four-ſided priſms, acuminated on both extremities by four planes, which are ſet on lateral edges; 7, ſix-ſided priſms, acuminated by four planes; 8, three-ſided tables, in which the terminal planes are bevelled. The cryſtals are uſually ſmall, or at moſt middle-ſized, either grouped on one another, implanted, or ſolitary. The planes of the cryſtals are ſometimes ſmooth, ſometimes druſy, and ſometimes rough. Internally it alternates from ſpecular ſplendent to gliſtening; on the external ſurface it is leſs bright, but its luſtre is metallic. Its fracture is more or leſs perfect foliated, and its fragments are cubical. In maſs it is often compoſed of granular, and rarely of lamellar diſtinct concretions, which are much grown together, and whoſe fracture has a radiated aſpect. It is ſoft, perfectly ſectile, eaſily frangible, and the ſpecific gravity is from 6.2 to 7.8 nearly. Before the blowpipe it flies to pieces, and emits a ſulphureous odour. It is eaſily fuſible, and may be readily reduced on coal before the blowpipe. When it is alternately heated and cooled, it at length diſappears entirely; and if it contain ſilver, a globule of that metal remains behind. According to Vauquelin, lead-glance contains the following ingredients:

	From Kirſchwald, in Deux Ponts.	Kampfſtein.	Eckerberg.	Kantenbach.	Cologne.
Lead	54	69	68.69	64	63.1
Sulphur	8	16	16.18	18	12.
Carbonated lime and ſilex	38	15	16.13	18	19.67
Oxyd of iron	0	0	0	0	3.33
	100	100	101	100	98.1

Dr. Thomſon gives the following as the reſult of his experiments:

Lead	85.13
Sulphur	13.02
Oxyd of iron	0.5
	98.65
Loſs	1.35
	100

Hence, as is evident from the above tables, the proportion of lead varies from 54 to rather more than 85 *per cent*. The proportion of ſilver varies conſiderably alſo; and it appears to have an effect on the external aſpect of the varieties. It ſometimes alſo contains a ſmall portion of iron; and gold has even been found in lead-glance. It is, next to pyrites, the moſt common of metallic ores, and is found in beds and veins in primitive, tranſition, and ſecondary mountains. It occurs almoſt always with blende and calamine, with which it appears to have a ſtrong geognoſtic affinity. It is frequently accompanied with ſilver ores, and ſometimes with copper ores. To mention all the places in which it is found, would be to mention almoſt all the known mineral diſtricts in the world. It is very abundant in Germany, and alſo in many places in our own country. The lead-mines in Britain are ſituated in Cornwall, Devonſhire, and Somerſetſhire, in Derbyſhire, Durham, Lancaſhire, Cumberland, and Weſtmoreland; in Shropſhire, in Flintſhire, Denbighſhire, Merionethſhire, and Montgomeryſhire; at the lead-hills in Scotland, on the borders of Dumfriesſhire and Lanarkſhire, in Ayrſhire, and at Strontian in Argyleſhire. Lead-glance is alſo found at Konigſberg in Norway; in various parts of Lapland, and in Denmark and Sweden; in ſeveral diſtricts of Saxony, Hungary, Tranſylvania; in France, Italy, and Spain. Moſt of the lead of commerce is procured from this ore: it is alſo uſed without farther preparation in the potteries for coarſe work, and alſo in the ſmelting of ſilver ores. Lead-glance is now generally uſed as a ſcientific name, in preference to the leſs ſignificant but common one *galena*, on account of its luſtre, which forms a ſtriking feature in the external aſpect of this mineral. (2) The ſecond ſubſpecies is *compact lead-glance.* The colour of this is very ſimilar to that of the common lead-glance. It occurs in maſs, diſſeminated, and ſpecular. The latter is externally ſmooth, ſhining, and ſplendent; internally it is glimmering, and its luſtre is metallic. Its fracture is even. It acquires a poliſh by friction; its ſtreak is ſhining, almoſt ſplendent; not ſo eaſily frangible as the preceding ſubſpecies; but agrees with it in the other characters. Its ſpecific gravity is about 7.4. It occurs in veins, and is uſually accompanied with the common lead-glance. When the two ſubſpecies occur together, the compact always forms the ſides of the vein, and this probably owing to its having been in a leſs perfect ſtate of ſolution. It is accompanied with black blende, common iron pyrites, copper pyrites, quartz, and heavy ſpar. It is found in the lead-hills in Lanarkſhire, and in Derbyſhire; in divers parts of Germany, and in the valley of Chamouni in Switzerland.

Sp. 2. *Blue lead ore. Blaubleyerz*, Wern. *Mine de plomb bleue*, Broch. The colour of this ſpecies is intermediate between dark indigo blue and lead-grey. It occurs maſſive, and cryſtallized in perfect ſix-ſided priſms, which are uſually ſmall, low, ſometimes bulging, with a ſurface rough and dull. Internally it is feebly glimmering, and its luſtre is metallic. The fracture is even, paſſing into the fine-grained uneven and flat conchoidal. Its fragments are indeterminately angular. It is opaque, gives a ſhining metallic ſtreak, is ſoft, ſectile, and eaſily frangible. Its ſpecific gravity is 5.46. It eaſily melts before the blowpipe, burns with a weak blue flame, emits a ſtrong ſulphureous vapour, and is reduced to pure lead. It is conjectured to be a compound of lead, oxyd of lead, and ſulphur; and is ſuppoſed by Werner to be intermediate between lead-glance and black lead ore. Klaproth diſcovered in it phoſphoric acid. It occurs in veins, accompanied with black lead ore, white lead ore, malachite, radiated copper azure quartz, fluorſpar, and heavy ſpar. It is not often to be met with, and has hitherto been found only at Zſchoppau in Saxony, at Schemnitz in Hungary, and Brittany in France.

Sp. 3. *Brown lead ore. Braun bleyerz*, Wern. *La mine de plomb brune*, Broch. Its colour is hair-brown, of different degrees of intenſity, ſometimes very pale, approaching to grey, and ſometimes it paſſes into a clove-brown. It occurs maſſive, and is cryſtallized in ſix-ſided priſms. The ſurface of the cryſtals is blackiſh and rough. Internally it is gliſtening, and its luſtre is reſinous. The fracture is ſmall and fine-grained uneven, and ſometimes paſſes into ſplintery. It is ſoft, not very brittle, but eaſily frangible. Its ſpecific gravity between 6.60 and 6.98. It melts eaſily before the blowpipe, without being reduced; and, during the cooling, ſhoots into acicular cryſtals. It does not effervefce with acids. According to Klaproth, a ſpecimen from Brittany contained,

Oxyd of lead - -	78.58
Phoſphoric acid -	19.73
Muriatic acid - -	1.65
	99.96
Loſs - - -	4
	100

It is found at Mieſs in Bohemia; alſo in parts of Hungary, Saxony, and Lower Brittany. In Bohemia it is uſually found accompanied with lead-glance, white, black, and green lead ores, copper pyrites, blende, quartz, heavy ſpar, &c. It occurs in veins.

Sp. 4. *Black lead ore. Schwarz bleyerz*, Wern. *La mine de plomb-noire*, Broch. The colour of this ſpecies is greyiſh-black, of different degrees of intenſity. It occurs in maſs, diſſeminated or cellular, or cryſtallized in ſix-ſided priſms. It is externally ſplendent, and internally only ſhining. Fracture ſmall-grained uneven, which ſometimes paſſes into imperfect conchoidal and ſplintery. Fragments indeterminately angular; ſtreak greyiſh white; rather brittle; eaſily frangible. Specific gravity about 5.8. Before the blowpipe it decrepitates, and is quickly reduced to a metallic globule. According to Lampadius it conſiſts of,

Lead - - -	72
Oxygen - - -	7
Carbonic acid - -	18
Carbon - -	2
	99
Loſs - -	1
	100

It occurs in veins, and is almoſt always accompanied with white lead ore and lead-glance, and uſually in the upper part of veins, and in new lead-glance formations. It very frequently encruſts lead-glance, and is covered with white lead ore, and ſometimes by green lead ore. It is found in the lead-hills of Scotland; in different parts of Bohemia, Saxony, Salzburg, Lower Brittany, and in Siberia. Previouſly to the analyſis of Lampadius, Haüy ſuppoſed it was a phoſphate of lead; and Werner ſuſpected that it was a compound of lead, carbonic, and ſulphuric acids.

Sp. 5. *White lead ore. Wies-bleyerz*, Wern. *Mine de plomb blanche*, Broch. This is a carbonate of lead: its colour is a greyiſh or yellowiſh-white, with very many different ſhades. It occurs maſſive, diſſeminated, but moſt frequently in a cryſtallized ſtate. The chief varieties are, 1, the cuneiform octahedron; 2, the pyramidal dodecahedron; 3, the preceding, with a ſix-ſided priſm interpoſed between the pyramids; 4, the ſame as variety 3, with ſummits of the terminal pyramids replaced by a ſix-ſided plane; 5, a ſix-ſided priſm, with ſummits compoſed of four planes; 6, the ſame, with ſummits compoſed of ſix planes. The cryſtals are uſually ſmall. Externally, it is ſpecular ſplendent, ſeldom gliſtening: internally, it alternates from highly ſplendent to gliſtening, and its luſtre is adamantine, inclining ſometimes to ſemi-metallic, and ſometimes to reſinous. The fracture is commonly ſmall conchoidal, but it frequently paſſes into fine-grained uneven, and even into fine ſplintery. Fragments indeterminately angular. It alternates from tranſlucent to tranſparent, and is duplicating. It is ſoft, brittle, and eaſily frangible. Its ſpecific gravity is from 6 to 7.24, according to the different ſpecimens that have been analyſed. Before the blowpipe it flies to pieces, becomes red, yellow, and laſtly melts into a globule of metallic lead. It makes a ſtrong effervefcence with acids. Its ſurface becomes black, when expoſed to the vapour of ſulphuret of ammonia. Its conſtituent parts are as follow:

From Siberia, analyſed by Macquer.		From the Lead-hills in Scotland, analyſed by Klaproth.	
Lead - -	67	Lead - -	77
Carbonic acid -	24	Carbonic acid -	16
Oxygen -	6	Oxygen -	5
Water - -	3	Water . -	2
	100		100

But according to two other able chemiſts, they are as follow :

From Zellerfeld.	Firſt Analyſis.	Second Analyſis.
Lead - -	81.2	80.25
Carbonic acid -	16.	16.0
Oxyd of iron . -	0.3	0.18
Alumine - -	0.0	0.75
Lime - -	0.9	0.50
	98 4	97.68
Loſs - -	1.6	2.32
	100	100

From Ildekanſkoi.	Firſt Analyſis.	Second Analyſis.
Lead - -	74.0	77.50
Carbonid acid -	15.0	15.0
Oxyd of iron -	0.25	1.25
Alumine -	1.0	0.0
Lime - -	1.0	0.0
Silicia - -	0.25	0.50
Water - -	4.0	0.0
	95.50	94.25
Loſs - -	4.5	5.75
	100	100

It is almoſt always accompanied with lead-glance, and occurs in a kind of repoſitory. It occurs in veins that traverſe tranſition rocks; though it is found with different minerals, in different parts of the world. It is not a rare mineral, but is ſeldom found in ſufficient quantities to make it worth while to ſeparate it from the adhering ſpar, for the purpoſe of ſmelting. The fineſt ſpecimens of this ore that are found in Britain come from the mines of Derbyſhire, the Lead-hills in Scotland, and Minera in Denbighſhire. It is alſo found on many parts of the continent.

Sp. 6. *Green lead-ore. Grün Bleyerz*, Wern. *La mine de plomb verte*, Broch. The colour of this ſpecies is graſs-green, which paſſes on through the ſeveral ſhades into greeniſh-white. The olive and piſtachio-green colours are the moſt common. It occurs maſſive, ſometimes reniform, but moſt commonly cryſtallized. The varieties are, 1. Six-ſided priſms, having ſometimes the lateral and terminal edges truncated. 2. When the lateral edges of the priſm converge towards their extremities, an acute, double, ſix-ſided pyramid is formed. The cryſtals are ſmall; externally ſmooth and ſhining; internally gliſtening; the luſtre is reſinous. Fracture ſmall-grained, uneven. Fragments angular and blunt-edged: it is ſoft, rather brittle, and eaſily frangible. Specific gravity 6.27 to 6.94. Before the blowpipe it does not fly to pieces: it becomes white and melts eaſily into a greyiſh-globule, but without being reduced even with charcoal. It diſſolves in acids without effervescence. Its conſtituent parts are, according to

Fourcroy	
Oxyd of lead -	79
Phoſphoric acid -	18
Oxyd of iron -	1
Water - -	2
	100

Vauquelin	
Lead - -	45.18
Phoſphoric acid -	18.17
Oxygen - -	4.05
Silica - -	32.
	99.40
Loſs -	60
	100

Green lead-ore is, when of a pale colour, apt to be confounded with the preceding ſpecies; but it may be diſtinguiſhed by the following characteriſtics: 1. The fracture in this ſpecies is fine-grained, uneven, but in white lead-ore it is more or leſs conchoidal. 2. Its luſtre is reſinous. 3 It is harder than white lead-ore. 4. It is of a greater ſpecific gravity. 5. Its cryſtals are often aggregated: and 6. Its priſms are generally ſhorter than thoſe of white lead-ore.

Sp. 7. *Red lead ore. Roth Bleyerz*, Werner. *Red lead-ſpar*, Kirwan. *La mine de plomb rouge*, Brochant. The colour of this mineral is of a hyacinth-red, ſometimes inclining to aurora, or morning red. It occurs moſt commonly cryſtallized in broad four-ſided priſms, and but rarely maſſive, diſſeminated, or in membranes. The cryſtals are middle-ſized: the ſurface of the cryſtals is uſually ſmooth, ſometimes longitudinally ſtreaked. Both externally and internally it is ſplendent, and its luſtre is intermediate between adamantine and reſinous. The fracture is foliated, and the fragments indeterminately angular. It ſometimes inclines to tranſparency. It is ſoft, and in the intermediate ſtate between very brittle and ſectile: eaſily frangible, and its ſpecific gravity is ſomewhere between 5.6 and 6.0. It melts before the blowpipe into a blackiſh ſcoria, and may be partly reduced with borax. Specimens have been analyſed by

Vauquelin	
Lead - -	57.10
Oxygen - -	6.86
Chromic acid -	36.04
	100

Thenard	
Oxyd of lead -	64
Chromic acid -	36
	100

This mineral occurs in veins in gneiſs and mica ſlate, where it is accompanied with lead-glance, green lead-ore, iron pyrites, brown iron-ſtone, native gold and quartz. It is found in Siberia; at Annaberg, in Auſtria; and at Upper Faucigny, in Savoy. It is much uſed as a pigment, on account of its beautiful colour, its durability in the atmoſphere, and its mixing readily with oil.

Sp. 8. *Yellow lead-ore. Gelbes Bleyerz*, Werner. *Yellow lead-ſpar*, Kirwan and Hatchett. *Plomb molybdatè*, Haüy. *La mine de plomb jaûne*, Brochant. In this ſpecies, which has long been known to mineralogiſts, the lead is mineralized by a particular metallic acid, called the molybdic acid. It occurs ſometimes maſſive, more commonly cryſtallized in ſmall cryſtals; the forms of which are rectangular tables of four ſides, or of eight ſides, bevelled; the cube, octahedron, equiangular eight-ſided table, and double eight-ſided pyramid. The tables are uſually broad and thin, and alternate from ſmall to very ſmall, but are ſeldom middle-ſized.

They are ſometimes united, frequently interſect one another, and form thus the cellular external ſhape. Its colour is wax-yellow, and its luſtre diſtinctly waxy: it is tranſlucent, ſoft, and eaſily frangible. Its ſpecific gravity is rather more than 5. It decrepitates before the blowpipe, then melts into a globule of a grey colour, in which are diſſeminated particles of metallic lead. It gives a blueiſh-white colour to borax: it occaſionally produces a glaſs, which is greeniſh-blue, and ſometimes deep blue. Its conſtituent parts are, according to

Klaproth's Analyſis

Oxyd of lead -	64.42
Oxyd of molybdena	34.25
	98.67
Loſs	1.33
	100

Hatchett's Analyſis

Oyxd of lead -	58.40
Molybdic acid -	38.0
Oxyd of iron -	2.08
Silica - -	0.28
	98.76
Loſs	1.24
	100

Macquart's Analyſis

Lead - -	58.75
Molybdena -	28.0
Oxygen - -	4.76
Carbonate of lime -	4.50
Silica - -	4.
	100.01

It occurs on compact lime-ſtone which is much traverſed by veins of calc-ſpar, and is accompanied with molybdena and yellow lead-earth; ſometimes, alſo, with lead-glance, white, black, and green lead-ore, calamine, blende, the calc and fluor ſpars. It is found principally in Carinthia; though it is met with at Annaberg, in Auſtria; alſo in Hungary, Sileſia, Saxony, Burgundy, in France, and other places.

Sp. 9. *Lead vitriol, or ſulphate of lead.* *Bléi vitriol,* Werner. *Native vitriol of lead,* Kirw. *Plomb ſulphaté,* Haüy. *Le vitriol de plomb natif,* Broch. The colour of this mineral is yellowiſh grey, paſſing to the greyiſh-white; the lighter varieties incline much to white. It occurs only in cryſtals, the form of which is rectangular octahedrons with obtuſe pyramids. The pyramids are often variouſly truncated. Externally it is ſhining; internally it is ſplendent. The fracture is compact; it is more or leſs tranſparent: is ſoftiſh, rather brittle, and its ſpecific gravity is about 6.3. It is eaſily reduced, when expoſed to the flame of the blowpipe; and is inſoluble in the nitrous acid. Specimens have been analyſed by Klaproth; the conſtituent parts are as follow: *viz.* of that from

	Angleſea	Wanlock-head
Oxyd of lead -	71	70.50
Sulphuric acid -	24.8	25.75
Water of cryſtallization	2	2.25
Oxyd of iron -	1	
	98.8	98.50
Loſs - -	1.2	1.5
	100.	100.

It occurs in lead-glance veins at Wanlock-head, and in brown iron-ſtone in the iſland of Angleſea. It has alſo been found in lead-glance veins in Andaluſia in Spain.

Sp. 10. *Lead-earth.* *Bleyerde,* Wern. is divided into two ſub-ſpecies; 1, the coherent; and 2, the friable. 1. The coherent, or indurated, named *Verhärtete bleierde* by Werner, and *Le plomb endurci* by Brochant, is of a yellowiſh or greeniſh-grey colour. It is ſometimes of a ſmoky-grey, and ſometimes of a light browniſh-red. It occurs in maſs. Internally it is glimmering, paſſing into gliſtening, and its luſtre is reſinous. Its fracture is fine-grained, uneven, paſſing into fine ſplintery and earthy, alſo into flat conchoidal. It is opaque, or, at moſt, ſlightly tranſlucent on the edges. It gives a browniſh ſtreak, is ſoft, paſſing into friable, not brittle, but inclining to ſectile, and heavy. It is eaſily reduced before the blowpipe, effervesces with acids, and becomes black with ſulphuret of ammonia. It does not appear to have been hitherto analyſed, but is ſuppoſed to be in intimate combination with white lead ore, alumine, and lime. It occurs with the other ores of lead, and is uſually accompanied by iron pyrites, malachite, and quartz. The yellow varieties are found in Derbyſhire, in ſome parts of Germany, at La Croix in France, and at Nertſchinſk in Siberia. The other varieties are to be met with at Wanlock-head, in the Lead-hills in Scotland, in Saxony, Sileſia, Poland, &c. 2. *Friable lead-earth.* *Zerreibliche bleierde,* Werner. *Le plomb terreux friable,* Brochant, is of a yellowiſh-grey, approaching to ſulphur-yellow. It occurs friable; ſometimes maſſive and diſſeminated. It is compoſed of dull duſty particles, which are more or leſs cohering, and ſoil a little. It has a rough feel, and is heavy. It occurs on the ſurface, or in the hollows of other minerals, and is uſually accompanied with lead-glance, and other ores of lead, and is found at Wanlock-head, and the Lead-hills of Scotland, at Zellerfeld in the Hartz, near Freyberg, in the electorate of Saxony, in the mountains of Cracow, Poland, at La Croix in France, and at Bereſowſkoi in Siberia. It is in ſome inſtances obſerved paſſing into ſolid lead-earth, and is probably formed by the decompoſition of lead-glance, as it is frequently met with as a cruſt upon it.

Sp. 11. Another ſpecies is denominated a triple ſulphuret of lead. Its colour is dark-grey inclining to black. It occurs cryſtallized. Its primitive figure is a rectangular tetrahedral priſm, beſides which it preſents the following varieties. 1. The primitive cryſtal with ſolid angles replaced by triangular planes. 2. The ſame with lateral edges replaced by rectangular planes. 3. The ſame terminated by a very low and deeply truncated tetrahedral pyramid. 4. Four priſms with deeply truncated dihedral ſummits joined together at their baſes, forming a rectangular croſs. The cryſtals are large and middle-ſized, with a ſplendent metallic luſtre both externally and internally. Its fracture is coarſe-grained and uneven. It is brittle and eaſily frangible. It leaves a faint black trace when rubbed on paper. Specific gravity 5.8 nearly. When ſuddenly heated before the blowpipe it crackles and ſplits; but if gradually heated it melts, and on cooling forms a globule of a dull metallic grey colour. According to an analyſis made by Mr. Hatchett, it conſiſts of

Sulphur - - -	17
Lead - - -	42.62
Antimony - - -	24.23
Copper - - -	12.8
Iron - - -	1.2
	97.85
Loſs - - -	2.15
	100

It is found in a mine at Huel-Boys in Cornwall.

The exiſtence of native lead, which has been maintained by ſeveral mineralogiſts, is extremely doubtful. What has been regarded as a native oxyd of the metal, appears to be rather an earthy carbonate.

Aſſay and Analyſis of Lead Ores.—The moſt common lead ore, galena, is very eaſily analyſed, ſince it is in general compoſed of ſulphur and lead only. Thoſe ores in which the lead is combined with other metals, ſuch as ſilver, copper, antimony, biſmuth, or arſenic, are attended with more difficulty in their analyſis. If the analyſis be made with a view to ſmelt the ore, it will be proper to make the aſſay in the dry, as well as the humid way. The latter will not only give the proportion of lead, but its other conſtituents, by which the ſmelter is directed to uſe the moſt proper fluxes. When, however, the analyſis is made for publication, it ſhould be made by the humid proceſs only, and with the greateſt accuracy.

The common galena may be analyſed by diſſolving 100 grains in dilute nitric acid: the lead will be diſſolved, and the reſiduum will be ſulphur, which may be ſeparated by waſhing. The ſolution of lead may now be treated with ſulphat of ſoda. The lead will be precipitated, with the ſulphuric acid in the ſtate of ſulphat of lead. The precipitate being collected, and dried at the temperature of 212, muſt be weighed, allowing for every 100 grains of the ſulphat 69.85 of lead. The lead may be precipitated from the nitric acid, in the metallic, by means of a plate of zinc. The metallic lead will adhere to the plate, and may be ſcraped off and ſqueezed into lumps, after being waſhed in clean water. The lead obtained by this proceſs is ſuppoſed to contain a ſmall portion of the zinc. It will, therefore, be proper to digeſt the metallic precipitate, for a ſhort time, in very dilute ſulphuric acid, and then waſh the lead with warm diſtilled water.

A ſpecimen of galena containing ſilex was analyſed by Vauquelin.

By ſlowly roaſting a portion of this ore, he found it loſt 12 *per cent.* of ſulphur. Another portion was treated with dilute nitric acid, which diſſolved the lead. The reſiduum was heated to redneſs, by which the ſulphur was volatilized, leaving behind 16.76 of ſulphur. To the ſolution in nitric acid was now added ſulphat of ſoda, when the lead was precipitated in the ſtate of ſulphat. He obtained 63.1 *per cent.* of lead, allowing 100 of ſulphat to contain 75.72 of metallic lead. He then ſaturated the liquor with ammoniac, which threw down 3.3 *per cent.* of oxyd of iron, and obtained from the remaining liquor, by carbonat of potaſh, 3 *per cent.* of carbonat of lime.

A ſpecimen of lead ore from Cornwall, conſiſting of lead, ſulphur, antimony, and copper, was analyſed by Mr. Hatchet.

To 200 grains of the ore, in a matraſs, he added 2 oz. of muriatic acid. While the mixture was heated, he added, from time to time, ſmall quantities of nitric acid, juſt to keep up an efferveſcence, till the metals were oxydated and diſſolved. After being gently heated for an hour, the ſolution was complete, and of a green colour, owing to the preſence of the copper. The ſulphur was ſeparated and floated on the liquid, which being collected was digeſted in muriatic acid. When dried it weighed 34 grains.

The above ſolution, and the muriatic acid in which the ſulphur was digeſted, were mixed together, and diluted with ſix pints of diſtilled water. The mixture became turbid and milky, and on being filtered while hot, the pure oxyd of antimony was left on the filter, which being waſhed with more boiling water, was dried, and found to weigh 63 grains.

When the liquid, which had paſſed through the filter, including the waſhings, was cold, ſome muriat of lead was depoſited in cryſtals, owing to the ſparing ſolubility of that ſalt. The whole was evaporated to a ſmall quantity of liquid, ſufficient to hold the copper in ſolution. This liquid, being ſeparated from the ſolid muriat of lead, contained a ſmall portion of that ſalt. A few drops of ſulphuric acid being added, however, ſeparated it in the ſtate of ſulphat of lead. The maſs of muriat of lead left by evaporation, was now re-diſſolved in boiling water, and decompoſed by ſulphat of ſoda. The ſulphat of lead here formed was added to that produced from the ſeparated liquid, which, on being waſhed and dried on a ſand bath, weighed 120.2 grains. The green liquid containing the remainder of the mineral was now ſaturated with ammonia and an exceſs added, which rediſſolved the oxyd of copper, forming a vivid blue ſolution. A quantity of oxyd of iron now ſubſided, which, when ſeparated, weighed 2.4 grains.

The ſolution of copper was now evaporated nearly to dryneſs, and boiled with pure potaſh, when the black oxyd of copper was left at the bottom of the veſſel, which being waſhed, ſeparated, and dried, weighed 32 grains.

In this analyſis the ſulphur is the only ſubſtance ſeparated in a ſtate of purity. The 63 grains of oxyd of antimony, allowing it to contain 23.08 *per cent.* of oxygen, would afford 48.46 of antimony. The 120.2 grains of ſulphat of lead, allowing 70.9 to the 100, will give 85.22 of metallic lead. The 32 grains of oxyd of copper, reckoning the black oxyd of that metal to contain 25 in the 100, will yield 24 grains. If we reckon the 2.4 grains of iron at 1.2 of metal, the analyſis will ſtand as follows, when reduced to 100.

Sulphur - - -	17
Antimony - - -	24.46
Lead - - -	42.61
Copper - - -	12
Iron - - - -	1.2
	97.27
Loſs - - -	2.73
	100

If ſilver had been a conſtituent of the ore, the above proceſs would have been a little varied. In the firſt operation the ore would have been diſſolved in dilute nitric acid, the antimony would have been in part diſſolved, and left at the bottom of the veſſel in the ſtate of white oxyd. When the ſulphur and the antimony, by dilution with water, are ſeparated, muriatic acid muſt be added. The lead will be in part, and the ſilver entirely precipitated. The muriat of lead may be ſeparated, by boiling water, from the muriat of ſilver. The weight of ſilver may be rated at 77.52 in the 100 of muriat. The other metals may be ſeparated as in the laſt proceſs. Arſeniated lead ore requires a ſtill different treatment. It was analyſed by Vauquelin as follows: 100 parts of ore were roaſted for half an hour, occaſionally adding a little tallow, which ſerved to reduce the arſenic and facilitate its eſcape. By this treatment it loſt 38 parts, which was preſumed to be oxyd of arſenic; the remaining maſs was boiled with ſtrong muriatic acid for an hour. A quantity of oxymuriatic acid eſcaped, the liquid aſſumed a red colour, and white needle-formed cryſtals of muriat of lead were depoſited. The lead by this means was converted into a muriat, which being diſſolved in boiling water, and treated with ſulphat of ſoda, affords ſulphat of lead. This precipitate, being ſeparated and dried, weighed 25 parts, which gave 20.2. of lead, allowing 80.8 to the 100 of ſulphat. The liquid thus freed from lead being treated with pure ammonia, afforded a precipitate equal to 39 grains, conſiſting of oxyds of iron and arſenic. The circumſtance of oxymuriatic acid being given out, when the oxyd of lead was digeſted with muriatic, induced Vauquelin to conclude that it was in a ſtate of peroxyd.

In this account the laſt part of the proceſs appears incomplete, in the circumſtance of the oxyds of arſenic and iron being mixed together. The former of theſe may be ſeparated, boiling the two in nitromuriatic acid, which will convert the oxyd of arſenic into arſenic acid, and which may be ſeparated by waſhing.

Carbonat of lead was analyſed by Klaproth by the following proceſs. He introduced 100 grains of this ore into 200 grains of nitric acid, and diluted it with 300 of water. The carbonic acid eſcaped in the form of gas, making a loſs of weight equal to 16 grains. Into this ſolution was ſuſpended a cylinder of zinc. In 24 hours the lead was precipitated in the metallic ſtate, which weighed 77 grains, equal to 82 of oxyd.

Sulphat of lead has been analyſed by the ſame chemiſt: 100 grains of the ore were firſt roaſted at a red heat, and loſt two grains, ſuppoſed to be water. The remainder was then heated to redneſs in a platina crucible, with 400 grains of carbonat of potaſh. By this treatment a yellow reddiſh maſs was obtained, which, on being digeſted in water and filtered, afforded 72 grains of oxyd of lead. This was next diſſolved in nitric acid, leaving a reſiduum of one grain of oxyd of iron. A cylinder of zinc was introduced into the ſolution, which precipitated the lead in the metallic form, in quantity equal to $66\frac{1}{2}$ grains.

The alkaline matter which paſſed through the filter contained the ſulphuric acid of the ſulphat of lead, with exceſs of alkali; this exceſs was ſaturated with nitric acid, and the liquid acetat of barytes was added, which cauſed a precipitation of 73 grains of ſulphat of barytes: this he allows to contain 25 grains of real ſulphuric acid. Hence the reſult is

Oxyd of lead	72
Sulphuric acid	25
Oxyd of iron	1
Loſs by roaſting	2
	100

We have alſo the analyſis of phoſphat of lead by the ſame ingenious experimenter.

One hundred grains of this native ſalt were diſſolved in dilute nitric acid; into this ſolution nitrat of ſilver was dropped till it ceaſed to precipitate: the inſoluble ſubſtance, which was muriat of ſilver, weighed 11 grains, indicating 1.7 grains of muriatic acid. Sulphuric acid was now added to precipitate the lead. The ſulphat of lead weighed 106 grains, which contained 78.4 of oxyd of lead. The exceſs of ſulphuric acid was ſeparated by adding nitrat of barytes, and then nearly neutralized with ammonia. On adding acetat of lead, 82 grains of phoſphat of lead were precipitated, containing 18.37 of phoſphoric acid: muriatic acid was now added to the ſolution, and evaporated to dryneſs. The dry maſs was digeſted with alcohol, which diſſolved the muriat of iron, the preſence of which was detected by pruſſiat of potaſh, and was found equal to $\frac{1}{10}$th of a grain of the oxyd.

Molybdat of lead was analyſed by Mr. Hatchett. He boiled a quantity of the ore in ſulphuric acid, till it would diſſolve no more. This formed ſulphat of lead, while the molybdic acid was diſſolved in the ſulphuric acid. The ſulphat of lead was boiled with carbonat of ſoda, and was afterwards waſhed: this appeared to be carbonat of lead. The nitric acid diſſolved all but a ſmall quantity, which was found to be ſilex. The lead was next precipitated by ſulphuric acid. The ſolution of the molybdic acid in the ſulphuric acid was diluted with 16 parts of water, and ſaturated with ammonia; when a little oxyd of iron was precipitated. The ſolution was now evaporated to dryneſs, and a ſtrong heat given to ſublime the ſulphat of ammonia. The remaining maſs, when boiled with nitric acid to dryneſs, afforded molybdic acid of a yellow colour.

Although the analyſis of the different ores may have pointed out general methods for the ſeparation of lead from other metals, ſome hints may, neverthleſs, be neceſſary for the analyſis of the alloys of lead. Lead is moſt frequently alloyed with tin, ſilver, antimony, or biſmuth. The alloy of tin and lead may be diſſolved in dilute nitric acid. The lead will be entirely taken up. Moſt of the tin will be precipitated in the ſtate of white oxyd, by the addition of water. If ſulphuric acid be now dropped into the ſolution till the precipitation ceaſes, the lead, in a ſtate of ſulphat, will be obtained, while the remaining tin will be diſſolved, which may afterwards be precipitated by an alkali. Lead may be ſeparated from ſilver, when both thoſe bodies are diſſolved in pure nitric acid. The ſilver may be precipitated in the ſtate of muriat, by adding muriat of ſoda. The lead may be afterwards precipitated by ſulphuric acid.

To ſeparate lead from biſmuth, diſſolve the alloy in nitric acid, then add a large quantity of water, which will precipitate the greateſt part of the biſmuth in the ſtate of white oxyd. The lead muſt then be precipitated by ſulphat of ſoda, and the remainder of the biſmuth by potaſh.

The ſeparation of lead from antimony may be performed by the ſame proceſs uſed for ſeparating tin.

It may be here noticed, that in all caſes where ſulphur is preſent in the ore or ſubſtance to be analyſed, if the nitric acid be employed, it muſt be very dilute, otherwiſe the ſulphur will combine with its oxygen, forming ſulphuric acid. In order to know when this takes place, the ſolution muſt be teſted with nitrat of barytes. If, however, lead be preſent, it will combine with the ſulphuric acid as it is formed, and fall to the bottom of the veſſel.

Reduction of the Ores, or ſmelting of Lead.—Two proceſſes are employed for the ſmelting of lead, the one by means of a blaſt furnace, called an ore-hearth, and the other by means of a reverberatory furnace. The latter is uſed throughout Derbyſhire and North Wales, and is undoubtedly the beſt, where coal is not very ſcarce. In the former of theſe methods the ore and the fuel are mixed together, and expoſed to the blaſt. The heat diſſipates the ſulphuret, the ore being the common ſulphuret of lead or galena. A portion of the lead is oxydated, which facilitates the vitrification of the earthy parts of the ore, and of the fuel. Theſe together conſtitute the ſlag or ſcoria. The metallic lead falls into the lower part of the hearth, and is defended from the oxygen of the blaſt by the ſcoria, which is fluid upon its ſurface. The liquid lead is let off from time to time, always retaining a portion for the ſcoriæ to float upon. When the whole of the lead is to be drawn off, the blaſt muſt be ſtopped, and ſome lime thrown upon the liquid ſcoria, which renders it concrete, while the lead, being ſtill liquid, can be run off.

The reverberatory furnace employed for ſmelting lead is made on the ſame plan with thoſe commonly uſed for puddling iron, differing in ſize, and a few other particulars. The fire is made at one end, and the flame plays over the hearth, entering an oblique chimney at the end, which terminates in a perpendicular one, of conſiderable height. The length of the hearth, from the place where the fire enters, to the chimney, is 11 feet; two feet of this length next the fire conſtitutes the throat of the furnace; the width of the ſame is four feet, and its depth about ſix inches; the length of the fire-place is four feet, equal to the width of the throat; its width two feet, and depth three feet, from the grate up to the throat of the furnace. The reſt of the hearth is a concave ſurface, nine feet long, four and a half feet wide at the throat of the furnace, ſeven feet four inches wide at the diſtance of two feet from the throat, ſeven feet two inches in the middle of the hearth, five feet eleven inches at two feet diſtance from the chimney, and two feet ten where the flame enters the chimney at two apertures, each ten inches ſquare. Theſe apertures terminate in the oblique part of the chimney, the ſection of which is 16 inches ſquare, which communicates with the main chimney, the ſection of which is twenty inches ſquare, ſuppoſing a ſtraight horizontal line, drawn from the lower plane of the throat of the chimney to the oppoſite ſide of the furnace; the loweſt part of the concave hearth, which is in the middle of this cavity, is nineteen inches below this line, the roof of the furnace being ſeventeen inches above the ſame line: the reſt of the hearth is conformably concave.

On each ſide of the furnace are three openings, each about ten inches ſquare, provided with iron doors, to be removed as occaſion may require. They are arranged at equal diſtances from each other, between the commencement of the hollow hearth and the entrance into the chimney. The lower part of theſe apertures is on a level with the horizontal line above alluded to, being for the purpoſe of ſtirring and raking the ore, &c. Beſides the larger openings there are two ſmall apertures, one below the large middle opening, and nearly on a level with the bottom of the furnace; the other under that next to the chimney, at ſome diſtance above the firſt aperture. The firſt is a tap-hole for the lead, and the ſecond for the ſcoria. The ore is introduced by a veſſel in the ſhape of a hopper, placed in the roof of the furnace.

Previous to the ore being ſmelted, it requires to be ſeparated as much as poſſible from the earthy matter in which it is imbedded. Although galena, which is the ore uſed for ſmelting, is moſt frequently accompanied by ſulphat of barytes, fluats and carbonat of lime, it is found to exiſt in cryſtallized diſtinct maſſes, and can be ſeparated from it by mechanical means to a tolerable extent. The whole of the ore, with the earthy matter, is pounded to a certain degree with hammers, and is chiefly performed by women. In ſome places, however, it is broken down by paſſing it through iron rollers preſſed together by great weights. After the ore has been thus reduced, the earthy matter is ſeparated by waſhing. The powder to be waſhed is introduced into a ſieve or riddle, and placed in a large tub full of water. By a certain motion given to the riddle, the lighter or earthy parts are thrown over the edge of the ſame, while the galena, by its greater ſpecific gravity, is retained. This proceſs requires great dexterity, which can be acquired by experience only. There are, however, ſome impurities which cannot be ſeparated by this mechanical proceſs, and are generally ſmelted with the ore. Theſe are *blind*, or *black-jack*, called by the ſmelter *mock* ore; pyrites, or ſulphuret of iron, named *Brazil* by the workmen. When the ore abounds much with theſe ſubſtances, the proceſs of ſmelting is more difficult, and requires an extra aſſiſtance of flux to reduce it.

In the ſtate above deſcribed, the ore is introduced at the hopper in the middle of the roof of the furnace, and ſpread upon the concave hearth, to expoſe it as much to the flame as poſſible, in order to facilitate the eſcape of the ſulphur. This ſhould be performed by a long continued heat which is not violent, in order that the ſulphuret itſelf may not be volatilized, an effect which, more or leſs, always takes place. The moment the ſulphur has left the lead it begins to combine with oxygen. The oxyd of lead, thus formed, combines with the earthy matter, which it renders ſo fuſible as to become liquid upon the ſulphur of the melted lead, and defends it from the future action of the oxygen. At this ſtage of the proceſs the fire is raiſed to ſeparate as quickly as poſſible the melted lead from the liquid ſcoria. The latter is now let off at the upper tap hole, leaving a ſmall portion ſtill upon the lead to preſerve it from the air. The fire at this period is lowered, and a quantity of coal-ſlack thrown in upon the melted maſs. This ſerves as well to facilitate the cooling, and to cauſe the reduction of ſome oxyd of lead, which alſo tends to ſtiffen the melted ſcoria. This laſt effect, however, is not produced ſufficiently, till a quantity of powdered lime is thrown into the furnace. By this treatment the remaining ſcoria becomes concrete, and is then broken to pieces and puſhed to the oppoſite ſide by means of a rake, and taken out of the furnace at the different openings on the ſame ſide. The liquid lead is now let out, at its proper aperture, into a large iron pan, or ciſtern, from whence it is laded into moulds to caſt into pigs. The furnace is now ready to be charged again. When the ore abounds with much impurity, the oxyd of lead is not ſufficient to give the proper degree of liquidity to the ſcoria. In this caſe a certain quantity of fluat of lime is added, which has the property of forming a very fuſible compound with ſulphat of barytes, an ingredient very common in the ore.

This flux has been uſed from time immemorial for the ſame purpoſe, and has no doubt derived its name from its properties as a flux. See *Fluat of* Lime.

The concrete ſcoria, which is taken out of the furnace, is found to contain ſome lead, independent of that in the ſtate of oxyd, and chemically combined. This is generally lodged in the cavities of the ſpongy maſs. Theſe maſſes are taken to a kind of blaſt furnace, called a ſlag-hearth. By this ſecond fuſion of the ſcoria, the lead drops through the liquid maſs into the lower part of the hearth, where it is not acted upon by the blaſt, and from thence is let off and caſt into pigs. This lead is ſaid to be of an inferior quality. Some ores of lead contain ſilver. The great affinity of lead for that metal is ſuch, that the whole of it is found in the lead (ſee Silver), from whence it is afterwards ſeparated.

Phyſical and chemical Properties of Lead.—Lead is of a bluiſh-white colour, when made as bright as poſſible. This is beſt effected by ſcraping and burniſhing. This poliſh it ſoon loſes by expoſure to air.

Its ſoftneſs is ſuch, that a cylinder of one inch in diameter and twelve inches long, may be eaſily bent by a perſon of ordinary ſtrength: indeed, it is the moſt ſoft and flexible of the metals. Its ſpecific gravity, according to Briſſon, is 11.3523, and ſo far from being increaſed by the hammer, agreeably to that change in other metals by the ſame effect, Muſchenbroeck aſſerts that it is diminiſhed. It may be here proper to obſerve, that thoſe metals which are ſuſceptible of the moſt perfect cryſtallization, will undergo the greateſt condenſation by the hammer, provided the metal be ſufficiently malleable. Hence we find this property the moſt conſpicuous in braſs, and in bliſtered ſteel. See Metal.

Lead, in common with its ſoftneſs, is the leaſt elaſtic of the metals; to which alſo may be attributed its little tenacity. Its hardneſs is increaſed by hammering, and its tenacity in a proportionate degree.

Lead is exceedingly malleable, which connected with its exceſſive ſoftneſs, admits of its being rolled into thin ſheets with little power. Its tenacity, according to Dr.

Thomſon, is ſuch, that a wire of $\frac{1}{12.6}$ of an inch will ſupport only 18.4 pounds. Lead fuſes at about 600° of Fahrenheit, and if raiſed to a much higher temperature, will be found to diminiſh by evaporation. If lead be melted and poured into an iron mould, it will be found to concrete on the ſides next the mould, while the middle part will be liquid for a ſhort time. If this liquid part be poured off, or let out at a plug-hole at the bottom, the interior ſurface of the ſolid part will exhibit a cryſtalline form. The cryſtals will be larger and more diſtinct as the cooling is ſlower.

Lead is much employed in the arts, particularly for buildings and ciſterns. For the former of theſe purpoſes it has many advantages. It is eaſily worked into any ſhape on account of its great ſoftneſs, and is ſufficiently malleable to fold two edges over each other, ſo as make it water-tight without ſoldering. This is a very great advantage, ſince, when the pieces are ſoldered together, the expanſion and contraction, by a change of temperature, ſoon breaks it to pieces.

Although it is at preſent in general uſe for water-ciſterns, pumps, and pipes for conveying water, ſerious objections have been made to it by different philoſophers, particularly Dr. Lambe, ſo far as regards its effects on the human economy.

A very ingenious paper was ſome time ago publiſhed by Morveau, in which he ſhews that the water expoſed to the leaden veſſels would frequently be pernicious, if ſome ſulphuric acid were not preſent, which never fails to precipitate lead from any of its ſolutions. Thus we ſee that lead is the leaſt objectionable for mineral waters containing the ſulphuric acid, which is very general in almoſt all ſprings.

Great miſchief has been produced by the uſe of lead in dairies; although we lament to ſay that this practice is ſtill followed up to a certain extent. If the milk runs into the ſlighteſt acidity, we muſt expect ſome lead to be diſſolved, and its probable conſequences if taken into the ſtomach.

The diſeaſe called the Devonſhire colic, was proved by ſir George Baker, in ſeveral excellent papers written by him, and publiſhed in the Philoſophical Tranſactions of that time, to be occaſioned by lead diſſolved in the cyder, and which had been furniſhed from the cyder preſſes, which were lined with that metal; but was in conſequence of this valuable diſcovery laid aſide.

We have heard of a ſimilar diſeaſe in the Weſt Indies, acquired by drinking new rum. The rum was found to contain lead, which had been taken from the leaden worm uſed for the condenſation of the ſpirituous vapour. What, however, is very ſingular, the rum loſt its deleterious property by keeping about twelve months. This fact was not explained at the time, but it has lately been cleared up by a ſeries of experiments made by the writer of this article. The new rum is generally put into oak caſks, from whence the liqour extracts a quantity of tan and gallic acid. Theſe ſubſtances combine with the lead in ſolution, forming a perfectly inſoluble ſubſtance, which falls to the bottom of the caſk. Theſe facts ſhew that lead ſhould not be uſed in any ſituation where fermented liquors are preſent, ſince in every ſtage of their exiſtence, they contain more or leſs acetic acid. And it muſt not be forgotten, that all diſtilled ſpirits will contain the ſame acid, from the circumſtance of its being volatile and coming over with the ſpirit.

We have, however, abundant ſatisfaction in knowing that the exiſtence of lead and gallic acid in ſpirits, wines, or other fermented liquors, are incompatible: and that all liquors which have been kept in oak caſks for a certain time muſt be freed from lead. If we find the preſence of gallic acid by a ſolution of iron, we may pronounce ſuch liquid free from lead.

Theſe obſervations, which may appear out of place, are given with a view to guide thoſe who may be making or uſing veſſels of lead, which, under ſome circumſtances, are attended with deplorable conſequences.

Alloys of Lead formed with other Metals.—One part of tin and two of lead form an alloy, fuſible at about 350° of Fahrenheit, and uſed by tinmen and others under the name of ſoft ſolder. See SOLDER.

Lead forms an imperfect alloy with copper. The metal uſed for common braſs-cocks is an alloy of theſe two metals. The lead is ſo imperfectly combined with the copper, that when a piece of the metal is expoſed to a certain heat, the lead ſeparates from the copper in bright globules of the former.

The alloy of antimony with lead is not uncommon. Sixteen of lead and one of antimony form the printers' type metal.

Lead eaſily combines with mercury, forming an amalgam. This is effected either by putting mercury into melted lead, or by putting lead, in ſmall particles, to the mercury. See AMALGAM.

An alloy of ſilver and lead is eaſily formed. Indeed lead is frequently uſed to take ſilver from plated iron, which is afterwards got from the lead by cupellation.

We are indebted to Mr. Hatchett for ſome valuable facts relative to the alloys of lead and gold. One part of lead to eleven of gold forms a very brittle alloy, having a fracture of a pale brown colour, deſtitute of metallic luſtre.

The alloys in any proportion have the ſingular property of being of leſs ſpecific gravity than the mean, the very contrary of which is obſerved in moſt other compounds of metals. The following is a table given by Mr. Hatchett exhibiting theſe facts.

Metals.	Grains.	Specific Gravity of Alloy.	Bulk before Union.	Bulk after Union.	Expanſion.
Gold Lead	442 38	18.08	1000	1005	5
Gold Copper Lead	442 19 19	17.765	1000	1006	6
Gold Copper Lead	442 30 8	17.312	1000	1022	22
Gold Copper Lead	442 34 4	17.032	1000	1035	35
Gold Copper Lead	442 37.5 .5	16.627	1000	1057	57
Gold Copper Lead	442 37.75 .25	17.039	1000	1031	31

When lead is expoſed to the air for a little time, it ſoon appears of different colours, not unlike the priſmatic colours. By a longer expoſure, aſſiſted with moiſture, it becomes covered with a white powder. This is the oxyd of lead combined with carbonic acid. This change is facilitated by heat, and ſtill more by the fumes of acetic acid or vinegar. It is by this means that the white lead of commerce is made, of which we ſhall treat hereafter.

If melted lead be expoſed to the oxygen of the atmoſphere, a greyiſh-yellow powder begins to form upon the ſurface. By keeping it expoſed for ſome time, the powder becomes more yellow. In this ſtate it is called *maſſicot*, or yellow oxyd of lead. It contains about 6.88 of oxygen.

This oxyd is made, in the large way, in a furnace not unlike a baker's oven. The middle of the hearth contains a receſs for expoſing the melted lead. On each ſide, and a little below the level of the hearth, is a fire, the flame of which paſſes ſlowly over the hearth, giving ſufficient heat to keep the lead melted, and paſſes up a chimney near the mouth of the furnace. As ſoon as the lead is melted, a perſon is conſtantly employed to agitate it, in order to expoſe greater ſurface to the air. This manual operation is performed by a rake ſuſpended from a chain, ſo that the perpendicular part of the rake daſhes through a portion of the melted lead, by merely moving it backwards and forwards. By the ſame motion, the oxyd which is formed is puſhed away from the ſurface of the lead, leaving it free to the action of freſh oxygen. This proceſs being kept up, the lead is at length converted into a greeniſh-yellow powder, mixed with lumps of metallic lead. This powder is ground in a mill and then waſhed, by which means the metallic lead is ſeparated, and the powder becomes of a more bright yellow. The green colour was therefore owing to a mixture of the blue particles of lead, mixed with the yellow oxyd. The yellow oxyd here produced is called *maſſicot;* which ſee.

This oxyd appears capable of combining with more oxygen by a ſecond expoſure. For this purpoſe the yellow powder, after being waſhed and dried, is returned into the furnace above-mentioned, or one of ſimilar conſtruction, kept for this ſecond proceſs only. The heat is kept uniform but not great, and the oxyd raked about to expoſe as much ſurface as poſſible. It gradually changes colour, and ultimately aſſumes a ſplendid red. In this ſtate it is called *minium;* which ſee. Although during this proceſs the oxyd appears gradually to paſs through all the ſhades of orange colour from yellow to red, the two latter can only be conſidered as diſtinct oxyds, the intermediate tints being mixtures of the two.

If we conſider the yellow as the firſt or protoxyd, the red will be the ſecond, and the brown, yet to be treated of, the third and the peroxyd. Prouſt, however, has given ſome reaſon to believe that the yellow is not the firſt. The oxyd which is precipitated from the nitric acid when heated to redneſs, to drive off the water and carbonic acid, is found to be the yellow oxyd in a very perfect ſtate. The author above-mentioned informs us, that if cryſtals of the common nitrat of lead be boiled with ſome pieces of metallic lead, ſcaly yellow cryſtals are formed. This ſalt, decompoſed by potaſh, affords an oxyd which Prouſt ſuppoſes to contain leſs oxygen than the yellow. Dr. Thomſon repeated his experiment; he found the oxyd not to differ in appearance from the yellow, and makes it to conſiſt of lead, 91.5 lead, and 8 5 oxygen. This appears to be rather leſs oxygen than, according to his own analyſis, is contained in the yellow. But there is reaſon to believe, that in Dr. Thomſon's analyſis of the yellow oxyd, the oxygen is rated too high. The ſame oxyd, according to Bucholz, is compoſed of 100 lead and eight of oxygen, equal to 7.4 *per cent.* This analyſis appears to have been made under ſuch circumſtances as to entitle it to much credit. From the average of three analyſes of the yellow oxyd, obtained from acetat of lead, the writer of this article made the oxygen 7.4 *per cent.* Hence we have abundant reaſon to doubt the exiſtence of an oxyd below the yellow oxyd, ſince it appears, from Dr. Thomſon's own account, that the oxyd, ſaid to conſiſt of leſs oxygen than the yellow, contains 8.5 *per cent.*, being 1.1 more than Bucholz makes the yellow oxyd.

If nitric acid in ſufficient quantity be added to the red oxyd of lead, nearly the whole will be diſſolved; $\frac{1}{13}$th of the oxyd will remain at the bottom of the veſſel, which, when collected and dried, is of a dark brown colour, and is called the brown oxyd of lead. The following proceſs is given by Vauquelin: Mix a quantity of the red oxyd of lead with water in a Woulff's apparatus, and let the oxymuriatic acid gas paſs through the mixture. The oxyd gradually becomes of a deeper colour, and is at laſt diſſolved. From this ſolution the brown oxyd is precipitated by potaſh. From every 100 parts of the red oxyd 68 of the brown may be obtained.

This oxyd is of a flea-brown colour, having no ſmell or taſte. It is inſoluble in any of the acids. It converts the muriatic into oxymuriatic acid, by giving up a portion of its oxygen. When rubbed briſkly in a mortar with powdered ſulphur, the ſulphur inflames, producing a ſtrong ſmell of ſulphurous acid. According to the analyſis of Prouſt, this oxyd is compoſed of 79 lead and 21 oxygen. Dr. Thomſon makes it 81.6 lead and 18.4 oxygen.

It appears highly probable that we have only three oxyds of lead, namely, the yellow, the red, and the brown. The firſt, according to Prouſt, contains 9 *per cent.*; Thomſon, 10.3; Bucholz, 7.4; the writer of this article, 7.4: the average of all theſe being 8.5. The red oxyd, by Dr. Thomſon's analyſis, contains 12 *per cent.*: the brown, according to Prouſt, contains in the 100, 21 oxygen; Dr. Thomſon makes 18.4: the mean of theſe is 19.7.

Agreeable to the average reſults of theſe different analyſes, we cannot help being forcibly ſtruck with the beauty of Mr. Dalton's hypotheſis relative to the limited proportions with which bodies combine. He makes the atom of lead to weigh 95, or to be 95 times heavier than an atom of hydrogen; the atom of oxygen being 7 times heavier. In referring to the doctrine advanced by this ingenious chemiſt, it will be ſeen that he holds the neceſſity of bodies combining atom to atom, or in ſome multiple of the ſame; as, 2 to 1, 3 to 1, &c. The firſt oxyd of lead, agreeably to the above data, muſt be 1 to 1, or 95 to 7; the ſecond oxyd, 95 to 14; and the third, 95 to 21. Hence theſe proportions reduced to 100, will ſtand as follows: $\frac{95+7}{7} = \frac{100}{6.86}$, or 6.86 in the 100, for the firſt oxyd. Then, for the ſecond, $\frac{95+14}{14} = \frac{100}{12.84}$, or 12.84 in the 100. Laſtly, for the third or peroxyd, $\frac{95+21}{21} = \frac{100}{18.1}$, or 18.1 in the 100. The proportions by analyſis give, for the firſt, 8.5; ſecond, 12; and the third, 19.7: by theory, 6.86, 12.84, and 18.1.

The ſecond and third oxyds of lead give out oxygen, by expoſure to heat in a crucible, and are reduced to the ſtate of the firſt oxyd. If the heat be raiſed a little above redneſs, the yellow oxyd fuſes into a glaſs, in which ſtate it is called the vitreous oxyd of lead. It becomes ſo exceedingly fluid, as to run through the common crucibles. In this ſtate it has the power of oxydating, and combining with the oxyds of all the metals which are oxydatic, by expoſure to air with heat: and hence is employed to great advantage in the cupellation of the nobler metals. See SILVER.

When lead is oxydated at a high temperature, ſuch as that employed in the ſeparation of ſilver from lead, the yellow oxyd fuſes as it is formed, and is blown from the ſurface of the lead by bellows. In this ſtate it is called *litharge;* which ſee. It conſiſts of the yellow oxyd, united to a portion of carbonic acid. For this part we are indebted to Dr. Thomſon.

Lead combines with ſulphur and phoſphorus.

Sulphuret of lead may be formed by projecting ſulphur into melted lead, or by ſtratifying thin plates of the metal with the ſulphur. The compound is very brittle, of a dark grey colour. It may be cryſtallized by ſlow cooling; under which form it exhibits a brilliant fracture, reſembling the native ſulphuret, or *galena.* This ſulphuret, according to Dr. Thomſon, conſiſts of 86 lead and 14 ſulphur. According to Dalton's hypotheſis, it conſiſts of one atom of lead to one of ſulphur: the former atom being 95, and the latter 13, will give $\frac{95 + 13}{13} = \frac{100}{12}$, or 12 to 100; which agrees with ſeveral other analyſes very nearly.

Lead appears capable of combining with a ſecond doſe of ſulphur, conſtituting a compound, which is more brilliant, and of a lighter colour. It may be eaſily diſtinguiſhed from the common kind, by its burning in the flame of a candle.

It is called the *ſuper-ſulphuret of lead,* and, according to Dalton's hypotheſis, muſt conſiſt of one atom of lead and two atoms of ſulphur, which would give $\frac{95 + 2 \times 13}{26} = \frac{100}{21.5}$, or 21.5 *per cent.* Dr. Thomſon makes it 25 *per cent.* It is to this chemiſt we are indebted for our knowledge of this ſubſtance.

Phoſphuret of lead may be formed by mixing together equal parts of filings of lead and phoſphoric glaſs; the mixture being fuſed in a crucible. It is of a ſilvery blueiſh-white colour. It poſſeſſes ſlight malleability, and may be cut with a knife. It is compoſed of 88 lead and 12 of phoſphorus. Dalton makes the atom of phoſphorus to weigh 9: hence this compound of 1 to 1 will give $\frac{95 + 9}{9} = \frac{100}{8.6}$.

Salts of Lead.—Moſt of the acids combine with the yellow oxyd of lead, forming peculiar compounds. By far the greateſt proportion of theſe compounds is inſoluble in water. All thoſe which are ſoluble have a ſweetiſh taſte, attended with a roughneſs which it leaves on the tongue, ſimilar to that of red port, and ſome other wines. This property has cauſed it to be uſed for the villainous purpoſe of mixing with ſour wine, which does not only take up the acid, but adds a roughneſs and ſweet vinous flavour, exceeding impoſing upon the palate. Some have ſuſpended bags of ſhot in the caſks of wine; others have added common white lead.

Mankind are now ſo well acquainted with the different teſts for lead, that it is very ſeldom found in thoſe liquors. Water impregnated with ſulphuretted hydrogen gas will inſtantly turn wine muddy and black, which contains lead. If a ſolution of iron be dropped into wine, and it turns black, the preſence of gallic is indicated: and from what we before obſerved, the exiſtence of lead and that acid are incompatible in the ſame liquid.

Sulphat of Lead.—Lead is ſcarcely acted upon by the ſulphuric acid, in the cold. If the acid be boiled with the lead, fumes of ſulphurous acid will be given out, and a portion of the lead oxydated, which combines with the acid, forming a whitiſh paſty compound. If the acid be in exceſs, and the maſs waſhed in water, the ſubſtance becomes divided into two portions, namely, the ſulphat of lead, which is inſoluble, and the ſuperſulphat, which is ſlightly ſoluble, and will be depoſited in cryſtals.

It is from the circumſtance of the inſolubility of the ſulphat of lead, that the metal can be uſed with ſuch advantage for the lead-houſes, uſed in making ſulphuric acid, and for making veſſels which have to hold this acid. The ſulphat which firſt forms upon the ſurface defends the lead not only from the action of this acid, but from any other ſolvent of this pernicious metal. Sulphat of lead may be beſt formed by adding ſulphat of ſoda to the acetat of nitrat of lead. A denſe white precipitate is formed, which is ſulphat of lead. This ſalt is produced in great abundance by the calico-printers, in making acetat alumine, with alum and acetat of lead. It forms an excellent paint with oil, for ſtanding the action of acids.

Kirwan gives the proportion of this ſalt at 23.37 acid, 75 acid yellow oxyd, 1.63 water in the 100; Bucholz, 24.72 acid, 75.28 oxyd; and Klaproth, 26.5 acid, and 73.5 oxyd: the mean of theſe is 24.86 acid, and 75.14 baſe. Calculated by Dalton's theory, the atom of ſulphuric acid weighs 34: therefore, $\frac{95 + 7 + 34}{34} = \frac{100}{25}$; or, the acid is 25 in the 100: then, $100 - 25 = 75$ the baſe.

Sulphite of Lead.—The ſulphurous acid has no action upon lead: but it combines with the yellow oxyd, forming an inſoluble compound, having no remarkable properties. When expoſed to a red heat, the acid is diſengaged, in the form of gas.

When the ſulphurous acid is added to the red oxyd of lead, the acid takes oxygen from the oxyd, reducing it to the ſtate of yellow oxyd. The acid is converted into the ſulphuric, and combines with the oxyd, forming the ſulphat of lead.

Dr. Thomſon gives the proportions at

74.5 oxyd,
25.5 acid.
———
100
———

Nitrat of Lead.—When the nitric acid is a little diluted, it acts with conſiderable rapidity upon lead. If it be a little aſſiſted by heat, the whole will become ſpeedily diſſolved, forming nitrat of lead: This conſiſts of the yellow oxyd of the metal united to a portion of the acid. If the ſolution be evaporated, it affords cryſtals of tin, in ſix-ſided pyramids of a ſilvery white colour. This ſalt diſſolves in 7½ of boiling water. When the cryſtals are heated, they undergo a ſlight detonation: the ſame takes place when they are rubbed with ſulphur in a hot mortar.

According to experiments of Dr. Thomſon, this ſalt conſiſts of,

66	oxyd,
34	acid.
100	

When the cryſtals of the laſt ſalt are boiled with metallic lead, yellow ſcaly cryſtals are formed, conſtituting, according to Dr. Thomſon, a ſubnitrat, conſiſting of

81.5	oxyd,
18.5	acid,
100	

By Dalton's theory the weight of an atom of nitric acid is 19: in moſt of the nitrats he ſuppoſes one atom of the baſe to unite with two atoms of acid. The nitrat of lead, already deſcribed, ſhould, according to the above analyſis, conſiſt of at leaſt two atoms of acid to one of baſe, for $\frac{102 + 2 \times 19}{38} = \frac{100}{27.14} = 27.14$ of acid, and 72.86 of baſe.

The acid here falls conſiderably ſhort of that in the analyſis of Dr. Thomſon. The latter ſalt, which we have called the ſubnitrat, ſhould have one atom leſs of acid. Hence $\frac{95 + 7 + 19}{19} = \frac{100}{15.7}$, which gives 15.7 acid, and 84.3 of oxyd = 100.

Muriat of Lead.—Muriatic acid has a very feeble action on lead, but it readily diſſolves the yellow oxyd, forming the muriat of lead. This ſalt may be alſo formed by adding muriat of ſoda to nitrat of lead. The precipitate which is formed is the ſalt in queſtion. It diſſolves in 22 parts of cold water. This is the fact only when no exceſs of this acid, or when no other acid is preſent; ſince the ſalt is ſoluble in moſt acids to a greater extent than in water. When this ſalt is mixed with the ſulphat of lead, it may be ſeparated from it by its ſolubility in the acetic acid. Muriat of lead is much more ſoluble in hot than in cold water. Hence, when a ſaturated hot ſolution is ſuffered to cool, the ſalt is depoſited in cryſtals of a ſilvery-white colour. When heated they readily melt, and on cooling aſſume a ſlight tranſparency, from which it has been called *Plumbum corneum.*

On the application of greater heat ſome of the ſalt evaporates in a white ſmoke, leaving behind a ſubſtance, which is ſaid to be a ſubmuriat of lead.

The compoſition of muriat of lead is, according to Klaproth,

Acid	13.5
Oxyd	86.5
	100

By Kirwan's account,

Acid	17
Oxyd	83
	100

The weight of the atom of muriatic acid being 22, we ſhall have by Dalton's theory $\frac{95 + 7 + 22}{22} = \frac{100}{17.74}$, by which we have 17.74 acid, and 82.26 of oxyd, which comes very near to Kirwan. When the muriatic acid is poured on the red oxyd of lead, the lead gives up a part of its oxygen to the muriatic acid, conſtituting the oxymuriatic acid. The muriatic acid then unites with the yellow oxyd thus formed, while the oxygen is returned to the remaining red oxyd, forming the brown oxyd.

The ſubſtance above-mentioned, ſaid to be a ſubmuriat, appears rather ambiguous, and may, perhaps, be a mere mixture of the common muriat with the yellow oxyd of lead. There is, however, one argument in favour of its being a proper compound. It is ſaid not to be ſoluble in water, or that the exceſs of oxyd is attached to the muriat, ſo as to prevent its being ſeparated by the affinity of the water for the ſalt.

The common way of forming this ſubſtance is by adding to the muriat of ſoda a much larger quantity of litharge than would be neceſſary to ſaturate the acid of the ſalt. We are indebted to Vauquelin for the beſt account of the nature of this anomalous decompoſition. At the ſame time the muriat of lead is decompoſed by ſoda. We have the fact before our eyes, that an oxyd of lead will completely decompoſe the muriat of ſoda. If we ſtate the experiment of Vauquelin we ſhall be better able to give an opinion. To one part of muriat of ſoda he added ſeven of litharge in fine powder, with as much water as made the mixture of the conſiſtency of thin ſoup. This was frequently ſtirred for ſeveral hours. The litharge gradually loſt its colour, and ultimately became white. It increaſed in bulk, and ſo much water was abſorbed as to make it neceſſary to add more. At the end of four days the chemical action had entirely ſubſided, when the reſult was examined. The liquid part, when ſeparated by the filtre, had a ſtrong taſte of ſoda, with a taſte of muriat of lead, but no muriat of ſoda was preſent. The liquid afforded cryſtals of carbonat of ſoda by evaporation. The ſubſtance from which the liquor had been ſeparated, when waſhed and dried, was of a dirty white colour, and was found to have increaſed in weight $\frac{1}{8}$th of the whole oxyd employed. When this ſubſtance was heated to a certain degree it aſſumed a fine yellow colour, by which it loſt $\frac{1}{10}$th of its weight. This was, perhaps, carbonic acid and water.

Some cauſtic ſoda was added to a part of this ſubſtance, which changed its colour to that of a dirty yellow, and the reſiduum was found to be a maſs of cryſtals of muriat of lead. By the teſt of an alkaline hydro-ſulphuret, the ſoda appeared to hold a great quantity of the oxyd of lead in ſolution.

The one part of muriat of ſoda, uſed in this experiment, conſiſted of .44 of acid, and .56 of ſoda. The .44 acid would combine with 2.4 of the yellow oxyd to form 3.84 of muriat of lead, leaving 7 − 2.4 = 4.6 of oxyd of lead. This is ſuppoſing the true muriat to be formed; but if a ſubmuriat were formed, it muſt conſiſt of more than one atom of lead united to one of acid. Suppoſe it one of acid to two of oxyd, then $.44 + 2 \times 2.4 = .44 + 4.8 = 5.2$ of ſubmuriat, ſtill there would be free oxyd left. But the author tells us that the yellow ſubſtance was inſoluble in water, or that the water would not take the muriat from the exceſs of oxyd, although the nitric acid, as well as the ſoda, was capable of that effect. If there were no free oxyd when two atoms of lead were to one of acid, let us ſuppoſe them three to one, we ſhall then have $.44 + 3 \times 2.4 = .44 \times 7\ 2 = 7.64$ of a ſecond ſubmuriat. If, therefore, we are to rely upon the fact, that the muriat of lead could not be diſſolved, leaving the exceſs of oxyd, we muſt regard this yellow ſubſtance as a legitimate compound. If the contrary be the caſe, we muſt regard it as a mixture of the true muriat mixed with the yellow oxyd of lead. This ſubſtance has been manufactured under a patent by Mr. Turner, of Newcaſtle-upon-Tyne, and is deemed a valuable pigment for painting.

Phoſphat of Lead.—The phoſphoric acid does not act upon lead in the cold, and but very feebly by heat. The reſult of this action is the formation of an inſoluble compound, which is the phoſphat of lead.

This ſalt may be more eaſily formed by adding together the ſolutions of phoſphat of ſoda and the nitrat, or acetat of lead. A denſe white powder ſubſides, which is the ſalt in queſtion. This ſalt is inſoluble in water, but it diſſolves readily in nitric, and alſo, when aſſiſted by heat, in the muriatic acid. On the latter ſolution cooling, cryſtals of muriat of lead are depoſited; a proof that a partial decompoſition takes place. It is alſo decompoſed by the ſulphuric acid, by the aſſiſtance of heat.

When this ſalt is heated it melts, and on cooling aſſumes a cryſtalline appearance.

It is from this ſalt that phoſphorus is generally obtained; for when it is expoſed to a great heat, in an earthen retort, with charcoal, both the lead and the phoſphorus loſe their oxygen, the latter being diſtilled over.

Mr. Dalton makes the atom of phoſphoric acid to weigh 23, then $\frac{95 + 7 + 23}{23} = \frac{100}{18.4}$; ſo that this ſalt, from theſe data, conſiſts of 18.4 of acid, and 88.6 of oxyd, which is very near the proportions of the native ſalt.

Carbonat of Lead.—Carbonic acid does not act upon lead, but it combines with the yellow oxyd of lead, forming an inſoluble white powder, which is manufactured under the name of *white lead*.

This ſalt may be formed by adding a carbonat of potaſh to the acetat or nitrat of lead. The precipitate, being waſhed and dried, is ſnowy-white powder, appearing to the eye well calculated to make a much finer white paint than that made in the common way. Although the carbonat formed by precipitation is, no doubt, chemically the ſame with the manufactured, their difference, in point of denſity, is very remarkable. The proportions of the conſtituents of this ſalt are, according to Bergman, 16 acid, 84 oxyd; to Chenevix, 15 acid, 85 oxyd; Prouſt, 16.15 acid, 83.85 oxyd; and Klaproth, 16.33 acid, 83.67 oxyd in the 100.

The manufacture of white lead has been known long before any idea was entertained of its compoſition, or the theory of the proceſs; and it is rather ſingular that no more improvement has been made in the common proceſs, which has long appeared to chemiſts as clumſy and uneconomical.

The proceſs conſiſts in expoſing thin ſheets of lead to the fumes of vinegar at a certain temperature. The lead is caſt into ſheets about two feet long, five or ſix inches broad, and about $\frac{1}{8}$th of an inch thick. Theſe are coiled up, rather ſpirally, into a cylindrical ſhape, about five or ſix inches diameter. The vinegar is placed in the bottom of earthen pots, which are different in ſize at different manufactures; ſome holding three pints and others five or ſix. There is a ledge round the pot, in the inſide, about an inch deep, for the purpoſe of ſupporting the cylindric coil of lead, which ſtands upon it like a chimney. The pots thus fitted, with the lead and vinegar, are arranged in rows, upon a ſtratum of horſe-litter, or, what is now uſed as being cheaper, the refuſe bark of tanners. The ends of all the cylinders of lead are covered with a plate of the ſame metal, to confine the whole as much as poſſible to the action of the vapour. The pots thus placed are covered over with litter or bark, and a new ſtratum of pots arranged in a ſimilar way over them. Several tons of lead are ſometimes expoſed in this manner at one time. The heat ariſing from the fermentation of the vegetable or animal matter keeps up a certain temperature, by which the vinegar is ſlowly evaporated. The vapour oxydates the lead, and the oxyd combines with carbonic acid. This latter ſubſtance was formerly thought to be furniſhed by the fermenting ſubſtance in which the pots were imbedded: it is now, however, known, that the vinegar is decompoſed, and furniſhes the carbonic acid. White-lead works are at preſent carried on, both on the continent and in this country, in which the heat is furniſhed by artificial means only; and of courſe the carbonic acid can come from no other ſource than that of the vinegar.

After the lead has been expoſed to the vapour of the vinegar for about ſix weeks or two months, the pots are withdrawn, and the coils of lead are found corroded to a conſiderable thickneſs. The white carbonat thus formed is very brittle and very hard. The ſheets are now paſſed through rollers for the purpoſe of breaking the white lead from the uncorroded metallic lead. The powder is now taken to a pair of ſtones, and ground in a manner ſimilar to corn. After this it is levigated to get it of the greateſt poſſible fineneſs, and it is then gradually dried in ſtoves for the purpoſe.

Denſity and whiteneſs are the moſt valuable properties of white lead. Theſe properties do not depend upon the proportions of its elements, but upon the mechanical treatment. The denſity in all probability will be greater, as it has been longer forming, by the action of the vinegar being ſlower. Some of the pieces of white lead, as they are ſeparated from the ſheet, are much harder than others, even in the ſame bed. This hardneſs and denſity are ſometimes ſo great as to render the pieces ſonorous. In this ſtate it is the moſt valuable. Hence the whiteſt and denſeſt pieces are ſelected for making the beautiful ſubſtance called *flake white*.

The value of white lead is eaſily aſcertained by the painters, from the quantity of oil required to give it proper conſiſtency. The greater the proportion of lead to the oil, the greater is ſaid to be the body of the paint, and the greater will be its whiteneſs. The carbonat of lead made by precipitation, when in a dry ſtate, is much whiter than the beſt white lead, made in the common way. If, however, equal weights of the two be mixed with oil to make them fit for painting, the precipitated ſpecimen will be found to take a much greater quantity of oil than the other, and its whiteneſs much diminiſhed. The common white lead will have loſt ſo little of its whiteneſs, that the contraſt will be very ſtrikingly in favour of the latter. This fact is exceedingly apparent, on mixing together tranſparent media of different denſities. The whiteneſs of ſnow depends upon the mixture of ſmall particles of ice with air; for when the ſame are mixed with water, the whiteneſs diſappears. All colourleſs tranſparent bodies become white on being reduced to powder. This is obſerved in pounded glaſs and in ſalts which loſe their water of cryſtallization. Whiteneſs may therefore be ſaid to ariſe from a confuſed refraction of light, rather than from reflection. See LIGHT.

Fluat of Lead.—Fluoric acid does not oxydate lead; but it is capable of combining with the yellow oxyd, forming this ſalt, which is an inſoluble compound. It may be formed better by adding the fluat of ammonia to nitrat or acetat of lead, the fluat of lead falling down in a ſtate of powder.

Borat of Lead.—Boracic acid does not act upon lead. This ſalt, however, may be formed by adding a ſolution of borat of ſoda to nitrat of lead. The borat of lead will be precipitated in the form of an inſoluble white powder. This ſalt, from a vitreous ſtate which the acid is capable of aſſuming, melts into a colourleſs glaſs before the blowpipe.

Acetat of Lead.—Acetic acid has little or no action upon lead when the metal is immerſed in it; but the fumes of the acid in contact with air is capable of oxydating lead, as we have ſhewn in the manufacture of white lead. The oxyd thus formed is eaſily taken up by the acetic acid, forming a ſoluble compound of a ſweetiſh and aſtringent taſte. If the ſolution be evaporated, an exceſs of the acid being preſent, the ſalt is obtained in needle-formed cryſtals, and of the luſtre of ſatin. It diſſolves in about four times its weight of water at 60°. It is ſingular that this ſalt is decompoſed by the carbonic acid. It is from this circumſtance that we always find it decompoſed, in ſome degree, by diſſolving it in water, which generally contains more or leſs of that ſubſtance. This ſalt is uſed in medicine, uncryſtallized, under the name of *Goulard's extract.*

The acetat of lead is an article of extenſive manufacture in England, France, and Holland.

Common diſtilled vinegar is firſt ſaturated with the yellow oxyd of lead, which is ſometimes from the carbonat or white lead, and frequently from litharge: the latter, however, is the cheapeſt proceſs. The ſolution ſhould have a little exceſs of acid, elſe it does not form the real ſalt. By ſlow evaporation this ſolution cryſtallizes, in which ſtate it is uſed in abundance in the arts, particularly by the calico printers, for the purpoſe of getting the acetat of alumine, by double decompoſition with alum.

The analyſis of this ſalt, according to Dr. Thomſon, is

26	Acid
58	Yellow oxyd
16	Water
100	

From the combinations of the acetic acid, the earths, and alkalies, it appears that the weight of its atom is about 36. We have hence $\frac{102 + 36}{36} = \frac{100}{26}$, which gives 26 of acid and 74 of yellow oxyd = 100.

Subacetat of Lead.—When the laſt ſalt is boiled for ſome time with the yellow oxyd of lead, a peculiar ſalt is formed, conſiſting of two atoms of oxyd, and one of acid. It is leſs ſoluble in water than the acetat. It was firſt noticed by Thenard, to whom we are indebted for the following analyſis:

17	Acid
78	Oxyd
4	Water.

If it conſiſts of two atoms of baſe to one of acid, its analyſis, according to the data in the acetat, will be $\frac{2 \times 102 + 36}{36} = \frac{100}{15}$, which gives 15 acid, and 85 oxyd = 100.

Oxalat of Lead.—This ſalt is formed by diſſolving the oxyd of lead in oxalic acid. In all probability there are two ſalts of this ſpecies. That given by Dr. Thomſon is formed with the ſecond oxyd, and an exceſs of acid, and is the ſuperacetat. According to Bergman's analyſis it contains

41.2	Acid
58.8	Red oxyd
100	

The weight of the atom of oxalic acid appears to be 39, and an atom of the oxyd in this ſalt 95 lead + 14 oxygen = 109, therefore ſuppoſing it the ſuper ſalt $\frac{95 + 14 + 39 \times 2}{39 \times 2} = \frac{100}{41.7}$, which gives 41.7 acid, and 58.3 red oxyd = 100.

The proper oxalat of lead may, no doubt, be formed by an alkaline oxalat being added to the nitrat of lead, the ſalt being precipitated in a ſtate of inſoluble powder. From the above data it ought to conſiſt of 27.7 and 72 3 yellow oxyd.

Tartrat of Lead.—The tartaric acid does not act upon lead; but this ſalt may be formed by adding an alkaline tartrat to the acetat, or nitrat of lead. The tartrat of lead falls down in the form of white powder. Dr. Thomſon gives the analyſis of this ſalt at 37.44 acid, and 62.56 yellow oxyd.

Citrat of Lead.—This is an inſoluble compound, formed by adding an alkaline citrat to a ſoluble ſalt of lead.

Malat of Lead.—Malic acid has no action on lead; but the acid combines with the oxyd, forming a compound inſoluble in water, but ſoluble in acetic acid. Cyder, which contains an abundance of malic acid, would never contain lead, but from the preſence of acetic acid. If acetat of lead be dropped into cyder, a copious precipitate falls down, but if free acetic acid be added, the precipitate is diſſolved.

Arſeniat of Lead.—The arſenic acid is capable of oxydating lead, and then combines with its oxyd, forming arſeniat of lead, which is completely an inſoluble compound. It may alſo be formed by adding the arſeniat of potaſh to a ſoluble ſalt of lead. From the analyſis of Chenevix it conſiſts of 33 acid, 63 yellow oxyd, and 4 of water. According to Thenard, it is compoſed of 35.7 acid, and 64.3 of oxyd. See the native arſeniat of lead under the mineralogical part of this article.

Molybdat of Lead.—The artificial ſalt of this ſpecies has been little examined. See the native ſalt.

Chromat of Lead.—This ſalt may be formed by adding an alkaline chromat to a ſoluble ſalt of lead. The ſalt is precipitated in the form of powder of a reddiſh-yellow colour. It is ſoluble in potaſh and ſoda, from which it may be precipitated without changing its properties. It is ſoluble in nitric acid, but it is decompoſed by the muriatic and ſulphuric acids. See native ſalt.

The other ſpecies of the ſalts of lead are not of importance.

The alkalies and ſome of the earths diſſolve the oxyd of lead.

Potaſh and ſoda, when pure, diſſolve the greateſt proportion. By expoſure to the air, however, the carbonic acid of the atmoſphere combines with the oxyd of lead, as well as the potaſh. The lead is precipitated in a ſtate of carbonat.

Theſe alkaline ſolutions of lead have the property of ſtaining hair, wool, and horn. The tint commences with a light fawn colour, and ultimately becomes of a deep and beautiful reddiſh-brown. Theſe colours are not permanent, being quickly faded by expoſure to the light and the air.

Lime water, and probably ſolutions of barytes and ſtrontian, diſſolve the oxyd of lead, but in ſmaller quantity. A liquid formed by boiling lime and litharge in water, has alſo the property of ſtaining wool, but the colour is ſomewhat different to that given by the alkaline ſolution. The brown colour has leſs of the red and more of the yellow tint. A compoſition of common pearl-aſh, red lead, and quick lime, is uſed to give horn the appearance of tortoiſe ſhell. In effect, this compoſition is a ſolution of the oxyd of lead in potaſh.

Lead, as we have already ſeen in the preceding part of this article, is much uſed in building, particularly for covering, gutters, pipes, and in glaſs windows. For which uſes, it is either caſt into ſheets in a mould, or milled; which laſt, ſome have pretended, is the leaſt ſerviceable, not only on account of its thinneſs, but alſo becauſe it is ſo exceedingly ſtretched in milling, and rendered ſo porous and ſpongy, that when it comes to lie in the hot ſun, it is apt to ſhrink and crack, and conſequently will not keep out the water. Others have preferred the milled lead, or flatted metal, to the caſt, becauſe it is more equal, ſmooth, and ſolid.

The lead uſed by glaziers is firſt caſt into ſlender rods, twelve or fourteen inches long, called *canes*; and theſe, being afterwards drawn through their vice, come to have a groove on either ſide for the panes of glaſs; and this they call *turned* lead.

The method of paling or ſoldering lead for fitting on of imboſſed figures, &c. is by placing the part whereon the figure is to be paled horizontal, and ſtrewing on it ſome pulverized reſin; under this they place a chafing-diſh of coals till ſuch time as the reſin becomes reddiſh, and riſes in pimples; they apply the figure, and rub ſome ſoft ſolder into the jointing; when this is done, the figure will be paled on, and as firm as if it had been caſt on.

Lead is much uſed in varniſhes and painting with oil, both as a colour and as a dryer. It is alſo uſed in the preparations of enamels and of porcelain as a flux, and makes the baſis of the glazing of almoſt all pottery wares; and by means of lead the moſt perfect metals are refined and aſſayed.

LEAD, in *Medicine*. This metal is celebrated by ſome chemical writers for its great medical virtues; but after all it ſeems to be a metal which ought to be given internally with the greateſt caution, and to be rather calculated for outward application. Its ore is ſo poiſonous, that the ſteam ariſing from the furnaces where it is worked, infects the graſs of all the neighbouring places, and kills the animals which feed on it. The poiſonous quality of this ore is ſuch, that the people who live in the countries where it is dug, and near the places where it is waſhed, can keep neither dog nor cat, nor any kind of fowl, but all die in a ſhort time, and it has been known that a little houſe, in which lead ore had been kept for ſome time, though afterwards made very clean, and bedded with fern, infected calves which were put into it, ſo that all died in a very ſhort time; and it is a too melancholy obſervation, that children often die ſtrangely and ſuddenly about theſe places. Philoſophical Collections, N° 2. p. 6.

Its beſt preparation is *ſaccharum ſaturni*, or the ſuper-acetate of lead; which, though capable of doing great good in hæmorrhages, and ſome other caſes, is apt, however, to bring on colics of ſo violent a kind, that the remedy often proves worſe than the diſeaſe.

The internal uſe of lead is dangerous, on account of the colics and palſies that are occaſioned by it. Culinary veſſels, lined with a mixture of tin and lead, which is the uſual tinning, are apt to communicate to acid foods pernicious qualities, and require to be uſed with great precaution. The ſame thing has been alſo ſaid of liquors kept in glazed ware, and of cyder made in veſſels, where lead is uſed, and of wines adulterated with litharge, &c. See the article LEAD, *ſupra*, and COLICA *Pictonum*.

M. Navier has lately diſcovered that the liver of ſulphur, and particularly liver of ſulphur of Mars, is an excellent antidote againſt the poiſon of lead; and he adviſes patients labouring under its pernicious effects to drink largely of acidulated liquors, to make afterwards the liver of ſulphur the principal part of the cure, and to finiſh the cure with gentle purgatives.

The Dutch have been charged with correcting the more offenſive expreſſed oils, as that of rape ſeed, ſo as to ſubſtitute them for oil olive or oil of almonds, by impregnating them with lead: in order to detect this abuſe, mix a little of the ſuſpected oil with a ſolution of orpiment made in lime-water: on ſhaking them together, and ſuffering them to reſt, the oil, if it has any ſaturnine taint, will appear of an orange-red colour: if pure, of a pale yellowiſh. The lead is diſcovered in wines by the ſame ſulphureous ſolution, which changes the colour of wines impregnated with this metal to a browniſh red or a blackiſh hue. However, the various preparations of lead are applied externally with ſafety and great benefit, on account of its ſedative, drying, and repellent qualities. The vinegar and ſugar of lead, and all the ointments and plaſters which contain ceruſs, minium, or litharge, eminently poſſeſs theſe qualities. See the following articles and references.

For the laws relating to lead, and the ſtealing of it, ſee 27 Ed. III. ſtat. 2. c. 1. 3. 15. 38 Edw. III. ſtat. 1. c. 6. 4 Geo. II. c. 32. 29 Geo. II. c. 30. See LARCENY.

LEAD, *Black*. See PLUMBAGO.

Black lead in fine powder may be readily mixed with melted ſulphur, and though the compound remains fluid enough to be poured into moulds, it looks nearly like the coarſer ſorts of black lead itſelf. This was probably the method by which prince Rupert is ſaid to have made black lead run like a metal in a mould, ſo as to ſerve for black-lead again. Birch's Hiſt. Royal Soc. vol. iii.

The German black-lead pencils, and thoſe which are hawked about among us, are prepared in this manner: their melting or ſoftening, when held in a candle, or applied to a red-hot iron, and yielding a blueiſh flame, with a ſtrong ſmell like that of brimſtone, diſcovers their compoſition. Pencils of this kind are hard and brittle, and cut or ſcratch the paper or wood inſtead of marking them. The true Engliſh pencils are formed of black lead alone, ſawed into ſlips, which are fitted into a groove made of the ſofteſt wood, as cedar, and another ſlip of wood glued over them. Theſe pencils, however, are of different quality, on account of different ſorts of the mineral being fraudulently joined together in one pencil, the fore-part being commonly pretty good, and the reſt of an inferior kind. To avoid theſe inconveniences, ſome take the finer pieces of black lead itſelf, which they ſaw into ſlips, and fix for uſe in port-crayons. Lewis's Commerce of Arts, p. 328.

By our laws, entering mines of black lead, with intent to ſteal it, is made felony. See 25 Geo. II. c. 10. See LARCENY.

LEAD, for the *manufacture of*, ſee PLUMBERY.

There are various preparations of lead, ſerving for various purpoſes, ſome of which are now diſuſed, and others, under one form and name, or another, ſtill continued.

LEAD, *Balſam of*, an external medicine, formerly famed for its effects in old and ſharp ulcers. It is made by mixing one ounce of ſugar of lead with two of oil of turpentine, and ſetting this mixture in a ſand-heat till the ſalt is diſſolved. By this means the oil acquires a red colour, and is called balſam of lead.

LEAD, *Burnt, plumbum uſtum*, is a chemical preparation uſed in medicine, made of plates of lead, melted in a pot with ſulphur, and reduced by fire into a brown powder.

Lead continued in fuſion and ſtirred, ſo that freſh ſurfaces may be expoſed to the air, will gradually change into a powdery duſky-coloured calx, bearing this name.

Burnt lead is only intended for external uſe. It has the ſame virtues aſcribed to it, in ointments and plaſters, as litharge or minium. Mixed into an unguent with lard alone, it makes a good ointment for the piles.

LEAD, *Butter of*, is a kind of liquid unguent made of vinegar and lead, incorporated with roſeate oil, and commended for the cure of tetters. It is called *butyrum ſaturni.*

LEAD, *Calcined*, or *calx of lead.* See CALX, CERUSSE, GLASS *of Lead*, LITHARGE, MASSICOT, MINIUM, &c. and *Alloys of* LEAD, ſupra.

LEAD, *Caſting of.* See CASTING.

LEAD, *Cerate of Super-acetate, Ceratum plumbi ſuper-acetatis*, the "Unguentum ceruſſæ acetatæ" of P. L. 1787, is prepared in the following manner: Take of ſuper-acetate of lead two drachms, white wax, two ounces, and olive oil, half a pint. Diſſolve the wax in ſeven fluid-ounces of oil, then gradually add to it the ſuper-acetate of lead, ſeparately rubbed down with the remaining oil, and ſtir the mixture with a wooden ſlice, until the whole has united.

LEAD, *Compound cerate of.* See CERATUM *lithargyri acetati compoſitum.*

LEAD, *Coheſion of.* See COHESION.

LEAD *Duſt* is a preparation uſed by the potters; made by throwing charcoal duſt into melted lead, and ſtirring them a long time together: to ſeparate the coal again, they only waſh it in water, and dry it afreſh. Its uſe is, to give a varniſh and gloſs to their works.

LEAD, *Extract of*, or *Saturn*, is prepared by ſimmering together as many pounds of the litharge of gold as quarts of vinegar for an hour and a quarter, and often ſtirring them; then taking it from the fire, and as ſoon as it is cool enough, pouring the clear liquor into bottles to be kept for uſe. If this liquor be made into the common conſiſtence of an extract, it muſt boil yet longer after its ſeparation from the maſs, and will acquire a reddiſh colour. This is Goulard's extract (ſee LEAD, *ſupra*), and the baſis of all his preparations of lead. It evidently differs in no reſpect from ſugar of lead, and vinegar of litharge, but in the degree of concentration. The only circumſtance in which the extract ſeems to have the advantage of ſugar of lead, appears to be in the greater quantity of the acetous acid contained in it, which proves an excellent aſſiſtant in many caſes, and the ſugar of lead, when once cryſtallized, cannot be brought back to that ſtate of ſolution in vinegar in which it was before; yet where a large quantity of watery menſtruum is added, as in Mr. Goulard's ſaturnine water, it is as well to make a ſolution of ſugar of lead in the water, and add the vinegar afterwards, as to mix them both together in the form of extract. Aikin's Obſ. on the external Uſe of Preparations of Lead, &c. p. 2. See VINEGAR *of Lead.*

In the London Pharmacopeia of 1787, this was denominated "Aqua lithargyri acetati;" and in the laſt edition it is called "Liquor plumbi acetatis," or "ſolution of acetate of lead," and it is directed to be prepared by mixing two pounds four ounces of ſemi-vitreous oxyd of lead, with a gallon of acetic acid, and boiling down to ſix pints, conſtantly ſtirring; then ſetting it by, that the feculencies may ſubſide, and ſtraining. This is a denſe liquor, of a deep brown colour, and conſiſts of a ſaturated ſolution of ſubacetate of lead. It was reſtored in the laſt Pharmacopeia, in conſequence of the celebrity it had obtained under the name of "Goulard's Extract." The "Aqua lithargyri acetati compoſita" of P. L. 1787, called in the laſt edition "Liquor plumbi acetatis diluti," or "diluted ſolution of acetate of lead," is prepared by mixing a drachm of ſolution of acetate of lead, a pint of diſtilled water, and a flui-drachm of weak ſpirit. When this mixture is made, even with diſtilled water, ſome precipitation takes place; and when, as is more common, ordinary water, containing any muriates or ſulphates, is uſed, this is much more abundant from double decompoſition, and gives the liquor a milky appearance when diffuſed through it. To this it owes its common name of "white waſh."

LEAD, *Glaſs of.* See GLASS *of Lead.*

LEAD, *Magiſtery of*, is the calx of lead purified and ſubtilized. It is made of lead diſſolved in aquafortis, pouring filtrated ſalt water into it; whence reſults a magiſtery extremely white, which, when ſoftened by ſeveral lotions, is mixed with pomatums for the face and complexion.

LEAD *Mine.* See MINING.

LEAD, *Mock*, a name given to a glittering ſubſtance found in lead-mines. See GALENA *inanis*, and BLINDE.

LEAD, *Native.* See LEAD, *ſupra.*

LEAD, *Ointments of, Preparations of.* See UNGUENT.

LEAD *Plaſter.* See EMPLASTRUM *Commune.*

LEAD *Pipes, Manufacture of.* The common method uſed for making lead pipes, conſiſts in caſting the lead upon a ſmooth ſteel mandril placed in a mould, alſo of metal, to form the outſide. Theſe pieces are about 18 inches long. They are afterwards joined together by a proceſs, called *lining.*

A very great improvement has been made in the manufacture of lead pipes, by drawing them in a manner ſimilar to wire. The lead to form the pipe is caſt upon a mandril of the diameter of the inſide the pipe, but of ſuch a thickneſs as to equal the whole pipe in weight: it is then faſtened upon one end of a cylindric ſteel mandril, and the lead is pulled through different ſized holes, till the pipe is of ſufficient length and thickneſs. Theſe pipes can be drawn to the length of eight or ten feet. The power required, however, is very great, which is one objection to the method. They are alſo liable to flaws; for, if the caſting happen to be imperfect, the imperfection is much increaſed and extended by the proceſs of drawing.

This manufacture has been much improved by paſſing the lead upon the mandril, through grooved rollers of different ſizes, following each other in ſucceſſion. The power required is much leſs than that required for drawing; and the pipes are ſaid to be ſuperior in other reſpects. For a more particular account of this manufacture, ſee *Lead* PIPES.

LEAD, *Red*, a preparation of mineral lead calcined and rubified; uſed by painters, potters, and ſurgeons. See MINIUM, and *Oxyds of* LEAD.

LEAD, *Salt* or *Sugar of, Saccharum ſaturni, Superacetat plumbi, ſuperacetate of lead*, is an eſſential ſalt of vinegar, incorporated with the proper ſubſtance of lead, or ceruſs, diſſolved in ſpirit of vinegar. See SACCHARUM *Saturni*, and LEAD, *ſupra.*

LEAD, *Tincture of.* See TINCTURA *Saturnina.*

LEAD, *Vinegar of,* or *of Litharge.* See VINEGAR.

LEAD, *Water of, Aqua Saturni,* is called by Mr. Goulard vegeto-mineral water, who makes it by dropping into a quart of pure water a hundred drops of the extract of ſaturn, and then adding to them four tea-ſpoonfuls of brandy. This is his ſpecific in external inflammations, particularly of the eye, for waſhing ulcers, cancers, ſcrofulas, contuſions, phlegmons, eryſipelas, piles, chilblains, tetters, gangrenes, &c. But a ſolution of the ſaccharum ſaturni will have the ſame effect.

LEAD, *White.* See CERUSSE, and LEAD, *ſupra.*

LEAD *Nails.* See NAILS.

LEAD, in the *Manege,* is a term uſed to expreſs the part that begins any motion firſt. A horſe going in a ſtraight line always leads, or cuts the way with his right foot. This is called in French *entamer le chemin.*

LEADWORT, in *Botany.* See PLUMBAGO.

LEADERS, in the *Military Art.* See FILE-*leaders.*

LEÆNA, the lioneſs. See LIONESS.

LEAF, (FOLIUM,) in *Botany* and *Vegetable Phyſiology,* is a very general, but not univerſal, organ of the herbage of plants, of the firſt importance to vegetable life, being, in many reſpects, equivalent to the lungs of animals; inſomuch that when leaves are not preſent in the uſual manner, their office muſt be performed by ſome other part, which is generally the ſtem. Leaves are, for the moſt part, remarkable for their expanded form, in which the object of nature is manifeſtly to preſent to the atmoſphere as wide an extent of ſurface as poſſible, greatly exceeding that of all the reſt of the plant. "Their colour is almoſt univerſally green, their internal ſubſtance pulpy and vaſcular, ſometimes very ſucculent, and their upper and under ſurfaces commonly differ in hue, as well as in kind or degree of roughneſs."—How great a ſhare the foliage of plants has in contributing to the beauty of the vegetable creation, and how widely their utility extends, in the ſuſtenance they afford to the animal world, not to mention their various economical uſes to mankind, is too evident to require much illuſtration. Their curious functions, and their real uſe to the plant that bears them, has not till lately been properly underſtood or juſtly appreciated. The ſcience of chemiſtry was, for a long time, not ſufficiently advanced to throw the neceſſary light upon this ſubject; and even at the preſent day, when applied to the phyſiology of vegetables, it ſerves rather to help us to conceive what *may be,* than to ſee clearly what *is,* tranſacted in their apparently ſimple, but truly elaborate, frame.

The firſt who attempted to reaſon upon the uſes and properties of leaves was Cæſalpinus, who merely ſuppoſed them a ſort of clothing, or protection againſt cold and heat. It is not worth ſtaying to conſider his reaſons, for an opinion which is ſo inadequate to what it attempts to explain. This writer conceived the foliage of plants to originate from, or to be, a ſort of expanſion of, their bark.

Some of the firſt practical obſervations that tended to diſcover the importance of leaves, were made by gardeners, who, in their various treatment of fruit trees, ſoon found they were not to be ſtripped of their leaves, even partially, without caution, and that a general injury to the foliage infallibly ruined the fruit. They have alſo univerſally diſcovered, by experience alone, the benefit of removing decayed or ſickly leaves; which all books on gardening have never failed to inculcate, though the writers had no idea of the manner in which the morbid ſecretions, or corrupted exhalations, of theſe bodies, might injure the growing plant.— When gooſeberry or currant buſhes are ſtripped of their leaves, by the voracity of caterpillars, every body knows that the fruit, if not withered, is altogether taſteleſs. We cannot even yet preciſely trace the mode in which this effect is produced, except that it evidently ariſes from a great, though only temporary, injury to the conſtitution of the ſhrub, cauſed by its premature and violent defoliation. This injury is repaired in the enſuing ſeaſon.

The abſorption and perſpiration of leaves could not long remain unobſerved, when theſe organs came to be conſidered with any philoſophical attention. Hales and Bonnet have made the beſt and moſt numerous experiments on this part of their functions. The former firſt ſuggeſted the probability of their imbibing air as well as moiſture, nor did the action of light upon them eſcape his ſagacity, though ſubſequent chemiſts and phyſiologiſts have purſued theſe ſubjects to a far greater extent. The fading of a leafy branch of any plant when gathered, and its revival, on being immerſed for a ſhort time in water, ſufficiently evince the perſpiring and abſorbing powers of the leaves. Dr. Hales firſt determined the proportion of each, by experiments upon the great annual ſun-flower, the vine, cabbage, &c. On the firſt-mentioned plant he beſtowed particular attention, and the reſult of his obſervation was that it loſt 1lb. 14 oz. weight in the courſe of a hot dry day, but in a dry night only three ounces. In a rainy night it gained two or three ounces by abſorption. The ſurface of the plant, compared with that of its roots being, as nearly as could be calculated, in the proportion of five to two, it follows that the daily abſorption by the roots was ſo much the more rapid, in order to make up the loſs which took place in the herbage. Compared with the ordinary inſenſible perſpiration of the human body, that of the ſun-flower is only as 15 to 50; but the bulk or ſolid ſubſtance of the two being extremely different, that of the vegetable being ſo much more dilated, it is found the latter perſpires ſeventeen times more, in proportion to its bulk, than the human frame. Theſe proportions of courſe vary in both, according to circumſtances. If the roots be plentifully watered, the evaporation by the leaves is the more copious and rapid. In newly removed plants, the abſorption by the leaves ſupplies the wants of the vegetable body, till the roots have ſhot forth new fibres in order to obtain moiſture in that their natural direction; but if ſuch plants be immoderately watered, they may be killed by exceſs of moiſture; for no evaporation by the leaves being allowed to take place, nothing can be imbibed by the roots. In certain ſtates of the atmoſphere, ſome plants are frequently exhauſted by their perſpiration, and droop for want of adequate ſupplies from the roots; while others are ſo conſtructed as to perſpire very ſlowly, and therefore to reſiſt the effects of the moſt parching air or ſun. Such is the nature of the cuticle that covers the leaves of aloes, and of all ſucculent plants, more or leſs, that although they perſpire but very ſlowly, they abſorb with great facility. Hence theſe plants are admirably adapted to thrive on dry ſunny rocks, or amid the moſt arid ſandy deſerts of Africa, where the rare and trivial ſupplies of rain which fall to their lot during a great part of the year, prove ſufficient for their ſupport in conſequence of their tardy perſpiration. It is truly worthy of remark, that this difference, in their powers of imbibing and giving out moiſture, exiſts only while theſe plants retain their living principle. When killed by the application of great heat or cold, their leaves dry as quickly as any bodies of equal thickneſs. Evergreens are found to perſpire much leſs than other ſhrubs, while the *Cornus maſcula,* or Cornelian cherry, a plant with a thin dry leaf, was found by Du Hamel to perſpire to the amount of twice its whole weight in 24 hours.—See PERSPIRATION OF PLANTS.

The beſt obſervations on the abſorbing power of leaves, and its difference in different plants, have been made by Bonnet, and are recorded in his book entitled *Recherches ſur l'Uſage des Feuilles*. By laying good, healthy, full-grown leaves of various herbs or trees upon the ſurface of water, ſome with the upper, and others of the ſame ſpecies with the under, ſide applied to the water, he obſerved in which ſituation they continued longeſt in health and vigour; and alſo how far different ſpecies differed from each other in this reſpect. In general, herbaceous plants ſuſtained the longeſt this continual and copious application of wet to their upper ſurface, while various trees on which the ſame experiment was made, decidedly preferred abſorption by their under ſide.

The abſorption and evaporation in the leaves of aquatic plants; whether, like many ſpecies of *Potamogeton*, as well as the *Zannichellia*, the *Chara*, and all the ſubmerſed *Algæ*, they are entirely under water; or whether, like the *Nymphæa*, they float on its ſurface; appear in general to be very rapid; ſuch plants, however juicy, drying with great rapidity when taken into the air. They are, for the moſt part, highly vaſcular, and, no doubt, have an equal facility in imbibing and in giving out water.

Although moſt leaves are ſo formed as to have decidedly an upper and an under ſurface, the ſword-ſhaped plants (ſee ENSATÆ) are an exception. Their foliage is vertical, and has little or no upper ſurface, except where it embraces the ſtem; what is analogous to the under ſide of ordinary leaves, being in fact ſo circumſtanced in theſe, as to conſtitute their whole ſurface. Other leaves are ſo cylindrical, that no difference of ſides can be traced. In all theſe the abſorbent veſſels and the perſpiring ones muſt be diſperſed alike over the whole expanſion of the leaf; as they are over ſtalks, and eſpecially over the ſtems of plants that have no leaves at all, in which nevertheleſs all the known functions of leaves neceſſarily take place. This latter is the caſe in the whole genus *Stapelia*, and in many ſpecies of *Cactus*, as well as in ſeveral ruſh-like plants, and thoſe ſingular productions the *Cuſcuta* and *Caſſytha*.

There are, in a very few inſtances, ſtrange aberrations of configuration in leaves, deſtined to the accompliſhment of ſome particular purpoſe. Thus, thoſe of the *Dionæa*, (ſee that article,) bear an appendage like a rat-trap, the toothed lobes of which, when ſtimulated, cloſe upon each other, and impriſon any inſect that may have happened to alight upon them. The leaves of the *Sarraceniæ* are tubular, and thoſe of the *Nepenthes* bear each a tubular appendage with a lid. Theſe are found for the moſt part full of water, that ſeems to be ſecreted or poured out by the veſſels of the leaf, rather than received, as has commonly been ſuppoſed of the *Sarraceniæ*, from the atmoſphere. This water is the reſort of inſects, who moſtly periſh in it, and the materials of their decompoſing bodies are ſuppoſed to miniſter to the health of the plant. The *Droſeræ*, found in our bogs, entrap inſects by the viſcid and irritable hairs of their leaves, apparently for a ſimilar purpoſe.

This leads us to conſider the effects of air and light upon vegetables, through the medium of their foliage, which, in this point of view, is tranſcendently important.

Grew and Malpighi, independent of each other, but about the ſame period, detected, in the leaves of plants, abundance of veſicles full of air, as alſo the ſpiral-coated tubes or veſſels of the ſtems, conſidered by their diſcoverers, as well as by ſubſequent phyſiologiſts till very lately, in the light of air-veſſels likewiſe, becauſe, like the arteries of the animal frame, they appeared, on diſſection, to be empty, or at leaſt not occupied by the ſap or juices of the plant. On the detection of theſe veſicles, phyſiologiſts theoretically ſuppoſed leaves to imbibe air, "which the ſpiral veſſels were believed to convey all through the plant, in order that it might act on the ſap as it does on the animal blood. The analogy thus underſtood was not correct, becauſe air is conveyed no further than the lungs of animals; but without this hypotheſis no uſe could be found for the ſuppoſed longitudinal air-veſſels." Now it is proved that theſe longitudinal ſpiral-coated tubes do really tranſmit the ſap from one part of the vegetable frame to another, finally conveying it into the leaves, where it is acted upon by the air, either of the above-mentioned veſicles, or of the atmoſphere. The analogy with animal reſpiration holds good, therefore, much more correctly than the authors of the above hypotheſis imagined. On this ſubject we need not repeat what is ſaid under the article CIRCULATION *of the Sap*.

Dr. Hales's experiments with the air-pump, to prove the tranſmiſſion of air through the vegetable body, are to be regarded with caution, as merely ſhewing that air will pervade their longitudinal veſſels, when a branch is cut, and its vital principle probably in ſome degree injured; at leaſt when the natural movement of its ſap is by no means going on, nor that fluid remaining in its natural ſituation. Air is obtained in abundance, by means of the air-pump, from every part of the vegetable body, as well as from recently extracted ſap; and plants are found to periſh very ſoon in an exhauſted receiver. Hales rightly remarked, that air is not only taken in by plants very copiouſly along with their food, but alſo imbibed by their bark, as well as through the ſurface of their leaves. Yet we cannot follow him when he adds, "eſpecially at night, when they are changed from a perſpiring to a ſtrongly imbibing ſtate." Such a difference between night and day ſeems merely to regard the watery abſorption and perſpiration of leaves, the introduction of air, or rather its action upon them, being doubtleſs carried on chiefly in the light, that body having a principal ſhare in the reſult. Nor did this eſcape the ſagacity of Hales, who, after concluding that "one great uſe of leaves is to perform in ſome meaſure the ſame office for the ſupport of the vegetable life, that the lungs of animals do, for the ſupport of the animal life; plants, very probably, drawing through their leaves ſome part of their nouriſhment from the air:" adds two pages further; "and may not light alſo, by freely entering the expanded ſurfaces of leaves and flowers, contribute much to the ennobling the principles of vegetables?"

Bonnet's experiments and enquiries, reſpecting leaves, principally elucidate their abſorbing powers, proving them to be "furniſhed with a ſyſtem of cuticular abſorbents, which carry fluids into their ſap-veſſels, ſo as to enable them, in ſome degree, to diſpenſe with ſupplies from the root." This philoſopher has not improved upon the ideas of Hales, reſpecting the effects of air or light upon plants. He does not appear to have had any conception of leaves imbibing air and giving it out again; ſtill leſs of their effecting any change in its properties. He was not aware that the bubbles he obſerved clinging to leaves, whether dead or living, when placed under water, and expoſed to a bright ſun, were ſeparated, by the action of light, from the water itſelf; ſo that he has no right to be conſidered as the diſcoverer of the expiration of plants.

The great Dr. Prieſtley firſt pointed out a property in growing vegetables, of abſorbing carbonic acid gas, denominated by him fixed air, by the upper ſurface of their leaves, and of giving out by their under ſurface oxygen gas, or pure reſpirable air. Dr. Ingenhouſz improved upon this important diſcovery, by obſerving light to be neceſſary to theſe functions, remarking that in the dark leaves give out a bad or carbonic air, and that fruits and flowers almoſt invariably give out the laſt-mentioned kind of air, at all times, but eſpecially in the dark. Aquatic or bog plants, as the *Epilobium* and *Nymphæa*, were found by theſe philoſophers to excel remarkably in this faculty of purifying air, or of changing it from a carbonic to an oxygenous nature. This operation is, in moſt caſes, performed very quickly. A vine-leaf in an ounce phial of carbonic acid gas, that immediately extinguiſhed a candle, being ſet in the ſun, without water, changed it to pure reſpirable air in an hour and a half. Dr. Prieſtley found ſome of the bog-plants to alter even unmixed inflammable air, or hydrogen. Succulent leaves afford moſt of the purified air in queſtion, becauſe of the abundance of their cellular parenchymatous ſubſtance, in which the chemical operations of leaves are performed, and in which their green colour chiefly reſides. This colour therefore does not exiſt in leaves never expoſed to the light, in which conſequently no ſuch chemical operations ever take place. The ſickly white obſervable in that part of celery ſtalks, or of the ſprouts of aſparagus, indeed of all plants, which is under the ſurface of the ground, is entirely owing to the abſence of light; for when expoſed to light ſuch parts become green like the reſt of the herbage. It is found that expoſing plants to the action of hydrogen gas will produce the ſame green colour, even if they are kept in the dark.

Every perſon attentive to the growth of plants muſt have obſerved the conſtant direction of the upper ſurface of their leaves towards the light. When the ſituation of branches nailed to a wall is altered, and the poſition of their leaves diſturbed, the latter reſume their natural poſture in a day or two, and the more ſpeedily in proportion to the brightneſs of the weather. It has long been known that light acts beneficially upon the upper ſurface of leaves, and hurtfully upon their under ſide; for if the latter be repeatedly turned to the light, or forcibly kept in ſuch an unnatural poſition, the leaves grow ſickly, black or diſcoloured ſpots appear about the veins at their backs, and the cuticle ſcales off. Thus we have ſeen the *Magnolia grandiflora*, whoſe rigid leaves do not readily change their poſture, very materially injured, by nailing it to a wall in hot and bright weather. The under ſurface of its foliage became ſpotted, and the colour of the other ſide ſickly; the leaves fell prematurely, and the plant was long in recovering its health. One great uſe of footſtalks to leaves appears to be to facilitate their turning to the light, and varying their poſition as the ſun purſues his courſe; as may be ſeen in clover and other papilionaceous plants more eſpecially. Leaves ſeparated from their parent branch, and ſuſpended delicately by a fine thread, turn to the light as effectually as if in their natural ſituations. This power, however, of turning to the light, is not equally obvious in all leaves. Such as are very much folded or plaited, neceſſarily preſenting, on that account, about an equal portion of their ſurface to the ſun in every poſition, are often leſs moveable; and this may account perhaps for the inſenſibility obſerved by Bonnet in the mallow. Sword-ſhaped leaves are always vertical, and do not alter their poſition. Thoſe of the papilionaceous tribe are, as we have already hinted, among the moſt ſenſible. Light ſeems, in many inſtances, the ſole cauſe of their expanſion, for when it is withdrawn, they fold together and droop as if dying; ſuch a ſtate of relaxation being very elegantly, and indeed, as it appears, very correctly, termed by Linnæus the ſleep of plants, on which ſubject he has left us a curious diſſertation in his *Amoenitates Academicæ*, v. 4. p. 333. He there juſtly remarks that the general aſpect of a field, a garden, or a hot-houſe, is wonderfully changed during a ſummer's night in Sweden, ſo as to puzzle the moſt experienced botaniſt, owing to a general alteration in the poſture of the foliage of plants. Some fold the two ſides of the leaf together; others turn their leaves upward, ſo as to encloſe the flowers, which they thus ſhelter from nocturnal dews that might interfere with their impregnation; and many preſs their foliage downwards, cloſe to the ſtem or branch, whoſe buds they thus perhaps protect from cold. Such movements evince a portion of that irritability, dependent on life, which is more ſtrikingly diſplayed in the ſenſibility of ſome leaves to the touch of any extraneous body. Several ſpecies of *Mimoſa*, called for that reaſon ſenſitive plants, as well as a few others of different genera, fold up their leaves when any concuſſion is given to the plant. If any of their leaflets be ſhaken or injured, the irritation is communicated to the neighbouring ones, and thence, with accelerated velocity, to the reſt, even to other leaves on the ſame branch or root. The leaves of the *Hedyſarum gyrans* of Bengal are remarkable for a ſpontaneous movement, apparently independent of external ſtimulation. They are ternate, and their ſmall lateral leaflets move frequently, but irregularly, up and down, independent of light, requiring only, for the performance of this action, a warm and ſtill air. This, like all other movements of leaves, is moſt conſpicuous in ſuch as are young.

In conſequence of the obſervations of Prieſtley and Ingenhouſz, confirmed, variouſly extended, and explained upon the principles of improved chemiſtry by ſucceeding philoſophers, the effects of light, heat, and atmoſpheric air upon leaves, and, where theſe are wanting, upon the green ſtems of plants, are now, as far as concerns all vegetables in common, tolerably well underſtood. It is agreed that in the day-time the parts in queſtion imbibe from the atmoſphere carbonic acid gas, which they decompoſe, abſorbing the carbon as matter of nouriſhment, which is added to the ſap, and emitting the oxygen. Plants abſorb the ſame gas from water, when by the action of light it is ſeparated from that fluid. Air contaminated with this gas by the burning of a candle, or the breathing of animals, ſerves therefore as food for vegetables, who in their turn purify it again, and render it fit for the ſupport of animal life, by the oxygen given out from their leaves under the influence of light. Hence ariſes a mutual and eſſential dependence of the animal and vegetable kingdoms on each other, for the diſcovery of which, one of the moſt curious and beautiful in natural philoſophy, we are principally indebted to Dr. Prieſtley, that great name from which fanaticiſm would gladly tear, if it could, even the laurels of ſcience.

The above view of the functions of leaves exactly coincides with Mr. Knight's theory of vegetation, of which we have given an outline in our article CIRCULATION *of the Sap*. That gentleman has proved, that very little alburnum, or new wood, is ſecreted when light is kept from the leaves. We are alſo thus enabled to underſtand how eſſential oils may be produced, which, as well as ſugar, are known to be compoſed of oxygen, hydrogen, and carbon in different proportions. The various modifications of mucilage, detected and diſtinguiſhed in the vegetable body by modern chemiſtry, are perhaps, as more dependant on the vital principle for their formation, more inexplicable by chemical laws. It is perhaps in vain to attempt to explain how any particular ſecretion is elaborated. Still leſs can we comprehend how different tribes of plants, growing in the ſame ſoil, even vegetating in the ſame diſtilled water, ſhould regularly produce, as far as the health of the individuals under experiment will allow, their own peculiar ſecretions, ever preſerving the moſt eſſential qualities of their ſpecies in this reſpect. How the nutritious ſap, originally ſimilar in theſe different plants, can be ſo operated upon, by the very ſame agents, in the thin and tender ſtructure of the different leaves, as to produce ſubſtances ſo totally unlike each other as we meet with in plants, whence their various flavours and qualities originate; all this is inexplicable in our preſent ſtate of knowledge, though tranſacted every moment before our eyes. The different ſecretions in various organs of the ſame individual vegetable body; the acrimony of the leaf, the bitter of the bark, the perfume of the bloſſom, the ſweetneſs and acidity of the fruit; all theſe are no leſs wonderful. We underſtand enough indeed to conceive how the reſt may be accompliſhed, and may congratulate ourſelves on being allowed even a glimpſe of thoſe myſteries of nature, which our finite powers are inadequate fully to comprehend.

Having ſaid ſo much on the phyſiology of leaves, it is neceſſary to conſider them in another point of view, for the purpoſes of ſcientific botany. In diſcriminating the ſpecies of plants a knowledge of the various forms of leaves is of the utmoſt importance, nor are they entirely uſeleſs in the diſcrimination of natural tribes or orders. It is univerſal with graſſes and the orchis family to have ſimple and undivided leaves; it is nearly as general for the papilionaceous or leguminous tribe to have compound ones. In ſome orders they are always oppoſite, in others alternate; in ſome genera evergreen, in others deciduous; but theſe latter circumſtances are liable to various exceptions. Trees and ſhrubs of North America, and even thoſe of Europe, generically related to them, have a general tendency to aſſume very brilliant colours in their foliage, as it verges towards decay. Graſſes, on the other hand, are very uniform and conſtant in their green colour, which is ſeldom changeable. Evergreen leaves are commonly darker coloured, though more ſhining than others, and will often thrive with a leſs proportion of light than is neceſſary for other trees. The lower leaves of herbs that grow in lofty and windy ſtations, are frequently much leſs divided than the upper ones, while the reverſe is the caſe with moſt aquatic plants, whoſe lower leaves, immerſed in the water, are ſometimes quite capillary, while the uppermoſt are broad, and float on its ſurface; witneſs the *Ranunculus aquatilis*, whoſe white flowers beſpangle our ponds in ſummer. The action of a running ſtream appears to elongate the leaves of this, as well as of many other plants. The dilated form of leaves in general, by which they preſent ſo large a ſurface to the atmoſphere, cauſes them to be the more eaſily diſlodged by autumnal ſtorms, when their connection with the branch or ſtem has already become gradually looſened by their approaching decay. See Deciduous, and Fall *of the Leaf.*

Leaves are, in the firſt place, to be conſidered as to their ſituation and poſition.

Folia radicalia, radical leaves, ſpring from the root, as in the Primroſe and Cowſlip; *caulina*, ſtem-leaves, grow on the ſtem, as in the White Lily; *ramea*, branch-leaves, if different from thoſe of the main ſtem, require to be diſtinguiſhed from them, as in Purple Cow-wheat, *Melampyrum arvenſe.*

Alterna, alternate leaves, ſtand ſolitarily on the ſtem or branches, as in Willows and many common plants; *oppoſita*, oppoſite ones are found in the Lilac, and many others equally common; *ſparſa*, are ſcattered without any order, as in the Orange and White Lilies; *conferta*, are crowded together, as in the *Rhododendron* and *Azalea.*

Bina, are only two upon a plant, like thoſe of the Lily of the Valley; *terna*, ſtand three together, as in the ſweet *Verbena triphylla*, and often in the *Fuchſia*; *quaterna, quina, ſena*, &c. are when four, five, ſix, or more, ſurround the ſtem in a whorl, as in ſome kinds of Heath; *verticillata*, whorled leaves, uſed without any reference to the number, expreſſes this mode of growth, as exemplified in the Woodruff, Madder, and many plants of the ſame as well as different families.

Faſciculata, tufted leaves, are ſeen in the Larch and Cedar; *imbricata*, lying like tiles upon a houſe, in the Common Ling; *decuſſata*, ſtand in pairs croſſing each other, as in the Caper Spurge, *Euphorbia Lathyris*; *diſticha*, two-ranked, ſpread in two directions, yet are not regularly oppoſite at their origin, as in the Yew; *ſecunda*, are unilateral, leaning all toward one ſide, as in the Solomon's Seal.

Adpreſſa are cloſely preſſed to the ſtem, as in ſome kinds of *Xeranthemum* and Spurge, in which caſe the back of each leaf only is preſented to the light; *verticalia*, ſtand perpendicularly, with both ſides equally at right angles with the horizon, like the *Lactuca Scariola*, but ſuch a caſe is rare, except in ſword-ſhaped leaves; *erecta*, are ſuch as grow nearly upright, forming a very acute angle with the ſtem; *patentia* ſpread more in the uſual manner; *horizontalia*, or *patentiſſima*, ſpread in the greateſt poſſible degree; *reclinata* incline downward, the extremity of each being lower than the baſe, or point of inſertion; *recurva*, are curved backward, as in *Erica retorta*; *incurva*, turn inward, as in *E. empetriſolia*; *obliqua*, are twiſted, ſo that one part is vertical, the other horizontal; *reſupinata*, are ſo completely turned or reverſed that the upper ſurface is become the under, as in *Alſtræmeria pelegrina*; *depreſſa*, are radical leaves preſſed cloſe to the ground, like the Hoary Plantain, *Plantago media*, or any ſucculent ones that are vertically flattened, in oppoſition to *compreſſa*, flattened laterally; *natantia*, float on the ſurface of water; *demerſa, immerſa*, or *ſubmerſa*, are plunged beneath it; *emerſa* are raiſed above the water, others upon the ſame plant being ſunk below its ſurface.

The inſertion of leaves means the mode in which they are connected with the parent plant.

Petiolata, ſtand on footſtalks (*petioli*) either long or ſhort, ſimple or compound; *peltata*, have the footſtalks inſerted, not into the baſe as uſual, but into the middle of each leaf, like the arm of a man holding a ſhield, as in the Common Naſturtium or *Tropæolum*; *ſeſſilia*, ſeſſile leaves, ſpring immediately from the ſtem, branch or root, without any footſtalk, of which examples are frequent; *amplexicaulia*, claſp the ſtem with their more or leſs dilated baſe, being uſually alternate; *connata*, or *connato-perſoliata*, are oppoſite leaves, united at the baſe, ſo that the ſtem runs through them; *perſoliata*, have the ſtem running through them in any way whatſoever, as *Bupleurum perſoliatum*, called Thorough-wax, from *wax* to grow, in alluſion to this circumſtance; *vaginantia*, are ſuch as ſheath the ſtem, or each other, with their baſe, which is exemplified in moſt graſſes, and many liliaceous plants that have no ſtem; *equitantia*, embrace each other with their compreſſed baſe, while they ſpread upwards in two ranks, of which the genus *Iris* affords many examples; *decurrentia*, decurrent, run down the ſtem or branch in a leafy border or wing, as in many Thiſtles, and the Great Mullein; *florifera*, bear the flowers out of their diſk or margin, as in *Ruſcus* and *Xylophylla.*

With regard to form, the firſt thing to be conſidered is whether leaves are ſimple (*ſimplicia*) or compound (*compoſita*). Of the former kind are thoſe of graſſes, Orchiſes and Lilies, which are not only ſimple but undivided, while thoſe of the Vine and Mallow are ſimple, but lobed; the Hop bears ſome leaves lobed, others undivided, as does *Laurus Saſſafras*, and the Paper Mulberry. Compound leaves are obſervable in Roſes, Jaſmine, and the Umbelliferous tribe in general, and conſiſt of leaflets, or partial leaves, (*foliola,*) connected by a common ſtalk, and falling off along with it. In compound leaves the footſtalk is either ſimple, as in the Jaſmine and Roſe, or compound, as in Parſley, Hemlock, and Fumitory. "In ſimple leaves the footſtalk, if preſent, muſt of courſe be ſimple, while in compound ones it muſt always be preſent, though not always ſubdivided."

The following are the principal forms of ſimple leaves, conſidering their outline only.

Orbiculatum, as nearly a perfect circle as poſſible, of which inſtances are very rare.

Subrotundum, roundiſh, is not uncommon.

Ovatum, the ſhape of an egg cut longitudinally, a very common form of leaves.

Obovatum, is the ſame figure reverſed, the little end being downward.

Ellipticum, oval, of an equal breadth at each end.

Oblongum, of an indeterminate oblong ſhape, three or four times longer than broad.

Spatulatum, roundiſh, or obovate, with a long taper baſe, like a ſurgeon's ſpatula

Cuneiforme, like a wedge, broad and abrupt at the extremity.

Lanceolatum, lanceolate, of a narrow oblong figure, tapering towards each end, very common, as in Willows, and *Plantago lanceolata*, or Ribwort.

Lineare, linear, narrow with the ſides as nearly parallel as poſſible, ſuch as the leaves of moſt graſſes, the various ſpecies of *Narciſſus*, the Roſemary, and many different plants. Linear-lanceolate leaves are of an intermediate ſhape between this and the laſt, or but ſlightly lanceolate, of which the gradations are numerous, often upon the ſame plant.

Aceroſum, needle-ſhaped, linear and evergreen, moſtly acute and rigid, almoſt peculiar to the Fir and Juniper tribe. Such leaves have uſually a joint where they unite with the branch, at which they ſeparate from it when they fall.

Triangulare, having three prominent angles, of whatever meaſurement or direction, as in Gooſefoot, and ſome leaves of Ivy.

Quadrangulare, having four angles, as in the *Liriodendrum* or Tulip-tree, a very peculiar kind of leaf.

Quinquangulare, with five angles, like the Cyclamen, and Ivy.

Deltoides, deltoid, or trowel-ſhaped, having three angles, of which the terminal one is much further from the baſe than the two lateral ones, as in *Chenopodium Bonus-Henricus.* Linnæus in his *Philoſophia Botanica*, p. 43, cites his fig. 58. of that work as an example of this leaf, which is a miſtake, that figure being a repreſentation of the ſucculent three-edged leaf, (*fol. trigonum,*) of *Meſembryanthemum deltoides.*

Rhombeum, rhomboid or diamond-ſhaped, approaching to a ſquare, though the ſides are ſcarcely ever equal. This is ſeen in *Trapa natans*, and the Stinking Gooſefoot.

Reniforme, kidney-ſhaped, a ſhort broad rounded figure, hollowed out at the baſe, as in Aſarabacca.

Cordatum, heart-ſhaped, ovate hollowed out at the baſe, according to the vulgar idea of a heart; a form very frequent in leaves.

Lunulatum, creſcent-ſhaped, like a half-moon, whether the points be directed backward, as in *Sagittaria obtuſifolia* when its leaves are ſhorter than uſual, or forward, as in *Paſſiflora lunulata*, Sm. Ic. Pict. t. 1.

Sagittatum, arrow-ſhaped, like *Sagittaria ſagittifolia*, and ſeveral ſpecies of Sorrel, *Rumex.* In the Great White Bindweed, *Convolvulus ſepium*, the poſterior angles are abrupt or lopped.

Haſtatum, halberd-ſhaped, triangular, hollowed out at the baſe and ſides, the lower lobes ſpreading horizontally, at right angles with the footſtalk, as in Sheep's Sorrel, and the upper leaves of the Woody Nightſhade, *Solanum Dulcamara.*

Panduriforme, fiddle-ſhaped, oblong, blunt and dilated at each end, hollowed out at each ſide, of which remarkable figure the Fiddle Dock is a ſtriking, and almoſt ſingular example.

Runcinatum, runcinate or lion-toothed, that is *re-uncinatum*, hooked backward, being cut into many tranſverſe acute ſegments, whoſe points are directed backwards, like the Dandelion.

Lyratum, lyrate, ſo named in alluſion to the antique lyre, but reverſed. This leaf has a broad rounded extremity, with ſeveral tranſverſe rounded ſegments, gradually leſſening towards its baſe, as in *Eryſimum Barbarea.* It is moſt frequent in the Cruciform and Compound claſſes, and by an occaſional deep ſeparation of the ſegments, often becomes a compound or lyrato-pinnate leaf.

Fiſſum, cloven or ſplit, when the margins of the fiſſures and ſegments are ſtraight, not rounded, as in the Ginkgo or Maidenhair-tree. *Bifidum, trifidum, multifidum*, &c. expreſs the number of the ſegments, but theſe terms are alſo uſed with leſs limitation, to indicate the number of diviſions, of whatever ſhape, when the latter circumſtance does not come under conſideration.

Lobatum, lobed, when the margins of the ſegments are rounded, as is moſt generally the caſe; witneſs the Hepatica. *Bilobum, trilobum*, &c. indicate the number of the lobes.

Sinuatum, ſinuated, cut along the margin into deep, rounded, or wide openings, like *Statice ſinuata*, *Meſembryanthemum pinnatifidum*, Curt. Mag. t. 67, and the Common Oak.

Partitum, deeply divided, almoſt to the baſe, like the Muſk Mallow. *Bipartitum, tripartitum, multipartitum*, expreſs the number of diviſions.

Laciniatum, laciniated, cut, or as it were torn, into numerous irregular portions, which may be ſeen in various ſpecies of *Senecio*, denominated on that account Ragwort.

Inciſum and *Diſſectum*, cut or jagged, are nearly ſynonymous with the laſt, but expreſs a leſs deep diviſion of the whole leaf.

Palmatum, palmate or hand-ſhaped, cut into ſeveral oblong, nearly equal or uniform ſegments, about half way, or rather more, towards the baſe, leaving an entire ſpace there, like the palm of the hand, as in the common Blue Paſſion-flower, whoſe leaves however are frequently ſtill more deeply divided, and the Fig.

Pinnatifidum, pinnatifid, or wing-cleft, cut tranſverſely into ſeveral oblong parallel ſegments, like ſeveral ſpecies of Thiſtle, *Carduus*, and on a ſmaller ſcale, though more deeply, *Lepidium petræum* and *alpinum;* as well as *Coronopus didyma* of Fl. Brit.

Bipinnatifidum, doubly ſo divided, as in the Long Rough-headed Poppy, *Papaver Argemone*, and *Eriocalia major;* ſee that article.

Pectinatum, pectinate, a fine and elegant ſort of pinnatifid leaf, whoſe ſegments are ſo narrow and ſo regularly parallel, that they reſemble the teeth of a comb, exemplified in the Water Violet, *Hottonia paluſtris*.

Inæquale, unequal, ſometimes called oblique, is when the two halves of a leaf are manifeſtly unequal in dimenſions, eſpecially at the baſe, where they are not at all parallel. This is the caſe with moſt ſpecies of *Eucalyptus* and *Begonia*, but it is hardly obſervable in any Britiſh plants, except in a ſmall degree.

Integrum, undivided, expreſſes a leaf or leaflet being deſtitute of all ſegment, diviſion or lobe, without any reference to its margin, whether toothed or not.

The various terminations of leaves are thus diſtinguiſhed.

Folium truncatum, an abrupt leaf, has the extremity cut off, as it were, tranſverſely, by a ſtraight line, as the Tulip-tree, *Liriodendrum tulipifera*.

Præmorſum, bitten, or jagged-pointed, is blunt with various irregular notches, a very unuſual termination, but characteriſtic of Dr. Swartz's genus *Aërides*, a tribe of Indian *Orchideæ*. *Hibiſcus præmorſus*, Linn. Suppl. has a more dilated leaf with a ſimilar termination.

Retuſum, retuſe, blunt with a broad ſhallow notch, like the Mountain Sorrel, *Rumex digynus*.

Emarginatum, emarginate or nicked, having a ſmall acute notch at the ſummit, which is not uncommon.

Obtuſum, blunt, terminating in a ſegment of a circle, like the Primroſe leaf, and many others.

Acutum, ſharp, ending with an acute angle, as is ſtill more uſual.

Acuminatum, pointed, having a taper point, like many graſſes, and various other plants.

Obtuſum cum acumine, blunt with a ſmall point, like the Sea Lavender, *Statice Limonium*.

Mucronatum, or *Cuſpidatum*, ſharp-pointed, tipped with a rigid or pungent ſpine, like the Thiſtle tribe.

Tridentatum, three-toothed, when there are three terminal, nearly equal, points.

Tricuſpidatum expreſſes the ſame thing.

Cirroſum, cirroſe, tipped with a tendril, as in *Glorioſa* and *Flagellaria*, two Indian plants.

The different margins of leaves are defined as follows, and are very important to be well underſtood, and correctly applied, in forming ſpecific characters of plants.

Folium integerrimum, an entire leaf, is deſtitute of all marginal teeth, notches or inciſions, as in the Orchis and Lily tribes. This term, alluding ſolely to the margin, has no reference to, or compariſon with, *integrum*, which concerns the general figure, or diſk, of the leaf.

Spinoſum, ſpinous, beſet with prickles, though otherwiſe perhaps entire, as in Thiſtles, and Eryngos. The veins and ribs are ſpinous in ſome kinds of *Solanum*, and many Roſes and Brambles.

Inerme, unarmed, is oppoſed to ſpinous.

Glanduloſum, glandular, bordered with pores that exude ſome peculiar fluid, as in *Salix pentandra*, the Bay-leaved Willow, and ſome others.

Ciliatum, fringed, bordered with ſoft parallel hairs, as in *Rhododendrum hirſutum*.

Cartilagineum, cartilaginous, having a hard or horny edge, like ſeveral ſpecies of Saxifrage.

Dentatum, toothed, beſet with directly projecting teeth, of its own ſubſtance, as in ſome ſpecies of Plantain and Hawkweed.

Denticulatum, finely toothed, is much more uſual than the laſt.

Serratum, ſerrated, having ſharp teeth pointing forward, like thoſe of a ſaw, either in a ſimple row, like the Nettle, or with ſmaller intermediate ſerratures, as in the Strawberry tree, (*Arbutus Unedo*,) various Roſes, and others. Such leaves are called *duplicato-ſerrata*, doubly ſerrated.

Serrulatum, minutely ſerrated, is uſed when the teeth are very fine, even ſo minute perhaps as to be ſcarcely perceptible but by the touch.

Crenatum, notched or crenate, when the indentations are blunted or rounded, and not directed towards either end of the leaf, which may be ſeen in Ground-ivy, and ſeveral Saxifrages, ſome of which are ſharply crenate. The two Britiſh ſpecies of *Salvia* are examples of doubly crenate leaves.

Eroſum, jagged, irregularly cut or notched, like ſome ſpecies of *Senecio* or Ragwort.

Repandum, wavy, bordered with ſmall projections and ſhallow ſegments of circles alternately, as in Fringed Water-lily, *Menyanthes nyphæoides*.

Revolutum, revolute, turned or rolled backwards, as in Roſemary. As this term always regards the margin only, in modern botanical phraſeology, it is needleſs to ſay *margine revolutum*.

Involutum, involute, is the reverſe of the laſt, as in Butterwort (*Pinguicula*).

Conduplicatum, folded, when the margins are clapped flatly together, as in *Roſcoea purpurea*, Sm. Exot. Bot. t. 108, and the baſes of ſword-ſhaped leaves.

Terms deſcriptive of the ſurfaces of leaves, no leſs requiſite to be clearly underſtood than the former, are as follows.

Folium glabrum, a ſmooth leaf, is uſed in contradiſtinction to all kinds of haireneſs or pubeſcence.

Læve, ſmooth and even, is oppoſed to all kinds of roughneſs and inequality whatever. Thus, the bliſtered leaf of a cabbage is *glabrum*, but not *læve;* that of an Orchis, or of Myrtle, is both.

Nitidum, poliſhed, ſmooth and ſhining, like Laurel.

Viſcidum, viſcid, exuding a clammy juice, as in Butterwort.

Verrucoſum, warty, beſprinkled with hard tubercles, like the Pearly Aloe, or ſome ſpecies of *Echium;* the warts of the latter moſtly bearing rigid briſtles.

Papilloſum, papillary, covered with ſofter tubercles, like the Ice-plant.

Scabrum, rough to the touch, from any little rigid inequalities, oppoſed to *læve*.

Aſper, is a greater degree of the laſt, of which one of the moſt eminent examples is *Symphytum aſperrimum*, Sims in Curt. Mag. t. 929.

Hiſpidum, briſtly, beſet with rigid or pungent briſtles, like the Borage.

Urens, ſtinging, when each briſtle diſcharges a venomous irritating fluid, as in the Nettle; ſee *Pilus* under the article FULCRA.

Hirtum, or *Piloſum*, hairy, clothed with ſoft hairs.

Tomentoſum, downy, very ſoft to the touch, as in the Marſh Mallow, and others of that tribe.

Villoſum, ſhaggy, clothed or beſprinkled with long ſhaggy hairs, like *Hieracium villoſum*, and others.

Lanatum, woolly, covered with denſe, entangled, often branched hairs, as in ſeveral ſpecies of Mullein (*Verbaſcum*).

Incanum, hoary, whether ariſing from cloſe ſilky depreſſed hairs, as in Wormwood, and the White Willow, or from a ſcaly kind of mealineſs, as in *Atriplex*, and ſome ſpecies of *Alyſſum*.

Glaucum, glaucous, clothed with a fine mealineſs, of a ſea-green colour, which eaſily rubs off, as in the Cabbage, the *Chlora*, and many others.

Maculatum, ſpotted, beſprinkled with ſpots or ſtains of a different colour from the prevailing green of the leaf. In *Lamium maculatum* theſe ſpots are white, in *Hypochæris maculata* they are of a dark purple.

Coloratum, coloured, is uſed when a leaf, or any part thereof, is of any other colour than green, as in *Amaranthus tricolor*.

Punctatum, dotted, either ſuperficially, as in *Rhododendrum punctatum*, Andr. Repoſ. t. 36, or with pellucid cells filled with an eſſential oil, like *Hypericum perforatum*, and the whole natural order of Juſſieu's *Aurantia*.

Rugoſum, rugged, having the veins tighter than the intermediate ſpaces, ſo that the latter become tumid, as in the Garden Clary, and many other ſpecies of *Salvia*.

Bullatum, bliſtery, a more remarkable degree of the laſt, frequent in the Garden Cabbage.

Plicatum, plaited, when the diſk of the leaf, eſpecially towards the margin, is acutely folded up and down, as in Mallows, and Ladies' Mantle.

Undulatum, undulated, when the diſk near the margin is waved obtuſely up and down, in conſequence of being more ample than the adjoining part, as in *Cyamus Nelumbo*; or than the rib, as in *Reſeda lutea* and *alba*.

Criſpum, curled, when the border is ſo much more dilated than the diſk, that it neceſſarily becomes curled and twiſted, which is the caſe with the Curled Mallow, and ſome varieties of Mint, for this mode of growth is juſtly ſuſpected by Linnæus, to be but a variety, or preternatural luxuriance.

Concavum, hollow, depreſſed in the centre, owing to a tightneſs in ſome part of the circumference, as in *Cyamus Nelumbo*.

Canaliculatum, channelled, having a longitudinal depreſſion, like ſeveral ſpecies of *Narciſſus*.

Venoſum, veiny, when the veſſels by which the fluids are conveyed through the leaf, are branched, ſubdivided, and more or leſs prominent, frequently forming an elegant network, in which caſe the leaf is ſaid to be reticulated, either on one or both its ſurfaces.

Nervoſum, or *Coſtatum*, (ſee the latter article,) ribbed, when the veſſels extend in ſimple lines from the baſe to the point, or towards it. The greater cluſters of veſſels are generally called *nervi* or *coſtæ*, nerves or ribs, the ſmaller *venæ*, veins, whether branched or ſimple.

Avenium, veinleſs, and *Enerve*, ribleſs, are oppoſed to the laſt-mentioned terms.

Trinerve, three-ribbed, is a leaf with three great or principal ribs, all alike diſtinct and ſeparate from the very baſe, as well as remote from the margin, like the beautiful *Blakea trinervis*.

Baſi trinerve, three-ribbed at the baſe, has the baſe cut away, as it were, cloſe up to the lateral ribs, as in the Burdock, and Great Annual Sunflower.

Triplinerve, triply-ribbed, is when the ſide-ribs branch off from the middle one, at ſome diſtance above the baſe, as in *Laurus Cinnamomum* and *Camphora*, and many ſpecies of Sunflower. The fine and ample South American genus *Melaſtoma*, is remarkable for the conſpicuous ribs of its leaves, which are uſually five, ſeven, or more, the lateral ones either branching off from the central, or all of them diſtinct to the baſe.

Nudum, naked, implies that a leaf is deſtitute of all kinds of clothing or hairineſs, as in the Orchis.

Variegatum, variegated, is a ſort of variety or diſeaſe, in which it differs from *coloratum*, the latter being natural, and proper to the ſpecies. Variegation of leaves conſiſts in white or yellow irregular blotches, as in the Elder, Round-leaved Mint, Holly, and *Aucuba japonica*. Such plants are uſually more tender, and difficult of increaſe, than when in their natural ſtate, as gardeners experience in Geraniums.

The following terms expreſs the ſubſtance, peculiar configuration, or ſome other circumſtance relating to leaves, not included in the foregoing liſts.

Folium teres, or *cylindraceum*, cylindrical, is ſeen in *Conchium gibboſum*, and ſome others of that genus. See CONCHIUM.

Semicylindraceum, ſemicylindrical, flat on one ſide, which is generally the upper, like *Salſola fruticoſa*, and *Chenopodium maritimum*.

Subulatum, awl-ſhaped, tapering from the baſe to the point, like *Salſola Kali*.

Tubuloſum, tubular, hollow within, as in the Onion, and ſome other ſpecies of *Allium*, ſome Ruſhes, &c. The tube is double in *Lobelia Dortmanna*.

Carnoſum, fleſhy, of a thick pulpy ſubſtance, as in all thoſe called ſucculent plants, belonging moſtly to the genera of *Sedum*, *Craſſula*, *Aloe*, *Meſembryanthemum*, &c. Of the ſingular power in ſuch leaves of reſiſting drought, we have already ſpoken. When bruiſed they ſoon dry or corrupt.

Gibbum, gibbous, ſwelling on one ſide or both, as in *Aloe retuſa*.

Compreſſum, compreſſed, flattened laterally.

Depreſſum, depreſſed, flattened vertically, as already mentioned. Various kinds of *Meſembryanthemum* exemplify theſe.

Carinatum, keeled, when the back is longitudinally prominent, like the keel of a boat.

Enſiforme, ſword-ſhaped, compreſſed, tapering to a point, ſlightly convex at each ſide, neither of which is properly the upper or under ſurface; as in *Iris* and its allies.

Anceps, two-edged, is nearly ſynonymous with the laſt.

Acinaciforme, ſcimitar-ſhaped, and *Dolabriforme*, hatchet-ſhaped, are two kinds of ſucculent leaves appropriated to two ſpecies of *Meſembryanthemum*, that bear the ſame names.

Trigonum, three-edged, has three longitudinal ſides and as many angles, like *Meſembryanthemum deltoides*, Linn. Phil. Bot. f. 58.

Triquetrum differs from the laſt only in being more preciſely applied to a three-ſided awl-ſhaped leaf.

Tetragonum, four-edged, has four prominent angles, as in *Iris tuberoſa*.

Lingulatum, tongue-ſhaped, is a thick oblong blunt figure, generally cartilaginous at the edges, as in *Saxifraga Cotyledon*, and ſome of its near relations.

Membranaceum, membranous, expreſſes a thin pliable ſort of leaf, the reverſe of ſucculent.

Coriaceum, leathery, is thick and tough, without being pulpy or ſucculent, like *Magnolia grandiflora*, *Aucuba*, Laurel, and many others.

Sempervirens, evergreen, permanent through one, two, or more winters, ſo that the branches are never ſtripped.

Deciduum, deciduous, (ſee that article,) ſuch as falls off at the approach of winter, as in moſt trees and ſhrubs of cold climates.

Alienatum, alienated, when the firſt leaves of a plant give place to others totally different from them, as well as from the natural habit of the genus, as in many *Mimoſæ* of New Holland.

Cucullatum, hooded, when the edges meet in the lower part and expand in the upper, forming a ſheath or hood, of which the genus *Sarracenia* is a curious example. The Common Lime, *Tilia europæa*, is liable to a variety in which the ſame thing takes place accidentally. A tree of this kind, of which we have a ſpecimen, in the church-yard of Zedlitz in Bohemia, is vulgarly ſuppoſed to bear ſuch hooded leaves, in conſequence of a parcel of monks having once been hanged upon this tree. It is ſeldom we can ſo clearly trace the cauſe of any variety. Some might think the experiment worth repeating.

Appendiculatum, furniſhed with an appendage, or additional organ, for ſome purpoſe not eſſential to a leaf, as the irritable lobes at the end of the foliage of *Dionæa muſcipula*; and the pouch with a lid, upon that of *Nepenthes diſtillatoria*; of both which we have already treated. *Aldrovanda* and *Utricularia* bear numerous bladders on their leaves under water, which ſeem to ſecrete air for the purpoſe of floating the plants, eſpecially perhaps at their flowering ſeaſon.

Folia compoſita, compound leaves, conſiſt of two or any greater number of partial leaves, connected by a common footſtalk, whether ſimple or branched. Such partial leaves are termed *foliola*, leaflets.

Folium articulatum, a jointed leaf, conſiſts of one leaflet, or pair of leaflets, growing out of the ſummit of another, with a ſort of joint, as in *Fagara tragodes*.

Digitatum, fingered or digitate, has ſeveral leaflets at the top of one common ſtalk, as in many *Potentillæ*.

Binatum, binate, conſiſts of a pair of leaflets only on one footſtalk, as in *Zygophyllum*, ſome *Mimoſæ*, the Great Everlaſting Pea, and other ſpecies of *Lathyrus*.

Ternatum, ternate, has three leaflets, like the Trefoil and Strawberry.

Quinatum, quinate, has five.

Pinnatum, pinnate, a very common kind of leaf, is formed of ſeveral leaflets, ranged laterally along one footſtalk, either with or without partial ſtalks, and in an oppoſite or alternate manner. There is uſually a terminal leaflet, as in Roſes, Jaſmine, and Elder, which mode of growth is called *folium pinnatum cum impari*, and is that always underſtood, when nothing is particularized; *abruptè pinnatum* means that there is no ſuch terminal or odd leaflet. Sometimes its place is ſupplied by a tendril, as in Vetches and Peas, and ſuch a leaf is termed *pinnatum cirroſum*. *Interruptè pinnatum*, interruptedly pinnate, is when the principal leaflets are ranged alternately with one or more intermediate ſeries of ſmaller ones, as in our Engliſh *Spirææ*, and *Potentilla anſerina*. *Articulatè*, jointedly, is when there are apparent joints in the common footſtalk, as in *Weinmannia pinnata*. In the Japaneſe ſhrub *Nandina domeſtica* the leaflets all ſeparate by a joint at their baſe, very ſoon after the leaf is gathered. *Decurſivè*, decurrently, is when the leaflets run down the footſtalk at their baſe, like *Eryngium campeſtre*. *Lyratò*, in a lyrate manner, has the terminal leaflet largeſt, the reſt gradually ſmaller, often with intermediate leaflets, as in *Geum*, and the Turnip. This and the true lyrate leaf often vary into each other, in the ſame plant or ſpecies. *Verticillatò*, in a whorled manner, has the leaflets cut into fine divaricated ſegments, embracing the footſtalk, of which the curious *Sium verticillatum*, Fl. Brit. is an inſtance.

Auriculatum, an auricled leaf, bears a pair of leaflets at its baſe, that often indeed unite with it, as in the *Dipſacus piloſus*, and *Salvia triloba*. *Hedyſarum gyrans*, the Moving Plant, mentioned above, has properly an auricled leaf, rather than a ternate one, the auricles being what move up and down ſpontaneouſly.

Conjugatum, conjugate or yoked, conſiſts of one pair of leaflets, and is much the ſame as *binatum*. *Bijugum*, *trijugum*, *quadrijugum*, *multijugum*, expreſs particular numbers of pairs of leaflets, as is ſometimes neceſſary in the ſpecific characters of *Mimoſæ*.

Pedatum, pedate or foot-like, is in the firſt inſtance ternate, but the two lateral leaflets are compounded in their fore part, which may be ſeen in *Helleborus fœtidus* and *H. niger*. "There is an affinity between a pedate leaf, and thoſe ſimple ones which are three-ribbed at the baſe."

The different degrees in which leaves are compounded are thus diſtinguiſhed, without any reference to the mode.

Folium compoſitum is a ſimply compound leaf, as in Roſes.

Decompoſitum, doubly compound, is exemplified in the Gout-weed (*Ægopodium*), and many other umbelliferous plants.

Supradecompoſitum, more than twice compounded, is ſeen in ſome common umbelliferous plants, as the Hemlock, and in many *Mimoſæ*.

The following terms expreſs not only the degree but the mode.

Bigeminatum, twice paired, and *Tergeminatum*, thrice paired, are found in ſome *Mimoſæ*.

Biternatum, twice ternate, is ſeen in *Ægopodium*, and *Triternatum*, thrice ternate, in *Fumaria lutea*.

Bipinnatum, doubly pinnate, *Tripinnatum*, triply pinnate, are found in many exotic leguminous plants.

Some botaniſts, amongſt whom Forſkall ſeems to have taken the lead, uſe the word *lamina* for the expanded part of a leaf, that is, for the leaf itſelf, ſo that the term is entirely ſuperfluous, and is beſides appropriated to the border of the petals in a polypetalous corolla. (See LAMINA.) What is not leaf is footſtalk (*petiolus*), the part which uſually ſupports the leaf, and whoſe different kinds will be explained under the article PETIOLUS. Another appendage to leaves, but not always preſent, any more than the footſtalk, is the *Stipula*. See FULCRUM and STIPULA.

In the uſe of the various terms above explained, it is often found neceſſary to combine two of them; in order either to expreſs ſome intermediate figure, or to provide for that variety or mutability of ſhape, very frequent in the foliage of many plants. Thus, *ovato-lanceolatum* indicates a lanceolate figure, ſomewhat dilated towards the baſe, ſo as to approach towards ovate; as *elliptico-lanceolatum* implies a dilatation about the middle. Or ſuch compound terms may expreſs, that the foliage, generally lanceolate, occaſionally verges towards either of thoſe broader forms. But we muſt be careful not to combine terms which are incompatible, as *conjugato-pinnata*, and *digitato-pinnata*, employed by ſome writers in defining *Mimoſæ*; whereas their meaning is *conjugata*, or *digitata*, in the firſt inſtance, and *pinnata* as regarding the ſecondary diviſions. *Sub* is commodiouſly prefixed to many terms, when our application of them is doubtful, or not preciſe, as *ſubrotundum*, roundiſh, *ſubſeſſile*, nearly ſeſſile; but it ſhould be ſparingly uſed. It too often indicates a want of deciſion or perſpicuity in the writer, rather than any uncertainty in his ſubject. An acute obſerver can generally ſeize what is eſſential, in parts that are the leaſt variable, in each particular tribe; paſſing over what is doubtful; and above all, not dwelling on too many particulars in his definitions, when a few are ſufficient. The leaves of plants afford, on the whole, the moſt commodious ſpecific diſtinctions, as being obvious, moſt generally preſent, and independent of the parts of fructification, from which the generic characters are taken. In few caſes are the leaves of any genus ſo uniform or ſimilar in all the ſpecies, as not to exhibit abundance of clear ſpecific differences, eſpecially when their ſtipulas and footſtalks are taken likewiſe into conſideration.

The *Leaves* of *Plants* have, in one inſtance only, as far as we know, been reſorted to for the purpoſe of forming a ſyſtem.

a ſyſtem of botanical arrangement. The celebrated Dr. Sauvages of Montpellier publiſhed, in 1751, a *Methodus Foliorum*, or an arrangement of the wild as well as garden plants about Montpellier, according to their foliage. It is preceded by an epiſtle to Linnæus in French, and an introduction in the ſame language. His orders are eleven: *Aphyllæ*, *Cæſpititiæ*, *Anguſtifoliæ*, *Latifoliæ*, *Adverſifoliæ*, *Verticillatæ*, *Digitatæ*, *Palmatæ*, *Pinnatæ*, *Decompoſitæ*, and *Laciniatæ*. But they offer, in many inſtances, ſo much violence to nature, and are attended with ſo little, if any, advantage, that it is not worth while to detail their characters. We doubt much whether this ſyſtem was ever expected to be prevalent; but if ſo, the author, truly able and excellent in other departments of ſcience, and even of ſyſtematic arrangement, has, in this caſe, been totally diſappointed.

Leaf, in *Agriculture*, ſuch parts of trees and ſhrubs as are annually ſhed and fall to the ground. Where the leaves of trees or plants can be collected in large quantities, as in parks and woodlands, they may be highly uſeful in augmenting the manure-heaps of the farmer. And it is adviſed by Mr. Young, in his Calendar, that, in wooded counties, all the leaves that can be had at little expence ſhould be raked up in October, and carted to the yards and ſtanding folds, for littering and making them into dung: he does "it," he ſays, "at three-pence per one-horſe cart-load. They do not rot eaſily, but that is," he thinks, "no objection to them; they are a ſponge to be ſaturated with urine, and if not touched previouſly to carting on the land, will convey to the field much of what might otherwiſe be loſt; and they are extremely uſeful in aiding the main object of bedding the yards" in the autumn and winter ſeaſon; and of courſe ſave ſtraw where that article is ſcarce.

Leaf, in *Gardening*. Leaves are of great uſe in the garden where they can be collected in proper ſupplies for mixing in hot-beds and other preparations, where gentle heat is required. They are, likewiſe, beneficial as light coverings againſt froſt and ſevere ſeaſons in many caſes. See Leaf, in *Botany*.

Leaf-*eared*, in *Rural Economy*, a provincial term applied to horſes when their ears are low and badly placed.

Leaf, *Indian*, in *Botany*. See Tamalapatra.

Leaf, *Water*. See Hydrophyllum.

Leaf is alſo applied to the fineſt and moſt beautiful parts of flowers, more properly called *petals*.

It is true, all flowers have not leaves or petals; and it is ſometimes difficult to determine which is to be called the leaves, and which the calyx of the ſame flower.

To prevent confounding the leaves of the flower with thoſe of the reſt of the plant, the former are called by botaniſts *petala*, the latter *folia*.

Leaves, in *Architecture*, are an ornament of the Corinthian capital, and thence borrowed into the Compoſite; conſiſting in the repreſentation of a double row of leaves covering the vaſe, tympanum, or neck of the column.

Theſe leaves are uſually formed in imitation of thoſe of the acanthus; ſometimes of thoſe of olive, and ſometimes of laurel.

The leaves are divided; each making three ranges of leſſer, and are bent at top one-third of their height.

Leaf-*gold*. See Gold-*leaf*.

Leaves, in clocks and watches, are uſed for the notches of their pinions.

Leaf-*ſilver*. See Silver.

LEAGUE, an extent of ground, conſidered lengthwiſe; ſerving to meaſure the diſtances of one place from another; and containing more or leſs geometrical paces, according to the different uſages and cuſtoms of countries.

The word comes from *leuca*, or *leuga*, an ancient Gauliſh word, for an itinerary meaſure, and adopted in that ſenſe by the Romans. Some derive the word *leuca* from λευκος, *white*; becauſe the Gauls, in imitation of the Romans, marked the ſpaces and diſtances of their roads with white ſtones. The Gallic leuca was = $1\frac{1}{2}$ Roman mile = 2415,522 yards.

A ſea-league is uſually reckoned 3000 geometrical paces, or three Engliſh miles; the large leagues of France are uſually 3000, and in ſome places 3500 paces; the mean or common league is 2500 paces, and the little league 2000. Chorier obſerves, that the ancient Gauliſh leagues were but 1500 paces; and the modern French league is = 2500 toiſes = 5328,75 Engliſh yards. The term lieue, or league, is applied in different parts of France to very different diſtances. The aſtronomical league of 25 to a degree meaſures 4865 Engliſh yards. The legal lieues, of two French miles, by which the highways were meaſured, contain each 4263 Engliſh yards. The marine league of 20 to a degree meaſures 6081 Engliſh yards.

The Spaniſh leagues are larger than the French, 17 Spaniſh leagues making a degree, or 20 French leagues, or $69\frac{1}{2}$ Engliſh ſtatute miles. The league of Spain is = four ancient Roman miles = 6441,392 yards. The large league of Spain is = five ancient Roman miles = 8051,74 Engliſh yards. On roads made ſince 1766, the diſtances are laid down at the rate of 8000 varas to the league; that is, 7416 Engliſh yards; ſo that five ſuch leagues = 21 Engliſh miles nearly. But the juridical league is 5000 varas, or 4635 Engliſh yards; ſo that eight of theſe are equal to 21 Engliſh miles. Marine leagues are reckoned at the rate of 20 to a degree. But in different parts of Spain, the leagues are very different. The leagues of Germany and Holland contain four geographical miles each. The German league, or that of Scandinavia, is = 9662,0886 Engliſh yards. The mile or league of Germany is = 200 Rheniſh yards = 8239,846 Engliſh yards.

The Perſian leagues are nearly the ſame with the Spaniſh; that is, each is equivalent to four Italian miles; which come nearly to what Herodotus mentions of the paraſanga, an ancient meaſure among the Perſians, containing thirty ſtadia; eight of which, according to Strabo, make a miles.

The Perſians mark their leagues by trees, as the ancient Romans did by ſtones, *lapides*; for which reaſon they are alſo called *agag*, a Turkiſh word ſignifying a *tree*. In Japan, the league conſiſts of 1800 fathoms. Theſe are all diſtinguiſhed by little hillocks, raiſed on purpoſe by the road-ſide. See the leagues of moſt countries reduced to the Roman foot, under Mile. See alſo Measure.

League alſo denotes an alliance or a confederacy between princes and ſtates for their mutual aid, either in attacking ſome common enemy, or in defending themſelves. The word comes from *liga*; which, in the corrupt Latin, was uſed for a confederacy: "Qua quis cum alio ligatur."

There have been ſeveral holy leagues entered into by the Chriſtians, againſt the Saracens and Infidels; called alſo *cruſados*, or *croiſades*.

The League, by way of eminence, denotes that famous one on foot in France, from the year 1576 to 1593. Its intent was to prevent the ſucceſſion of Henry IV. who was of the Reformed religion, to the crown; and it ended with his abjuration of that faith.

The leaguers, or confederates, were of three kinds: the *zealous* leaguers aimed at the utter deſtruction, not only of the Huguenots, but alſo of the miniſtry. The *Spaniſh* leaguers had principally in view the transferring of the crown of France to the king of Spain, or the infanta his daughter. The *moderate* leaguers aimed only at the extirpation of Calviniſm, without any alteration of the government.

League, in *Geography*. See Grisons.

League *of God's Houſe*. See God's *Houſe*.

League, *Grey*. See Grey *League*.

League *of the Ten Juriſdictions*, one of the three leagues into which the Griſons are diſtributed. This league ought properly to be called, and is not unfrequently denominated in Switzerland, the league of the *eleven* juriſdictions, from the number of communities that compoſe it; but as on its firſt union it was formed of *ten* only, the original appellation is ſtill retained, although one of the juriſdictions has been ſince that period divided into two. This territory was formerly under the dominion of the Vats, whoſe authority was limited, as the people poſſeſſed very conſiderable privileges. On the death of Donatus, the laſt baron, the count of Toggenburg, who married his eldeſt daughter, ſucceeded to his poſſeſſions; and Frederic, one of his deſcendants, dying in 1436, without iſſue, the communities united, formed an offenſive and defenſive alliance, and erected themſelves into a league. After ſome viciſſitudes, the communities became free, and their independence was ſolemnly ratified by the emperor Ferdinand III., ſoon after the peace of Weſtphalia. For further particulars, ſee Grisons.

League, *Solemn*. See Covenant

LEAK, in *Sea Language*, is a chink or breach in the decks, ſides, or bottom of a ſhip, through which the water comes in. A ſhip is ſaid to *ſpring a leak* when ſhe begins to leak, or let in the water.

The manner of ſtopping a leak is, to put into it a plug wrapt in oakum, and well tarred, or in a tarpauling clout, which keeps the water out; or nailing a piece of ſheet-lead on the place. See Caulking, and Fothering.

Seamen ſometimes ſtop a leak by thruſting a piece of ſalt beef into it. The ſea-water, ſays Mr. Boyle, being freſher than the brine imbibed by the beef, penetrates into its body, and cauſes it to ſwell ſo as to bear ſtrongly againſt the edges of the broken plank, and thereby ſtops the influx of the water. Works Abr. vol. i. p. 147.

A ready way to find a leak in a ſhip, is to apply the narrow end of a ſpeaking trumpet to the ear, and the other to the ſide of the ſhip where the leak is ſuppoſed to be; then the noiſe of the water iſſuing in at the leak will be heard diſtinctly, whereby it may be diſcovered. See Philoſ. Tranſ. No. 201.

LEAKAGE, the ſtate of a veſſel that leaks; that is, lets water, or other liquid, ooze in or out.

Leakage alſo denotes an allowance of three barrels in thirty-ſix, both of ſtrong beer or table beer and ale, and after that rate for any greater or leſs quantity, out of the exciſe, 43 Geo III. c. 69 ſ. 12. The ſaid allowance to the common brewer of three upon every thirty-ſix barrels of beer or ale, ſhall be in full compenſation for all waſte or other loſſes whatſoever. ſ. 13.

LEAKE, John, M. D., in *Biography*, was born of Scottiſh parents in Cumberland, and received his education at the grammar-ſchool at Biſhop-Auckland. This being finiſhed, he ſet off for London, intending to engage in the military profeſſion: but finding ſome promiſes, with which he had been flattered, were not likely ſoon to be realized, he turned his attention to medicine. After attending the hoſpitals, and being admitted a member of the corporation of ſurgeons, an opportunity preſented itſelf of improving himſelf in foreign ſchools; he embarked for Liſbon, and afterwards viſited Italy. On his return, he eſtabliſhed himſelf as a ſurgeon and accoucheur in the neighbourhood of Piccadilly; and about that time publiſhed "A Diſſertation on the Properties and Efficacy of the Liſbon Diet-drink." Where he obtained his doctor's diploma is not known; but he became ere long a licentiate of the College of Phyſicians, and removed to Craven-ſtreet, where he began to lecture, as well as continued to practiſe, the obſtetric art. In 1765, he purchaſed a piece of ground on a building leaſe, and afterwards publiſhed the plan for the inſtitution of the Weſtminſter Lying-in-Hoſpital: and as ſoon as the building was raiſed, he voluntarily, and without any conſideration, aſſigned over to the governors all his right on the premiſes, in favour of the hoſpital. He enjoyed a conſiderable ſhare of reputation and practice as an accoucheur, and as a lecturer; and was eſteemed a polite and accompliſhed man. He added nothing, however, in the way of improvement, to his profeſſion, and his writings are not characterized by any extraordinary acuteneſs, or depth of reſearch; but are plain, correct, and practical. He was attacked, in the ſummer of 1792, with a diſorder of the cheſt, with which he had been previouſly affected, and was found dead in his bed on the eighth of Auguſt of that year. He publiſhed, in 1773, a volume of "Practical Obſervations on Child-bed Fever;" and, in 1774, "A Lecture introductory to the Theory and Practice of Midwifery, including the Hiſtory, Nature, and Tendency of that Science, &c." This was afterwards conſiderably altered and enlarged, and publiſhed in two volumes, under the title of "Medical Inſtructions towards the Prevention and Cure of various Diſeaſes incident to Women, &c." The work paſſed through ſeven or eight editions, and was tranſlated into the French and German languages. In the beginning of 1792, a ſhort time before his death, he publiſhed "A practical Eſſay on the Diſeaſes of the Viſcera, particularly thoſe of the Stomach and Bowels." Hutchinſon Biog. Med.

Leake, Richard, was born at Harwich in the year 1629, and was bred to the ſea-ſervice. At the reſtoration he was made maſter-gunner of the Princeſs, a frigate of fifty guns; and in the firſt Dutch war diſtinguiſhed himſelf by his ſkill and bravery in two very extraordinary actions, in one againſt fifteen ſail of Dutch men of war, and another in 1667, againſt two Daniſh ſhips in the Baltic, in which, the principal officers being killed, the command devolved on him, though only maſter-gunner. In 1669, he was promoted to be gunner of the Royal Prince, a firſt rate man of war. In 1673, he was engaged, with his two ſons Henry and John, in the battle againſt Van Tromp, when the ſhip had all her maſts ſhot away, nearly four hundred men killed and diſabled, and moſt of her upper tier of guns diſmounted. As ſhe lay like a wreck, a Dutch man of war and two fire-ſhips came down upon her, and captain Rooke, afterwards ſir George, conceiving it impoſſible to defend her, deſired the men to ſave their lives, and ſtrike the colours. Mr. Leake hearing this, ordered the lieutenant off the quarter-deck, and took the command, ſaying "the Royal Prince ſhall never be given up to the enemy, while I am alive to defend her" The undaunted ſpirit of the brave gunner inſpired the ſmall reſidue of the ſhip's company with reſolution, they returned to the fight, and, under the direction of this valiant gunner and his two ſons, ſunk both the fire-ſhips, and obliged the man of war to ſheer off, and having thus ſaved the Royal Prince, he brought her into Chatham. Mr. Leake's joy in obtaining this victory was miſerably damped by the loſs of his eldeſt ſon Henry, who was killed by his ſide. Mr. Leake, in conſequence of his great merit, was made, in 1677, maſter-gunner of England, and ſtore-keeper of the ordnance at Woolwich. He invented, among other things, the cuſheepiece; and contrived a new method of firing a mortar. He died in 1686. He had a ſurpriſing genius for all inventions relating to gunnery, and alſo in the compoſition of fire-works. He left a ſon,

Leake, John, who was but ſixteen years of age when he was engaged in the battle juſt referred to, and in which he took a conſpicuous part. He was ſhortly after made captain, and performed many prodigies of valour, and, among others, he executed a deſperate attempt of convoying ſome victuallers into Londonderry, which obliged the enemy to raiſe the ſiege: he was alſo at the battle of La Hogue. In 1702, being commodore of a ſquadron, he deſtroyed the French trade and ſettlements at Newfoundland, and reſtored the Engliſh to the poſſeſſion of the whole iſland. On his return he was made rear-admiral, and, in a ſhort time afterwards, he was created vice-admiral of the blue, and received the honour of knighthood. In 1705, he ſaved the important fortreſs of Gibraltar from the combined attacks of France and Spain, and was engaged in the reduction of Barcelona. In the courſe of the following year he relieved that ſame city, when it was reduced to the laſt extremity, and obliged king Philip to raiſe the ſiege. Soon after this he took the cities of Carthagena, Alicant, and Joyce, and concluded the exploits of the year with the reduction of the city and iſland of Majorca. On his return home, he was preſented by prince George of Denmark with a valuable diamond ring, worth 400*l.*, and from the queen he received 1000*l.* as a reward of his important ſervices. On the death of admiral ſir Cloudeſly Shovel, in 1707, he was made admiral of the white, and commander-in-chief of her majeſty's fleet. In the following year he ſurprized a convoy of the enemies corn, ſent it to Barcelona, and thus ſaved the city and the confederate army from the danger of famine. He reduced the iſland of Sardinia to obedience to Charles king of Spain, and aſſiſted lord Stanhope in the conqueſt of Minorca. Returning home, he was appointed one of the council to the lord high admiral, and in 1709 he was made rear admiral of Great Britain. He was ſeveral times choſen member of parliament for Rocheſter, and in 1712 conducted the forces to take poſſeſſion of Dunkirk. On the acceſſion of George I. he was ſuperſeded, and allowed a penſion of 600*l.*, upon which he lived in a private manner till his death, which happened at his houſe in Greenwich, in 1720. He left no children, but was ſucceeded in his property by

Leake, Stephen Martin, who was ſon of captain Martin, the brother-in-law of admiral Leake. Inheriting the property of the admiral, he took his name in addition to that of his own. He went through the different ranks in the Herald's office, till he came to be Garter. He was the firſt perſon who wrote profeſſedly on Engliſh coins. He publiſhed a hiſtory of Britiſh coins, under the title of "Nummi Britannici Hiſtoria:" he wrote alſo "The Life of Sir John Leake," of which only 50 copies were printed: and in 1766 he printed 50 copies of "The Statutes of the Order of the Garter." He died in 1773.

LEAM, a term ſometimes uſed for a cut or canal.

Leam, in *Geography*, a high mountain of the county of Galway, Ireland, ſituated on the ſouth ſide of Lough Corrib, near the ſmall town of Oughterard.

LEAM-KIEN-SAM, a town of Chineſe Tartary; 42 miles S. of Poro.

LEAM-YOM-HOTUN, a town of Corea; 600 miles E.N.E. of Pekin. N. lat. 42° 20'. E. long. 128° 46'.

LEANDER, in *Biography*, a French Capuchin friar, was born at Dijon, where he died, in the year 1667. His writings are numerous, and by theſe he acquired a high reputation: he is frequently referred to by Dupin, in his "Nova Bibliotheca Auctorum Eccleſiaſticorum." One of his works is entitled "The Truths of the Goſpel;" in two volumes folio. Moreri.

LEAO, in *Geography*, a river of China, which runs into the ſea; 12 miles W. of Lai-tcheou.

Leao, or *Leho*, a river of Chineſe Tartary, formed by the union of ſeveral rivers, of which no one bears this name till after it has paſſed the barrier between Leao-tong and Tartary. It runs into the gulf of Leao-tong, about 12 miles W. of Yao-tcheou.

Leao, in *Natural Hiſtory*, a mineral ſubſtance, approaching to the nature of the lapis lazuli, found in the Eaſt Indies, and of great uſe in the Chineſe porcelain manufacture, being the fineſt blue they are poſſeſſed of. This ſtone is found in the ſtrata of pit-coal, or in thoſe of a yellowiſh or reddiſh earth, in the neighbourhood of the veins of coal. There are often found pieces of it lying on the ſurface of the ground, and theſe are a ſure indication, that more will be found on digging. It is generally found in oblong pieces of the ſize of a finger, not round, but flat. Some of this is very fine, and ſome coarſe, and of a bad colour. The latter is very common, but the fine ſort is ſcarce, and greatly valued. It is not eaſy to diſtinguiſh them at ſight, but they are found by experiment, and the trying one piece is generally ſufficient for judging of the whole mine; for all that is found in the ſame place is uſually of the ſame ſort.

Their manner of preparing it for uſe is this: They firſt waſh it very clean, to ſeparate it from the earth, or any other foulneſs it may have; they then lay it at the bottom of their baking furnaces; and when it has been thus calcined for three or four hours, it is taken out and powdered very fine in large mortars of porcelain, with peſtles of ſtone faced with iron. When the powder is perfectly fine, they pour in ſome boiling water, and grind that with the reſt; and when it is thoroughly incorporated, they add more, and finally pour it off, after ſome time ſettling. The remainder at the bottom of the mortar, which is the coarſer part, they grind again with more water, and ſo on, till they have made the whole fine, excepting a little dirt or grit. When this is done, all the liquors are mixed together, and well ſtirred. They are ſuffered to ſtand two or three minutes after this, and then poured off, with the powder remaining in them. This is ſuffered to ſubſide gradually, and is the fine blue they uſe in their beſt works, our common ſmalt ſerving for the blue of all the common low-priced China-ware. Obſervat. ſur les Coûtumes de l'Aſie, p. 326.

It is plain that this ſtone is a ſort of lapis lazuli; and the ultramarine blue, uſed by our painters, is made in a manner not wholly unlike this. It is much to be wiſhed, that England were well ſearched for ſuch a ſtone as this leao, ſince our mines in Derbyſhire afford many blue ſubſtances, which have not been ſufficiently conſidered; and if it ſhould be found that either this, or any other European nation, produces it, it will be a fine diſcovery, as we ſhould not only have the means of giving a fine colour to our own manufactures of this kind, but we might trade with it in China to a vaſt advantage. If England does not poſſeſs it, it is very probable that Germany does, the mines there affording an almoſt inexhauſtible ſtore of coloured ſtones: and this being certainly no other than the ſtony matter of ſome cryſtalline nodule, accidentally tinged with ſome particles of copper. See Lazuli *Lapis*.

LEAO-TONG, in *Geography*, a province of Chineſe Tartary, more uſually called Chen-yang, or Mougden. (See Chen-yang.) The province is extremely fertile; but it is too far diſtant from Peking, and from the centre of the empire, to ſend its proviſions thither. Beſide, carriage is altogether impracticable, except in winter: in this ſeaſon, great quantities of game, and fiſh preſerved, or incloſed in ice, according to the Chineſe expreſſion, are carried from that country to the capital.

LEAO-TONG, *Gulf of*, or *Yellow Sea*, is a large bay or gulf of the Chineſe ſea, between the peninſula of Corea and China; about 400 miles from N. to S., and from 100 to 250 from E. to W. N. lat. 34° 45′ to 41°.

LEAO-COU-HOTUN, a town of Corea, on the S. ſide of the Ya-lou river; 370 miles E. of Peking. N. lat. 40° 9′. E. long. 125° 4′.

LEAP, in *Agriculture*, a meaſure of capacity, ſignifying half a buſhel, ſometimes termed *lip*.

LEAP, in *Muſic*, is when the ſong does not proceed by conjoint degrees. For inſtance, when there is an interval of a third, fourth, fifth, &c. between two notes, the Italians call it a *leap*, *ſalto*.

It is to be obſerved, that there are two kinds of leaps, regular and irregular, called by the Italians *ſalti regolari & irregolari*.

The *regular* leaps are thoſe of a third major or minor, whether natural or accidental, fourth, fifth, ſixth minor, and octave, and theſe either aſcending or deſcending.

Irregular leaps are the triton, ſixth major, ſeventh major, the ninth, tenth, and, in general, all beyond the compaſs of an octave; at leaſt in vocal muſic.

Beſides theſe, there are others which may be uſed, but with diſcretion; ſuch as the diminiſhed fourth, the falſe fifth, and flat ſeventh. The difference between the regular and irregular leaps is, that the former are performed by the voice, without any great difficulty or effort; whereas, the latter require more attention and pains to execute.

LEAP, in *Fiſhing*, is uſed for a net, engine, or wheel, made of twigs, to catch fiſh in. Stat. 4 & 5 Will. & Mary. cap. 23.

LEAP, in the *Manege*, an air of a ſtep and a leap.

LEAPING-HORSE, in the *Manege*, is one that works in the high manege, or one that makes his leaps with order and obedience between two pillars upon a ſtraight line, in volts, caprioles, balotades, or croupades. Uſe excludes a gallop *a terra a terra*, and corvets from the number of leaps; becauſe the horſe does not riſe ſo very high in theſe. Each leap of the horſe ought not to gain, or make above a foot and a half of ground forward.

LEAP-YEAR, the ſame with *Biſſextile*; which ſee.

It is thus called, becauſe, in the common year any fixed day of the month changes ſucceſſively one day of the week; but in the leap-year, it ſkips or leaps over one day.

The common year hath three hundred and ſixty-five days in it, but the leap-year three hundred and ſixty-ſix days; and in this caſe February hath twenty-nine days; which, in the common year, hath but twenty-eight.

To find the leap-year, the rule is,

"Divide by 4, what's left ſhall be,
For leap-year, 0: for paſt, 1, 2, or 3."

For example; is the year 1812 a leap-year, or common-year.

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There is 0 remainder, ſo that it is leap-year.

LEASBURG, in *Geography*, a town of America, being the capital of Caſwell county, in North Carolina: containing a court-houſe, gaol, and a few houſes.

LEASE, from the French *laiſer*, *dimittere*, *to lett*, in *Law*, a demiſe, or letting of lands, tenements, or hereditaments, unto another for life, term of years, or at will, for a rent reſerved.

A contract for the poſſeſſion of lands or tenements, for ſome determinate period, is an *eſtate for years* (ſee ESTATE); and it takes place where a man letteth them to another for the time of a certain number of years, agreed upon between the leſſor, or perſon who granteth a leaſe, and the leſſee, the perſon to whom it is granted, and the leſſee enters thereon. (Litt. § 58.) If the leaſe be but for half a year, or a quarter, or any leſs time, this leſſee is reputed as a tenant for years, and is ſo ſtyled in ſome legal proceedings; a year being the ſhorteſt term which the law takes notice of in this caſe. A year is a determinate and well-known period, conſiſting commonly of 365 days. (See BISSEXTILE.) A month, (ſee MONTH) in law, is a leaſe month, or 28 days, unleſs otherwiſe expreſſed; and, therefore, a leaſe for "twelve months" is only for 48 weeks; but if it be for "a twelve-month" in the ſingular number, it is good for the whole year. (6 Rep. 61.) Theſe eſtates for years were originally granted to mere farmers or huſbandmen, who every year rendered ſome equivalent in money, proviſions, or other rent, to the leſſors or landlords; but, in order to encourage them to manure and cultivate the ground, they had a permanent intereſt granted them, not determinable at the will of the lord. Their poſſeſſion, however, was deemed of ſo little conſequence, that they were rather conſidered as the bailiffs or ſervants of the lord, who were to receive and account for the profits at a ſettled price, than as having any property of their own; and, therefore, they were not allowed to have a freehold eſtate: but their intereſt exiſted after their deaths in their executors, who were to make up the accounts of their teſtator with the lord, and his other creditors, and were entitled to the ſtock upon the farm. The leſſee's eſtate might alſo, by the ancient law, be at any time defeated by a common recovery ſuffered by the tenant of the freehold (Co. Litt. 46.); which annihilated all leaſes for years then ſubſiſting, unleſs afterwards renewed by the recoveror, whoſe title was ſuppoſed ſuperior to his by whom thoſe leaſes were granted. Eſtates for years, whilſt they continued precarious, were uſually of ſhort duration, like our leaſes upon rack-rent: and we are told (Mirror. c. 2. § 27. Co. Litt. 45, 46.), that by the ancient law no leaſes for more than 40 years were allowable, becauſe any longer poſſeſſion (eſpecially when given without any livery declaring the nature and duration of the eſtate), might tend to defeat the inheritance. This law, if it did ever exiſt, was ſoon antiquated; for, in Madox's "Collection of Ancient Inſtruments," ſome leaſes for years, of a pretty early date, occur, which conſiderably exceed that period; and long terms, for 300 or 1000 years, were in uſe in the time of Edward III., and probably of Edward I. But when, by the ſtatute 21 Hen. VIII. c. 15. the termor (that is, he who is entitled to the term of years), was protected againſt theſe fictitious recoveries, and his intereſt rendered ſecure and permanent, long terms began to be more frequent than before; and were afterwards extenſively introduced, being found extremely convenient for family ſettlements and mortgages; continuing ſubject, however, to the ſame rules of ſucceſſion, and with the ſame inferiority to freeholds, as when they were little better than tenancies at the will of the landlord.

Every eſtate which muſt expire at a period certain and prefixed, by whatever words created, is an *eſtate for years*; and, therefore, this eſtate is frequently called a term, *terminus*, becauſe its duration is limited and determined; for every ſuch eſtate muſt have a certain beginning and certain end. (Co. Litt. 45.) But "id certum eſt, quod certum reddi poteſt;" therefore, if a man make a leaſe to another, for ſo many years as J. S. ſhall name, it is a good leaſe for years (6 Rep. 35.) ; for though it is at preſent uncertain, yet when J. S. hath named the years, it is then reduced to a certainty. If no day of commencement is named in the creation of this eſtate, it begins from the making, or delivery, of the leaſe. (Co. Litt. 46.) A leaſe for ſo many years as J. S. ſhall live, is void from the beginning (Co. Litt. 45.) : but a leaſe for 20 or more years, if J. S. ſhall ſo long live, is good, for a certain period is fixed, beyond which it cannot laſt, though it may determine ſooner, on the death of J. S. An eſtate for life, even if it be *pur auter vie*, is a freehold ; but an eſtate for 1000 years is only a chattel, and reckoned part of the perſonal eſtate. A leaſe for years may be made to commence *in futuro*, though a leaſe for life cannot. Becauſe no livery of ſeiſin is neceſſary to a leaſe for years, ſuch leſſee is not ſaid to be *ſeized*, or to have true legal ſeiſin of the lands. Nor, indeed, does the bare leaſe veſt any eſtate in the leſſee ; but only gives him a right of entry on the tenement, which right is called his "intereſt in the term," or *intereſſe termini* ; but when he has actually ſo entered, and thereby accepted the grant, the eſtate is then, and not before, veſted in him, and he is *poſſeſſed*, not properly of the land, but of the term of years (Co. Litt. 46.) ; the poſſeſſion, or ſeiſin of the *land* remaining ſtill in him who hath the freehold. Thus, the word "term" does not merely ſignify the time ſpecified in the leaſe, but the eſtate alſo and intereſt that paſſes by that leaſe ; and, therefore, the "term" may expire during the continuance of the "time," as by ſurrender, forfeiture, or the like. See TENANT.

Eſtates at will, another ſpecies of eſtates not freehold, are thoſe where lands and tenements are let by one man to another, to have and to hold at the will of the leſſor ; and the tenant by force of this leaſe obtains poſſeſſion. (Litt. § 68.) Such tenant hath no certain indefeaſible eſtate, nothing that can be aſſigned by him to any other ; becauſe the leſſor may determine his will, and put him out whenever he pleaſes. But every eſtate at will is at the will of both parties, landlord and tenant ; ſo that either of them may determine his will, and quit his connection with the other at his own pleaſure. If, indeed, the tenant at will ſows his land, and the landlord, before the corn is ripe, or before it is reaped, puts him out, yet the tenant ſhall have the emblements, and free ingreſs, egreſs, and regreſs, to cut and carry away the profits. (Co. Litt. 56.) But it is otherwiſe, where the tenant himſelf determines the will ; for in this caſe the landlord ſhall have the profits of the land. (Co. Litt. 55.) And if rent be payable quarterly, or half-yearly, and the leſſee determines the will, the rent ſhall be paid to the end of the current quarter or half-year. (Salk. 414. 1 Sid. 339.) Upon the ſame principle, courts of law have of late years leaned as much as poſſible againſt conſtruing demiſes, where no certain term is mentioned, to be tenancies at will ; but have rather held them to be tenancies from year to year ſo long as both parties pleaſe, eſpecially where an annual rent is reſerved, in which caſe they will not ſuffer either party to determine the tenancy even at the end of the year, without reaſonable notice to the other, which is generally underſtood to be ſix months. For another ſpecies of eſtates at will, ſee COPYHOLD. See alſo SUFFERANCE.

A leaſe is either written, called an *indenture deed-poll*, or leaſe in writing ; or by word of mouth, called *leaſe-parol*. See PAROL.

All eſtates, intereſts of freehold, or terms for years in lands, &c. not put in writing and ſigned by the parties, ſhall have no greater effect than as eſtates at will ; unleſs it be of leaſes not exceeding three years from the making ; wherein the rent reſerved ſhall be two-thirds of the value of the things demiſed. (Stat. 29 Car. II. cap. 3.) Leaſes exceeding three years muſt be made in writing, and if the ſubſtance of a leaſe be put in writing, and ſigned by the parties, though it be not ſealed, it ſhall have the effect of a leaſe for years, &c. Wood's Inſt. 266.

But a leaſe in writing, though not under ſeal, cannot be given in evidence, unleſs it be ſtamped. (1 Term. Rep. 735.) Articles with covenants to make a leaſe to let and make a leaſe of lands, for a certain term, at ſo much rent, hath been adjudged a leaſe. (Cro. Eliz. 486.) In a covenant, with the words "have, poſſeſs, and occupy lands, in conſideration of a yearly rent, without the word demiſe," it was held a good leaſe ; and a licence to occupy, take the profits, &c. which paſſeth an intereſt, amounts to a leaſe. (3 Bulſt. 204. 3 Salk. 223.) An agreement of the parties, that the leſſee ſhall enjoy the lands, will make a leaſe ; but if the agreement hath a reference to the leaſe to be made, and implies an intent not to be perfected till then, it is not a perfect leaſe till made afterwards. (Bridg. 13. 2 Shep. Abr. 374.) If a man, on promiſe of a leaſe to be made to him, lays out money on the premiſes, he ſhall oblige the leſſor afterwards to make the leaſe ; the agreement being executed on the leſſee's part, where no ſuch expence hath been, a bare promiſe of the leaſe for a term of years, though the leſſee have poſſeſſion, ſhall not be good without ſome writing. A leaſe for years may begin from a day paſt, or to come, at Michaelmas laſt, Chriſtmas next, three or four years after, or after the death of the leſſee, &c. though a term cannot commence upon a contingency which depends upon another contingency. (1 Inſt 5. 1 Rep. 156.) If one makes a leaſe for a year, and ſo from year to year, it is a leaſe for two years ; and afterwards it is but an eſtate at will. (1 Mod. 4. 1 Lutw. 213.) And if from three years to three years, it is a good leaſe for ſix years ; alſo, if a man make a leaſe for years, without ſpecifying the number, it may be good for two years, to anſwer the plural number. (Wood's Inſt. 265.) Of all kinds of powers the moſt frequent is that to make leaſes. In the making of ſuch leaſes all the requiſites ſpecified in the power muſt be ſtrictly obſerved ; and ſuch leaſes muſt contain all ſuch beneficial clauſes and reſervations as ought to be, for the benefit of the remainder-man ; the principle being, that the eſtate muſt come to him in as beneficial a manner as the ancient owners held it. By ſtat. 29 Geo. II. c. 31. infants, lunatics, and femes-covert, may apply to the courts of chancery or exchequer, or to the courts of equity of the counties palatine of Cheſter, Lancaſter, and Durham, or to the courts of great ſeſſion of Wales, by petition or motion in a ſummary way, and by the order of theſe courts reſpectively, ſuch perſons may by deed only, without levying a fine, ſurrender leaſes for lives or years, and take new leaſes for lives or years of the premiſes compriſed therein. Joint-tenants, tenants in common, and coparceners may make leaſes for life, years, or at will, of their own parts, which ſhall bind their companions ; and in ſome caſes, perſons who are not ſeiſed of lands in fee, &c. may make leaſes for life or years, by ſpecial power enabling them to do it ; when the authority muſt be exactly purſued. (Wood's Inſt. 267.) But there is a difference, where there is a general power to make leaſes, and a particular power. (8 Rep. 69.) If joint-tenants join in a leaſe, this ſhall be but one leaſe, for they have but one freehold ; but if tenants in common join in a leaſe, it ſhall be ſeveral leaſes of their ſeveral intereſts. 3 Rol. Abr. 64. Com. Dig. title *Eſtates* (G. 6.) Bac. Abr. Leaſes (I. 5.)

A leſſor may take diſtreſs on the tenements let for the rent ; or may have action of debt for the arrears, &c. Tenants ſuffering houſes to be uncovered, or in decay, taking away wainſcot, &c. fixed to the freehold, unleſs put up by the leſſee, and taken down before the term is expired; cutting down timber trees to ſell, permitting young trees to be deſtroyed by cattle, &c. ploughing up ground that time out of mind hath not been ploughed, not keeping banks in repair, &c. are guilty of waſtes. (1 Inſt. 52. Dyer 37. 1 Salk. 368.) Leſſees are bound to repair their tenements, except the contrary be mentioned in the leaſe. Although a leſſee for years is not obliged to repair the houſe let to him, which is burned by accident; if there be not a ſpecial covenant in the leaſe, that he ſhall leave the houſe in good repair at the end of the term; yet if the houſe be burnt by negligence, the leſſee ſhall repair it, although there be no ſuch covenant. (Pasch. 24 Car. B. R.) A leſſee at will is not bound to ſuſtain or repair, as tenant for years is. A leſſee who covenants to pay rent, and to repair, with an exception of caſualties by fire, is liable upon the covenant for rent, though the premiſes are burnt down, and not rebuilt by the leſſor after notice. (1 Term Rep. 310.) A proviſo in a leaſe for two years, that the landlord ſhall re-enter, on the tenant's committing any act of bankruptcy, on which a commiſſion ſhall iſſue, is good. (2 Term Rep. 133.) An aſſignee of a bankrupt, a deviſee, and a perſonal repreſentative, are aſſignees in law to the purpoſe of being liable to actions on a covenant for rent in a leaſe to the bankrupt, deviſor, or inteſtate. (Dougl. 184.) Perſons for whoſe lives eſtates are held by leaſe, &c. remaining beyond ſea, or being abſent ſeven years, if no proof be made of their being alive, ſhall be accounted dead. (See 19 Car. II. c. 6.) Where the term of a leaſe is to end on a preciſe day, then, there is no occaſion for a notice to quit; becauſe the leaſe of courſe is at an end, unleſs the parties come to a freſh agreement. In the caſe of a tenancy from year to year, there muſt be half a year's notice to quit, ending at the expiration of the year. Six calendar months' notice is not ſufficient. And there is no diſtinction between houſes and lands as to the time of giving notice to quit. 1 Term Rep. 54. 159. 162, 3. Blackſt. Com. b. ii. Tomlins's Jacob, tit. *Leaſe*.

LEASE *by ſtatute*. There are three kinds of perſons, who may make leaſes for three lives or twenty-one years, and not exceeding this term, by ſtatutes, that could not do ſo heretofore, *viz.* tenants in tail, binding their iſſue in tail, but not in remainder or reverſion; huſband and wife, of the wife's land; and perſons ſeiſed of an eſtate in fee ſimple in right of the church, except parſons and vicars; by the ſtat. 32 Hen. VIII. c. 28. called the "enabling ſtatute."

But this ſtatute ſpecifies ſeveral requiſites in order to render the leaſes binding: they muſt be by indenture, and not by deed-poll, or parol. They muſt commence from the day of making, and not at any greater diſtance of time: the old leaſe, if there be any, muſt be firſt abſolutely ſurrendered, or be within a year of expiring: it muſt be either for twenty-one years, *or* three lives, and not for both; it muſt not exceed the term of three lives, or twenty-one years, but may be for a ſhorter time: the leaſe muſt be of corporeal hereditaments, and not of ſuch things as lie merely in grant; for no rent can be reſerved out of theſe by the common law, as the leſſor cannot reſort to them to diſtrain: though now by 5 Geo. III. c. 17. a leaſe of tithes or other incorporeal hereditaments alone, may be granted by any biſhop or eccleſiaſtical or eleemoſynary corporation, and the ſucceſſor ſhall be entitled to recover the rent by an action of debt, which, in caſe of a freehold leaſe, he could not have brought at the common law. The leaſe muſt alſo be of lands and tenements commonly letten for twenty years paſt; and the cuſtomary rent for that term reſerved; and leaſes muſt not be made without impeachment of waſte.

By 1 Eliz. c. 19. called the "diſabling or reſtraining ſtatute," it is enacted, that all grants by archbiſhops and biſhops, other than for the term of twenty-one years or three lives from the time of making, or without reſerving the uſual rent, ſhall be void: but this ſtatute did not extend to grants made by any biſhop to the crown; however, theſe, as well as thoſe made to any ſubject, were comprehended in the prohibition of the ſtatute 1 Jac. I. c. 3. The reſtrictions of this ſtatute were extended by 13 Eliz. c. 10. explained and enforced by 14 Eliz. c. 11. and 14. 18 Eliz. c. 11. and 43 Eliz. c. 29. to certain other inferior corporations, both ſole and aggregate. From all theſe it is collected, that all colleges, cathedrals, and other eccleſiaſtical or eleemoſynary corporations, and all parſons and vicars, are reſtrained from making any leaſes of any kind, of their land, unleſs under the following regulations: 1 They muſt not exceed twenty-one years or three lives from the making. 2. The accuſtomed rent, or more, muſt be yearly reſerved upon them. 3. Houſes in corporations or market-towns may be let for forty years; provided they be not the manſion-houſes of the leſſors, nor have above ten acres of ground belonging to them, and provided the leſſee be bound to keep them in repair; and they may alſo be aliened in fee-ſimple for lands of equal value in recompence. 4. Where there is an old leaſe in being, no concurrent leaſe ſhall be made, unleſs where the old one will expire within three years. 5. No leaſe by the equity of the ſtatute ſhall be made without impeachment of waſte. (Co. Litt. 45.) 6. All bonds and covenants tending to fruſtrate the proviſions of the ſtatutes 13 and 18 Eliz. ſhall be void. The 13 Eliz. c. 20, together with all explanations, &c. of the ſame by 14th, 18th and 43d of Eliz. and much of 3 Car. I. which made them perpetual, are repealed by 43 Geo. III. c. 84. ſ. 10.

If a biſhop have two chapters, as there may be two or more to one biſhopric, both chapters muſt confirm leaſes made by the biſhop. (1 Inſt. 131.) A leaſe made by a biſhop to begin preſently for twenty-one years, when there is an old leaſe in being, is good, notwithſtanding the ſtat. of 1 Eliz. c. 19. (Moor. Caſ. 241.) But if ſuch a leaſe is to commence at a future day, it will be void. (1 Leon 44.) Leaſe for three lives by a biſhop of tithes is void againſt the ſucceſſor, although the uſual rent be duly received. (Moor Caſ. 1078.) Leaſes of a dean and chapter are good, without confirmation of the biſhop (Dyer, 273. 2 Nelſ. Abr. 1096.) Where there is a chapter and no dean, they may make grants, &c. and are within the ſtatute. (1 Mod. 204.) A prebendary's leaſe confirmed by the archbiſhop, who is his patron, is good, without confirmation of dean and chapter. (3 Bulſtr. 290.) But where a prebendary made a leaſe for years of part of his prebend. and this was confirmed by dean and chapter; becauſe it was not confirmed likewiſe by the biſhop, who was patron and ordinary of the prebend, the leaſe was adjudged void. (Dyer 60.) If a prebendary hath rectories in two ſeveral dioceſes, belonging to his prebend, and his leaſe of them is confirmed by the biſhop, dean and chapter of the dioceſe of which he is prebendary, it is good, though not confirmed by the other. (Litt. 75.) A chancellor of a cathedral church may make a leaſe, and it is ſaid it will be good againſt the ſucceſſor, though not confirmed, &c. (Litt. 158.) If a parſon or vicar makes a leaſe for life or years, of lands uſually letten, reſerving the cuſtomary rent, &c., it muſt be confirmed by patron and ordinary, for they are out of the ſtatute 32 Hen. VIII. c. 28. And if the parſon and ordinary make a leaſe for years of the glebe to the patron; and afterwards the patron aſſigns the leaſe to another, ſuch aſſignment is good, and is a confirmation of that leaſe to the aſſignee. (5 Rep. 15.) A leaſe for years of a ſpiritual perſon will be void by his death, if it is not according to the ſtatute; and a leaſe for life is voidable by entry, &c. of his ſucceſſor. (2 Cro. 173.) If a biſhop be not biſhop *de jure*, leaſes made by him to charge the biſhopric are void, though all judicial acts by him are good. (2 Cro. 353.) And where a biſhop makes a leaſe, which may tend to the diminution of the revenues of the biſhopric, &c. which ſhould maintain the ſucceſſor, there the deprivation or tranſlation of the biſhop is the ſame with his death. 1 Inſt. 324.

There is another reſtriction with regard to college leaſes, by ſtat 18 Eliz. c. 6. which directs, that one-third of the old rent, then paid, ſhould for the future be reſerved in wheat or malt, reſerving a quarter of wheat for each 6*s*. 8*d*. or a quarter of malt for every 5*s*.; or that the leſſees ſhould pay for the ſame according to the price that wheat and malt ſhould be ſold for, in the market next adjoining to the reſpective colleges, on the market-day before the rent becomes due. This money ariſing from corn rents is, *communibus annis*, almoſt double to the rents reſerved in money.

But when a quarter of wheat is worth 50*s*. and the colleges receive one-third of their rent in corn, *i. e.* a quarter of wheat, or its value for every 13*s*. 4*d*. which they are paid in money, it follows that the corn rent will be in proportion to the money rent nearly as four to one. But theſe rents united are very far from the preſent value. Colleges, therefore, in order to obtain the difference, generally take a fine upon the renewal of their leaſes.

The leaſes of beneficed clergymen are farther reſtrained, in caſe of their non-reſidence, by ſtatutes 13 Eliz. c. 20. 14 Eliz. c. 11. 18 Eliz. c. 11. 43 Eliz. c. 9. which direct, that if any beneficed clergyman be abſent from his cure above fourſcore days in any one year, he ſhall not only forfeit one year's profit of his benefice to be diſtributed among the poor of the pariſh; but that all leaſes made by him of the profits of ſuch benefice, and all covenants and agreements of like nature, ſhall ceaſe and be void; except in the caſe of licenſed pluraliſts, who are allowed to demiſe the living, on which they are non-reſident, to their curates only, provided ſuch curates do not abſent themſelves above forty days in any one year. Blackſt. Com. b. ii.

An *aſſignment* differs from a leaſe only in this; that by a leaſe one grants an intereſt leſs than his own, reſerving to himſelf a reverſion; in aſſignments he parts with the whole property, and the aſſignee ſtands to all intents and purpoſes in the place of the aſſignor.

If a leſſor accepts of rent from an aſſignee, knowing of the aſſignment, it bars him from action of debt againſt the leſſee; for the privity of contract is extinguiſhed: but after ſuch acceptance, the leſſor or his aſſigns may maintain an action againſt the firſt leſſee upon his covenant for payment of the rent. (1 Saund. 241. 3 Rep. 24.) But acceptance of rent from the aſſignee has been adjudged a ſufficient notice of the aſſignment, ſo that the leſſor could not reſort to the firſt leſſee. 2 Bulſtr. 151.

LEASES *of the King*. Leaſes made by the king, of part of the duchy of Cornwall, are to be for three lives, or thirty-one years; and not to be made diſpuniſhable of waſte, whereon the ancient rent is to be reſerved; and eſtates in reverſion, with thoſe in poſſeſſion, are not to exceed three lives, &c. 13 Car. II. c. 4.

Leaſes from the crown of lands in England and Wales, and under the ſeals of the duchy of Lancaſter, &c. for one, two, or three lives, or terms not exceeding fifty years, are allowed time for inrollment, &c. by ſtat. 10 Ann. c. 18. Leaſes made by the prince of Wales of lands, &c. in the duchy of Cornwall, for three lives, or thirty-one years, on which is reſerved the moſt uſual rent paid for the greateſt part of twenty years before, ſhall be good againſt the king, the prince, and their heirs, &c. and the conditions of ſuch leaſes be as effectual as if the prince had been ſeiſed of an abſolute eſtate in fee-ſimple in the lands. Stat. 10 Geo. II. c. 29.

LEASE *of Land*, in the *Economy of Agriculture*, a kind of contract or agreement for the letting of lands, tenements, &c. either for life, or a certain term of years, under a reſerved rent. It has been ſtated by Mr. Marſhall, that the different modes of holding land are firſt that of "the tenant holding at will, or until the cuſtomary notice be given, by either party to the other,—without any legal contract or written agreement,—the only tie between the owner and the occupier being the cuſtom of the eſtate, or of the county in which it lies,—and the common law of the land." This, he conceives, may be conſidered as "the ſimple holding which ſucceeded the feudal or copyhold tenure; but which is now going faſt into diſuſe." The ſecond mode is that of "holding from year to year, under a written agreement, with ſpecified covenants." This, which is a more modern uſage, is, on the contrary, he thinks, becoming more and more prevalent; even where leaſes for a term of years were formerly granted." The third, is that of a "leaſe for a term of years; as ſeven, fourteen, twenty-one, or a greater number of years certain; but without the power of aſſignment, unleſs with the conſent of the leſſor." And the fourth, that of a "leaſe for lives; as one, two, three, or more, without the power of aſſignment, which he believes now are rarely granted in England, but in Wales they are ſtill prevalent; the rent being there ſettled according to the value of the land at the time of letting, as on granting a leaſe for a term. And, in the weſtern extremity of England, what are termed life leaſes are ſtill common. But that they are in fact rather pledges for money taken up, or deeds of ſale for lives, than leaſes; as nearly the whole of the eſtimated ſale value of the land, during the life term, is paid down at the time of purchaſe, the ſeller reſerving only a quit-rent or annual acknowledgment."

It is conceived by the ſame writer, that life leaſes may be conſidered in different points of view; as "to a tenant who holds at a moderate rent, a leaſe for life is gratifying, his farm becoming a ſort of life eſtate, in which he is fixed for life; but that unleſs he is a prudent or a fortunate man, it may prove a ſource of misfortune to his family, who in the moment of their diſtreſs for his loſs, may be liable to be turned out, pennyleſs, from a houſe and home: a circumſtance which can rarely happen, under holdings for certain terms of years." Theſe ſorts of leaſes have a much better effect, it is ſuppoſed, on agriculture than annual holdings; and that it is more than probable that life tenancy heretofore has aſſiſted in the advancement of the art. "It is, however, a well aſcertained fact, that the manifold and great improvements which have taken place in Engliſh agriculture, during the laſt half century, have not been effected in Devonſhire nor in Wales, but in Norfolk, and in the midland counties under leaſes for terms of years." And "that in a political light, life leaſes have a favourable appearance, as tending to fill up a ſpace between ordinary tenants and yeomanry or ſmall proprietors, and giving their holders better ſtakes than leſs certain occupiers have, in the eſtabliſhed order of things." But that "here it is the light in which life-holds appear to land proprietors that is entitled to the chief attention," which "on whatever ſide they have been viewed by the owners of extenſive eſtates during the laſt twenty or thirty years, have doubtleſsly appeared in odious colours. For owing to the rapid depreciation of money there are proprietors who have been receiving, year after year, not more perhaps than one-half, or a leſs proportion, of the fair rental value of many of their lands. And for ſuch as ſtill hang on good lives, they may not receive more for many years to come." And further, that "owing to the perpetual bondage in which their lands are kept, no general work of arrangement can be effected, nor any individual improvement introduced by a proprietor, who can ſcarcely be ſaid to have any authority either over his eſtate or its poſſeſſors." They have in fact been the bane of very uſeful improvement of the ſoil, and the great cauſe of its want of amelioration in every county where they have exiſted to any extent.

It may be noticed, that thoſe ſorts of holdings which are only for the year, "are, to a tenant, moſt diſcouraging; and to improvement in agriculture moſt unfriendly. In a public view they are of courſe highly impolitical: while to a proprietor they are moſt convenient, as he may be ſaid to be in conſtant poſſeſſion of his eſtate. He can lay out and execute general improvements, as embankments and drainage, extenſive works of irrigation, the alteration of water-courſes, roads and fences, and complete the arrangement of tenements without controul. It would be unwiſe, therefore, on an eſtate under this ſort of tenancy, to alter it, until the requiſite improvements were planned, and put in a train of being performed." It has, however, been further juſtly remarked, that "whatever diſcourages agriculture cannot be permanently profitable, either to a proprietor or the community." And in regard to preſent profit they muſt be highly diſadvantageous to the proprietor or owner.

With reſpect to the third holding of land, as that of leaſes for terms of years, as "for twenty-one years, though they may be profitable at their commencement, they have, it is ſuppoſed, been found much otherwiſe before their expiration: owing to the great riſe in the value of farm produce, during the terms. And while proprietors who were letting their lands from year to year, were profiting by this circumſtance; the income of thoſe whoſe lands were under long leaſes (whether of lives or years) were ſtationary; and this while the expences of living were advancing with the value of lands; which circumſtances, added to their being controuled in the required arrangement, and perhaps annoyed during a length of years, by the improper conduct of ignorant, ill-diſpoſed, purſe-proud tenants (enriched by theſe very circumſtances) have determined many perſons in different parts of the kingdom to diſcontinue the practice of granting leaſes; giving written agreements from year to year only; which is much to be lamented for the intereſt of agriculture and the community in general." While others have ſhortened the terms of their leaſes to fourteen years. But ſuch "has been the rapid depreciation in the value of money, and the nominal increaſe of the value of lands, that even this term has been found ſeriouſly inconvenient to a landlord; and the term of ſeven years (without a covenant of remuneration) is, it is believed, of little uſe to a tenant." Theſe fixed leaſes are liable, it is conceived, to another objection. As "although a man of ſpirit and worth will not only give an advanced rent, in the firſt inſtance, but will, through the improvements he has made, be able and willing to give a ſtill greater advance at the end of the term; yet, when a leaſe of this nature has been unfortunately or improvidently granted to a poor, an ignorant, an indolent, a reſentful, or a diſhoneſt man, the farm thus let may be left at the end of the term in a much worſe condition than it was in at the commencement." This renders it highly neceſſary for the manager of an eſtate to be careful in the choice of tenants. Where great and expenſive improvements are required, it will be conſtantly neceſſary, however, to have long leaſes.

This may be remedied, in a great meaſure, by the renewal of leaſes before their terms are expired.

The above writer conſiders it uſeful, for owners or proprietors to come to clear underſtandings with their tenants, three years previouſly to the terminations of their reſpective leaſes. "For it is conceived, that, until about that period, a ſkilful tenant continues to keep his land in cultivation and condition, for his own intereſt; which, until then, may be ſaid to go hand in hand with that of his landlord. And if, at that period of a leaſe, a freſh agreement were entered into, the ruinous conſequences of an expiring term might be avoided." And that from proprietors objecting to give leaſes for long terms, "it occurred to him, that agreements for holding from three years to three years, inſtead of from year to year, would be an eligible ſpecies of tenancy. Or, which is preciſely the ſame thing, granting leaſes for ſix years certain; with a condition, that if neither party give notice to quit before the expiration of the firſt three years, then the term to be prolonged to nine years; and ſo on, from three years to three years, (or in effect from ſix years to ſix years,) until three years after notice has been duly given by either party to the other," as by theſe means room is given for a tenant "to turn his hand in. He has, in reality, a freſh leaſe of ſix years granted him every third year. And this is ſufficient to encourage him to keep his lands continually in the moſt huſbandlike ſtate. And if he execute any of the higher improvements, it is but reaſonable that he ſhould have, whenever he may quit his farm, an equitable remuneration for the remainder of ſuch improvements. Thus the tenant is placed on ſure ground; he may ſtill manure and improve with much the ſame confidence, as if the lands in his occupation were his own property." And "in return for ſuch advantages, the tenant cannot heſitate, it is ſuppoſed, to covenant, that, during the laſt three years of his term, he will manage his farm in a huſbandlike manner, and at the end of the term leave it in ſuch a ſtate of cultivation and repair, as will induce a good tenant to take it at a full rent; or ſuffer the proprietor to put it in ſuch a ſtate, at his (the out-going tenant's) expence. An eſtate which is under leaſe on theſe principles, and under attentive management, cannot, it is conceived, be let down to an unprofitable ſtate. It muſt continually remain under a regular courſe of huſbandry, and in a ſtate of cultivation and repair; and the more permanent improvements be kept up. If the acting manager do his duty, even the changing of tenants cannot interrupt its proſperity," while "the incoming tenant (under active management) ſteps into his farm, with the advantages that he would have enjoyed, had it been under his own direction, for the three preceding years." But "with a leaſe on this principle, and with a proper choice of tenants, removals can rarely happen. What proprietor, who knows the difficulty of procuring a good tenant, would wiſh to diſcharge him? And no ſuch tenant would readily leave the farm he is ſettled upon, if he find proper treatment. Even ſhould notice be given in conſequence of any miſunderſtanding between the parties, three years allow time for reflection; and, before they expire, reſentment may die away, and cordiality be reſtored. If, however, either party be diſſatisfied, he has an eaſy way of diſſolving the connection. Or if a proprietor is deſirous to make freſh arrangements on his eſtate, or to regulate his rent-roll by the exiſting value of money, he need not wait many years to fulfil his deſires; for if the tenant in occupancy will not agree to pay a fair rent, the owner has three years before him to chooſe one who will." It is thus evident, that "a leaſe on this principle has a decided preference, by a proprietor, to long leaſes. And its advantage over annual holdings is not leſs conſiderable. The lands of an eſtate are well worth from five to ten *per cent.* more to a tenant, under the former, than under the latter tenancy. So that beſide the conveniencies mentioned, a proprietor may be immediately adding very conſiderably to his income, by this principle of management." This has been proved in many caſes in different parts of the kingdom.

Covenants of Leaſes.—It is ſuggeſted, that the neceſſary covenants,—the reſervations, reſtrictions, obligations, penalties, and remunerations, that the leaſe (or form of a leaſe) of any landed eſtate contains, are (or ought to be) a code of private reſtraining laws, ſuited to the circumſtances of that particular eſtate, in order to protect it from injury, and to promote its proſperity: an honeſt tenant conſiders the covenants of his leaſe merely as inſtructions to direct his ſteps, but which ought to reſtrain him no farther than to protect the farm or the eſtate from injury. But a worthleſs tenant, as a thief, is ever ready to break the laws which bind him; and the proprietor of an eſtate ought to have ſome means of puniſhing him for his fault. Penal covenants in leaſes are of courſe of the greateſt importance to proprietors. But on account of "the great difficulty with which a general law of this nature would be framed, owing to the great diverſity of ſoils, ſituations, and modes of culture, every eſtate, ſtrictly ſpeaking, requiring its own peculiar code to govern and defend it, (and of courſe the great difficulty which a court muſt find to decide with any ſort of accuracy in caſes of this kind,)—one would naturally imagine, it is ſaid, that courts of law would rather be thankful to proprietors of eſtates, for furniſhing them with ready and ſafe means of doing juſtice, than ſet their faces againſt any covenants, which have been formerly entered into, and legally confirmed by the parties before them. If penalties are exceſſive or oppreſſively ſevere, or have been ſurreptitiouſly impoſed, it undoubtedly belongs to a court of law to mitigate or remove them. But ſevere reſtrictions, and exceſſive penalties, are highly impolitic, and altogether improper to be introduced into the leaſe or law of an eſtate, inaſmuch as they tend to depreſs its character, and may prevent good tenants from ſettling upon it; or drive away thoſe whom it may already poſſeſs;" and of "courſe militating againſt one of the firſt principles of good management." But "where, by judicious reſtrictions and reaſonable penalties, deſigning men are kept aloof, a general good is gained to the eſtate."

The particular covenants that are neceſſary, muſt be determined by the exiſting circumſtances of the eſtate, or the particular farm for which it is intended; the modes of culture, cropping, &c. as it is obvious, that "a graſs land farm requires a ſet of covenants differing from thoſe which are proper for a farm under mixed cultivation. And an arable farm, ſituated near a great town, ſhould have covenants differing in ſome reſpects from thoſe of another, which lies in a recluſe diſtrict: while every part of an eſtate, and all eſtates on which hedge timber can be profitably raiſed, call for a ſeries of regulations, which an untimbered eſtate, or one on which grown timber only is to be protected, does not require." And that, "much depends on the time of changing tenants. A ſpring and autumnal removal require very different ſtipulations reſpecting the ſtates in which the lands of a farm are to be left; how the crops in the ground, and the produce on hand are to be diſpoſed of; and by whom the crops of the ſucceeding year are to be put in. Every diſtrict has its cuſtomary time or times of removal, and it can ſeldom be prudent in an individual to alter it (even though very improperly fixed) as he might thereby diminiſh his choice of tenants. Nevertheleſs, it is in the power of proprietors conjointly, to effect, in time, the required alteration. Michaelmas and Lady-day may be conſidered as the ordinary times of changing tenants in England. The former is not an ineligible time for removing in autumn, but the latter is extremely improper, as being in the middle of ſpring ſeed time, and falling at a time when the winter fodder is partially expended, and the crops of the preceding year are partially thraſhed out." Mr. Marſhall ſtates, that "in the north of England (Cleveland, in Yorkſhire, being the moſt ſouthern diſtrict in which he has obſerved it,) a far more rational plan of removal is eſtabliſhed. There, the arable lands are quitted at Candlemas; the paſture grounds (Cleveland being much of a dairy diſtrict) at Lady-day; and the mowing ground and the home-ſtall at old May-day." While, in Scotland, ſimilar regulations prevail; but with a well judged difference, which naturally ariſes out of the different climatures of the two ſituations. There, the premiſes are finally quitted at what is termed Whitſuntide, namely, the fifteenth of May old ſtyle." And it is the opinion of this writer, that, "for the more ſouthern provinces of England, the firſt of May, new ſtyle, would be a proper time for removals in the ſpring."

Forms of Leaſes.—In reſpect to the forms of leaſes, thoſe which are good do not, it is ſtated, "merely require a judicious ſelection of covenants, but that the ſeveral clauſes ſhould be properly digeſted; and be arranged, worded, and lettered in ſuch a manner, as to be intelligible to plain countrymen,—to men for whoſe guidance and good government they are intended." And the plan, which experience entitles the above writer to recommend, is that "of printing leaſes on large folio ſheets of firm paper, or ſheets of parchment, folded in the folio manner; each page containing two columns, and each clauſe compoſing a diſtinct paragraph; with a blank page, or half page, to receive a ſketch, or rough plan of the farm demiſed; as well as a particular, or ſchedude, of the different parcels of land of which it is compoſed: with the number, name, and meaſurement of each arranged in the column manner: in order that no doubt may at any time ariſe reſpecting their identity." It is uſeful to have a book in which all theſe, and ſome other circumſtances, are regularly arranged and marked down.

Mr. Kent, in his "Hints to Gentlemen of Landed Property," ſtates, that the ancient feudal tenures had undoubtedly a ſtrong tendency to enſlave mankind, by ſubjecting them to the controul and power of an arbitrary lord; but, like moſt other things, there were ſome advantages to be found in the ſyſtem. Every man who held land had a certainty in it, as the tenant generally held his poſſeſſion for life. When theſe tenures were diſcountenanced by the more liberal ſpirit of modern law, ſome new compact became neceſſary, and terms of years were ſubſtituted in lieu of the former; for, as land properly managed requires great expence, and ſeldom anſwers that expence in one year, it was but reaſonable that the man who applied his judgment, devoted his labour, and ventured his capital, ſhould have ſome reaſonable time allowed him to reimburſe himſelf, and derive ſome proportionate reward for what he had done. In the courſe of time, this term began to be reduced into a certain number of years; and as moſt of the land was formerly under the regulation of two crops and a fallow, the time allowed was from three to twenty-one years. And the latter in the end became the moſt general limitation, and is the moſt prevalent term for leaſes at the preſent period.

There can be no doubt, it is ſuppoſed, but that leaſes are the firſt, the greateſt, and moſt rational encouragement that can be given to agriculture ; yet of late years there are very ſtrong prejudices entertained againſt them.

Let any impartial man take a view of two diſtricts, where it is the cuſtom to grant leaſes, and where it is not : in the former he will generally find a reſpectable yeomanry, and a well cultivated country ; in the other, an indigent ſpiritleſs race ; following a contracted ſyſtem of huſbandry, calculated to anſwer no permanent purpoſe of advantage to themſelves or landlords. Yet, there are many gentlemen who, to have ſuch people at immediate command, prefer the continuance of a ſlovenly unproductive ſtyle of huſbandry, to neatneſs and fertility. In ſome parts of England, the prejudice againſt leaſes is ſo ſtrong, that ſome landlords will be tempted almoſt as ſoon to alienate the fee ſimple of their eſtates, as to grant a tenant a reaſonable term in them. It is very unfortunate for a county where this abhorrence of leaſes prevails, as it keeps back an immenſe ſcene of improvement, which otherwiſe would take place, and robs the induſtrious occupier of a deal of comfort which might be beſtowed upon him ; and it can produce no other conſolation to the owner than that of having the country more at command, and forcing a certain degree of reſpect from it, which is abſurd to the laſt degree ; for a landlord may, it is conceived, enſure as much real reſpect from a tenant on leaſe, as from a tenant at his immediate will and pleaſure, and at the ſame time ſecure his property better, and ſtipulate for improvements to the extent of his inclination or deſire.

It is noticed farther, that in the eaſtern counties, where it is more the cuſtom to grant leaſes than in the midland parts of England, agriculture is upon the moſt reſpectable footing ; and that within half a century there are many eſtates more than doubled in their value ; which, without leaſes, where the means of improvement were heavy, could not have carried a third of the advance that has been put upon them. In ſhort, it ſeems to him unreaſonable to expect a man to employ the whole of his capital, and to devote the beſt part of his life upon an eſtate which, on the death or mere caprice of the landlord, he is liable to be turned out of at ſix months, or perhaps a ſhorter notice.

It is not, however, meant to imply, that leaſes ought not in any caſe to be withheld ; there are certainly ſome exceptions againſt the practice he wiſhes to ſee eſtabliſhed : for inſtance, if lands are ſituated very near a gentleman's houſe, part of which it may, perhaps, be an object, on ſome future occaſion, to take into hand, or where a minor is very near coming of age, or where there is any immediate view of ſale ; in ſuch caſes, it would be imprudent to grant leaſes. But where none of theſe contingencies ſtand in the way, and where eſtates are under an entail, or in a family that has no idea of parting with them, leaſing is unqueſtionably the moſt effectual means of raiſing the value of an eſtate, as it enables the owner to ſtipulate for improvements in what way and proportion he pleaſes, which he cannot do ſo well in any other manner.

And the author of the "Treatiſe on modern Agriculture" contends, that nothing gives ſuch a ſpring to induſtry as the conviction, founded on the experience of ages, that in this country the fruits of the labours of the induſtrious man are ſecured to him. Hence, a farmer will be more or leſs active in proportion to the ſecurity he holds of reaping the fruits of his induſtry, ſkill, and capital.

And it is ſtill further ſtated, that leaſes are certainly neceſſary and proper, as a compact between man and man ; and though the mode of cropping and general tenor of the leaſe muſt vary according to times and circumſtances, yet no man who has thought ſeriouſly on the ſubject will deny that they are for the benefit of both parties, as they ſecure to the landlord the proper management of the land ſo leaſed, and to the tenant the additional profits which may be expected to ariſe from his ſuperior cultivation of ſuch lands or farms.

But as it is neceſſary to impoſe ſome degree of reſtraint upon tenants, the means of doing it in ſuch a way that they may not be ſo fettered as to be prevented from making uſeful improvements, or left ſo much at liberty as to do miſchief ; are the point that forms the principal difficulty. Hence the circumſtance to be chiefly guarded againſt by reſtrictive penal covenants, are thoſe of preventing the breaking-up of old meadows, paſtures, or other lands, the removing away hay, ſtraw, or other materials convertible into manure ; and the improving or deſtroying of timber trees. To enforce the leaving of green winter food ; the keeping up of all ſorts of fences ; the cleanſing of water-courſes, ponds, pools, &c. and the preſerving of buildings, gates, pens, and bridle roads in proper repair. To prevent the forming of rabbit-warrens, and the committing of waſte of any kind. And, finally, to regulate the circumſtances of the out-going and in-coming tenants with propriety.

But although it is not poſſible to form any particular leaſe, ſo as to include clauſes that can apply to every kind of ſoil, mode of cropping, and general management ; yet, as he has had opportunities of peruſing a great variety of leaſes in different parts of England ; and as he is in poſſeſſion of one which is the moſt perfect of the kind he has ſeen, it is ſuggeſted that it may convey more information on the ſubject than any explanation that could be otherwiſe given of it.

Form of Leaſe.

"THIS Indenture, made the day of in the year of our Lord one thouſand eight hundred and between A. B. of in the county of eſquire of the firſt part, and C. D. of in the county of yeoman of the ſecond part : Witneſſeth, That for and in conſideration of the rents and covenants, proviſos and agreements, hereinafter reſerved, expreſſed, and contained, and which, on the part and behalf of the ſaid C. D., his executors and adminiſtrators, are to be paid, done, and performed, he the ſaid A. B. hath demiſed, leaſed, ſetten, and to farm letten ; and by theſe preſents doth demiſe, leaſe, ſet, and to farm let unto the ſaid C. D., his executors and adminiſtrators, all thoſe meſſuages, tenements, or farms, called ſituated in the pariſh of and county of now or late in the poſſeſſion of together with all and ſingular houſes, out-houſes, edifices, buildings, barns, cow-houſes, cattle-ſheds, ſtables, yards, garths, ſtack-garths, gardens, lands, feedings, ways, waters, eaſements, privileges, and appurtenances whatſoever, to the ſaid demiſed premiſes belonging, or in anywiſe appertaining, except and always reſerved out of this preſent demiſe, unto the ſaid A. B., his heirs and aſſigns, all mines, minerals, and quarries, of what nature or kind ſoever the ſame may be, as well opened as not opened, lying, being, and remaining within or under the ſaid premiſes, or which can or may be obtained, or gotten forth, or out of the ſame, or any part thereof, with liberty to dig brick-earth, and room to work, mould, dry, and burn the ſame into bricks, in and upon the ſaid hereby demiſed premiſes, or any part thereof : And alſo with full and free liberty, power, and authority, to and for the ſaid A. B., his heirs or aſſigns, and his and their agents, ſervants, and workmen, at ſeaſonable times in the year, in the day-time, to ſearch for all and every ſuch mines, minerals, quarries, and brick-earth, and to ſink pits or ſhafts, and to make trenches, grooves, drifts, water-gates, canals, water-courſes, and to direct or turn any water-courſe, brook, or river, for the winning and working ſuch mines, minerals, and quarries, within the ſaid demiſed premiſes, with ſufficient ground-room and heap-room for laying the ores, metals, minerals, coals, ſtones, clay, earth, materials, and rubbiſh, to proceed, or be obtained or gotten forth out of the ſame or any of them ; together with full liberty and power to build and erect engines, machines, houſes, hovels, lodges, ſtables, cabins, and other edifices and erections whatſoever, for the effectual winning and working the ſame : And alſo full and free liberty of way, leave, and paſſage in, through, and over the ſaid premiſes, or any part thereof, to and from the ſaid mines, minerals, quarries, and brick-kilns whatſoever, with carts, wains, waggons, and any other carriage or carriages neceſſary for leading ores, metals, minerals, coals, ſtones, cinders, bricks, lime, timber, or any other matter or thing whatſoever, and to make, lay, and place through, over, and upon the ſaid premiſes, any road or roads, waggon-way or waggon-ways, rail-ways, or any way or ways, canal or canals, for the purpoſe aforeſaid, and from time to time to repair the ſame, and to do all other acts and things needful or neceſſary for the winning, working, managing, and carrying on the ſaid mines, quarries, and brick-making, as he or they ſhall think proper, with liberty to demiſe or grant to any perſons all ſuch liberties as herein before-mentioned : And alſo, except and reſerved unto the ſaid A.B., his heirs and aſſigns, all timber and other trees, woods, underwoods, and plantations, and the ground and ſoil thereof, now ſtanding, growing, or being, or which ſhall hereafter at any time during the continuance of this demiſe, ſtand, grow, or be upon the ſaid premiſes, with liberty to fell, cut down, or lop ſuch timber trees, or other trees, woods, underwoods, and plantations, and to carry away the ſame, by any means whatſoever : He, the ſaid proprietor, his heirs or aſſigns, or his or their grantee or leſſee reſpectively, making reaſonable ſatisfaction to the ſaid tenant, his executors or adminiſtrators, for the damage or ſpoil of herbage or ground, to be occaſioned by the uſe or exerciſe of all and every or any of the liberties aforeſaid, ſuch ſatisfaction to be from time to time fixed and aſcertained by two indifferent perſons, one to be named by and on the part of the ſaid A. B., his heirs or aſſigns, and the other by and on the part of the ſaid C. D., his executors or adminiſtrators : And alſo, except and reſerved full power and authority for the ſaid A. B., his heirs or aſſigns, and his and their ſtewards and agents, with workmen in their company, or without, in the day-time twice, or oftener, in every year during the term hereby demiſed, to enter in and upon the ſaid premiſes, or any part thereof, to view the ſtate and condition of the ſame : And alſo, except and reſerved unto the ſaid proprietor, his heirs and aſſigns, free liberty to hunt, courſe, hawk, ſhoot, and fiſh, in, upon, through, and over all and every the ſaid hereby demiſed premiſes, or any part thereof ; to have and to hold the ſaid meſſuage, tenement, or farm-hold, lands, grounds, and all and ſingular other the premiſes hereby demiſed, or mentioned, or intended ſo to be, with their and every of their appurtenances (except as before excepted), unto the ſaid C. D, his executors and adminiſtrators, from the twelfth day of May, in the year of our Lord one thouſand eight hundred and   , for and during and unto the full end and term of twenty-one years, from thenceforth next enſuing, and fully to be complete and ended : yielding and paying yearly, and every year during the ſaid term of twenty-one years hereby demiſed unto the ſaid A. B., his heirs or aſſigns, the clear yearly rent or ſum of   of lawful money of Great Britain, by equal half-yearly payments, at two days or times in the year, that is to ſay, the twenty-ſecond day of November, and the twelfth day of May in every year, by even and equal portions ; the firſt half-yearly payment of the ſaid yearly rent to begin and be made upon the twenty-ſecond day of November next enſuing the commencement of the ſaid term hereby demiſed : And alſo yielding and paying yearly and every year unto the ſaid A.B., his heirs or aſſigns, on the ſeveral days and times aforeſaid, over and above the ſaid yearly rent of   the further rent or ſum of   pounds an acre, for every acre of the ſaid demiſed premiſes, that he the ſaid C. D., his executors or adminiſtrators, ſhall, at any time or times during the continuance of this demiſe, break up, tear out, or convert into tillage, or have, or uſe, or employ in any courſe of huſbandry, contrary to the covenants hereafter contained, without the licence and conſent of the ſaid proprietor, his heirs or aſſigns, in writing for that purpoſe firſt had and obtained, and ſo in proportion for a greater or leſs quantity than an acre ; the firſt payment of the ſaid additional rent to be made on the firſt of the aforeſaid half-yearly days of payment, which ſhall happen next after the ploughing, breaking up, tearing out, converting into tillage, or having or uſing, or employing in any courſe of huſbandry, contrary to the covenants hereinafter contained, any part of the ſaid hereby demiſed premiſes, which ſaid two ſeveral and reſpective rents are to be paid as above expreſſed and reſerved, free and clear of all taxes, aſſeſſments, charges, and impoſitions whatſoever, as well parliamentary as parochial, or otherwiſe, which the ſaid premiſes now are, or may hereafter be liable to anſwer or pay : Provided always, and upon condition, and it is the true intent and meaning of theſe preſents, that if it ſhall happen that the ſaid yearly and other rents herein and above reſerved, or any of them, or any part thereof, be behind or unpaid, by the ſpace of forty days next over or after either or any of the ſaid days or times whereon the ſame ought to be paid as aforeſaid, or in caſe the ſaid C. D., his executors or adminiſtrators, ſhall neglect or refuſe to do and perform all and every of the covenants or agreements herein mentioned and contained, on his and their parts, to be paid, done, and performed ; or in caſe the ſaid tenant, his executors or adminiſtrators, ſhall, or do, at any time or times during the term hereby demiſed, alien, let, or aſſign over the ſaid premiſes, or any part thereof, unto any perſon or perſons, without the licence and conſent of the ſaid A. B., his heirs or aſſigns, in writing for that purpoſe firſt had and obtained, that then, and in any of the ſaid caſes, it ſhall and may be lawful to and for the ſaid A. B., his heirs or aſſigns, or ſuch perſon or perſons as ſhall be by him or them appointed for that purpoſe, into and upon the ſaid demiſed premiſes, or into and upon any part thereof, in the name of the whole, wholly to re-enter, and the ſame to have again, re-poſſeſs, and re-enjoy, as in his and their firſt and former eſtate, and from and immediately after ſuch re-entry made, the ſaid term hereby demiſed ſhall ceaſe, determine, and become utterly void and of none effect, any thing in theſe preſents contained to the contrary thereof in anywiſe notwithſtanding : And the ſaid A. B. for himſelf, his heirs and aſſigns, doth hereby covenant, promiſe, and agree to, and with the ſaid C. D., his executors and adminiſtrators, that it ſhall and may be lawful to and for the ſaid C. D., his executors and adminiſtrators, (he and they paying the rents and performing the covenants and agreements herein reſerved and contained, on his and their parts, and to be paid, done, and performed, according to the true intent and meaning of theſe preſents), peaceably and quietly to have, hold, uſe, occupy, poſſeſs, and enjoy all and ſingular the ſaid premiſes, with their appurtenances hereby demiſed (except as before excepted), for and during the ſaid term of twenty-one years, without the lawful let, ſuit, trouble, denial, hindrance, moleſtation, eviction, or interruption of him the ſaid A. B., his heirs or aſſigns, or any other perſon or perſons, claiming by, from, or under him, them, or any of them: And alſo, that it ſhall and may be lawful to and for the ſaid C. D. his executors or adminiſtrators (he and they paying the rents and performing the covenants and agreements as aforeſaid), in the harveſt ſeaſon next after the expiration of the ſaid term hereby demiſed, peaceably and quietly to have, cut down, reap and lead the crop of corn or grain by him, them, or any of them, ſown and then growing upon two-third parts of the lands then in ploughing or tillage (according to the covenants hereinafter contained, and the true intent and meaning of theſe preſents), commonly called the way-going crop; and the ſame corn or grain to ſet in the ſtack-yards, and thraſh the ſame in the barn or barns of and belonging to the ſaid demiſed premiſes: And that he the ſaid C. D., his executors or adminiſtrators, ſhall, for the purpoſes aforeſaid, have the uſe of all the ſtack-yards, barns, and granaries of and belonging to the ſaid demiſed premiſes, until the twelfth day of May next, after the determination of this demiſe; and the ſame corn and grain ſo thraſhed (after payment of rents and arrears of rents then unpaid), ſhall and may carry away, ſell, and diſpoſe of, to and for his or their proper uſe and benefit, leaving and delivering all the ſtraw of the ſaid way-going crop, as ſoon as the ſame is thraſhed (as hereinafter mentioned), in and upon the ſaid premiſes, unto and for the uſe and benefit of the ſaid A. B., his heirs and aſſigns, or his or their next ſucceeding tenant or tenants: And the ſaid A. B., his heirs and aſſigns, or his or their next ſucceeding tenant or tenants, ſhall and will lead the ſaid way-going crop from the lands where it grew to the barns or ſtack-yards, and fork the ſame from the loaded carts to the ſtacks: And alſo ſhall and will bear and pay one-half the expence of making and erecting new quick fences upon the ſaid premiſes, and of cleaning, rearing, and preſerving the ſame for ſeven years, after being firſt planted: And alſo, &c. [Here follow any other covenants on the part of the leſſor for new buildings, &c. &c.]

And the ſaid tenant, for himſelf, his heirs, executors, adminiſtrators, and aſſigns, doth covenant, promiſe, and agree to and with the ſaid A. B., his heirs and aſſigns, by theſe preſents, in manner following, that is to ſay, that the ſaid C. D., his executors or adminiſtrators, ſhall and will well and truly pay, or cauſe to be paid, unto the ſaid A. B., his heirs or aſſigns, the ſaid yearly rent or ſum of   and alſo the other caſual or eventual rents hererein above reſerved, and payable on the days and times, and in manner above mentioned for payment thereof, according to the true intent and meaning of theſe preſents: And alſo ſhall and will from time to time, and at all times during the term hereby demiſed, well and truly pay and diſcharge all and all manner of taxes, aſſeſſments, rates, charges, dues, tithes, and impoſitions, parliamentary or parochial, whatſoever, which now are, or at any time hereafter during the term hereby demiſed ſhall be, taxed, aſſeſſed, rated, charged, or impoſed upon the ſaid premiſes, or any part thereof: And alſo ſhall and will, from time to time, and at all times during the ſaid term hereby demiſed, at his and their own charge and expence, repair, uphold, maintain, and keep, with all manner of needful and neceſſary reparations, all and ſingular the houſes, buildings, barns, cow-houſes, cattle-ſheds, ſtables, offices, gates, ſtiles, rails, fences, hedges, ditches, drains, and water-courſes, of and belonging to the premiſes hereby demiſed, or which may at any time hereafter during the ſaid term, be built, erected, or made upon the ſaid premiſes or any part thereof: And at the end, expiration, or other ſooner determination of the ſaid term, ſhall and will deliver up all and ſingular the ſaid houſes, buildings, erections, barns, cow-houſes, cattle-ſheds, ſtables, offices, gates, ſtiles, rails, fences, hedges, ditches, drains, and water-courſes, with their and every of their improvements unto the ſaid A. B., his heirs or aſſigns, in good and ſufficient repair and condition, together with the peaceable and quiet poſſeſſion thereof: And alſo ſhall not, nor will not, at any time or times during the continuance of this demiſe, ſell, diſpoſe of, ſend or carry away, or permit to be ſold or diſpoſed of, ſent or carried away from off the ſaid premiſes hereby demiſed, any of the hay, ſtraw, clover, turnips, cabbages, or other fodder, that ſhall grow or be produced from, or made thereon, but ſhall and will eat and conſume the ſame (for the increaſe of manure) upon the ſaid premiſes: And alſo ſhall and will, from time to time, during the continuance of this demiſe, at the proper ſeaſons in every year, duly lay and ſpread upon the fallow grounds of the ſaid premiſes (where moſt requiſite and proper for the improvement thereof), in an even, regular, and uniform manner, all the manure, dung, and compoſt that ſhall be bred and made on the premiſes; except the manure, dung, and compoſt to be bred and made thereon in the year next before the determination of the ſaid term; and which manure, dung, and compoſt, ſhall be left in the fold-yards, dung-hills, or midden-ſteads of the ſaid premiſes, for the uſe and benefit of the ſaid A. B., his heirs or aſſigns, or his or their next ſucceeding tenant or tenants: And alſo ſhall not and will not plant or ſow any hemp, flax, or muſtard, or any rape for ſeed * upon the ſaid premiſes, or any part thereof: And alſo ſhall not, and will not, at any time or times in the year next before the determination of this demiſe, depaſture or graze, or ſuffer to be depaſtured or grazed upon the ſaid premiſes, or any part thereof, any larger ſtock of cattle or greater number of ſtints than were uſually depaſtured or grazed thereon in the two years next preceding the ſaid laſt year of the ſaid term, or other ſooner determination thereof: And alſo ſhall and will yearly, and every year during the ſaid term hereby demiſed, catch and deſtroy the moles, and ſcale, mould, dreſs, and clean the graſs-grounds of and belonging to the ſaid demiſed premiſes: And alſo ſhall and will thraſh the way-going crop, at the determination of the ſaid term, in an uniform manner, ſo as to deliver a conſtant, regular, daily ſupply of ſtraw to and for the uſe of the ſaid A. B., his heirs or aſſigns, or his or their tenant or tenants: And alſo ſhall and will, from and after the firſt day of October preceding the termination of the ſaid term, hain, free, and keep uneaten, all thoſe fields or parcels of ground ſown with graſs-feed in the laſt fifteen months of the ſaid term; ſave and except that it ſhall and may be lawful for the ſaid C. D., his executors and adminiſtrators, from and after the firſt day of April next before the end of the ſaid term, to depaſture, with not more than   ſheep an acre, one-half of the ſaid hained clover or new graſs, which half ſhall be choſen and ſet out by the agent of the ſaid A. B., his heirs or aſſigns, in the month of March preceding: And alſo ſhall and will permit the ſaid A. B., his heirs or aſſigns, or his or their tenant or tenants, to ſow with graſs-feeds all or any part of the lands ſown with corn or grain, for the way-going crop, and to roll in the ſame with a roller drawn

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* Rape for green food is allowed.

by horſes, according to the cuſtom of the country: And alſo ſhall and will permit and ſuffer the ſaid proprietor, his heirs or aſſigns, or his or their ſervants, draughts, and workmen, from time to time, and at all times, from and after the firſt day of December preceding the determination of this demiſe, to enter into and upon all the then fallow grounds of the ſaid premiſes, or the grounds which, according to the true intent and meaning of theſe preſents, ought to be in fallow, and the ſame to plough, ſow, harrow, dreſs, manure, lime, and prepare for ſuch courſe of agriculture as he or they ſhall think proper to convert the ſame into, without the let or hindrance of him the ſaid C. D., his executors or adminiſtrators: And alſo ſhall not, and will not, have, uſe, or employ, in ploughing or tillage, a greater quantity of land than acres of the ſaid premiſes at any one time, or in any one year, during the term hereby demiſed: And alſo ſhall and will yearly, and every year during the term hereby demiſed, ſummer fallow [†] at leaſt one-third part of the tillage, and plough the ſame at leaſt ſeveral times, at proper ſeaſons in each year, and keep the ſame free and clear from quick-ins, wild oats, thiſtles, coltsfoot, runch, dead nettles, and every other pernicious plant or weed, and lay and ſpread upon every acre of ſuch fallow, in an even and regular manner, at leaſt fother of well-turned clod-lime, or in lieu thereof twenty fother of good well-rotted dung, and ſo in proportion for a leſs quantity than an acre: And alſo ſhall not, and will not, have, keep, or continue in ploughing or tillage, any part of the ſaid demiſed premiſes, more than years at one time, that is from being ploughed out from graſs, to being laid down to graſs again: And alſo ſhall and will yearly, and every year, ſow with graſs-ſeeds, and lay down to graſs, at leaſt one-third part of the ploughing or tillage-lands, after a clean ſummer fallowing, and a crop of wheat, or a crop of turnips and white corn, and ſow upon every acre thereof at leaſt eight pounds of red clover ſeed, three pounds of white clover, three pounds of rib-wort plantain, and two pecks of rye-graſs [‡] of the beſt quality; the quantity and quality to be aſcertained by proper vouchers from the perſons of whom the ſaid ſeeds were bought, and by whom the ſaid ſeeds were ſown: And alſo ſhall and will, whenever any part of the ploughing or tillage lands are laid to graſs, keep and continue the ſame in graſs at leaſt [||] years before the ſame, or any part thereof, be again ploughed out, or converted into tillage: And alſo ſhall and will, in the laſt three years of the ſaid term, lay down to graſs as aforeſaid, or have in graſs, and at the end thereof leave in graſs, all thoſe fields or parcels of land, called And alſo ſhall and will, during the whole of the ſaid term, keep in graſs, and at the expiration thereof leave in graſs, all thoſe fields or parcels of land [§] And alſo all ſuch lands as ſhall be converted into watered meadows: And alſo ſhall and will during the term hereby demiſed, bear and pay one-half the expence of making and erecting new quick fences upon the ſaid premiſes, and of cleaning, rearing, and preſerving the ſame for ſeven years after being firſt planted. [Here follow any other particular covenants that circumſtances may require.]

In addition to this general form of leaſe, others with particular covenants become neceſſary for each particular ſort of farm.

Lease, *Valuation of*, the mode of finding out and aſcertaining the value of leaſehold property, in which the circumſtances that are to be more particularly attended to are thoſe of the peculiar nature or conditions of the leaſe, and the difference between the leaſe rent, and the full or actual rental value; as all ſorts of leaſes, where the rent payable is not equal to the juſt or true rental value at the period of their being ſold, leſſen the value of the land, and are obviouſly an incumbrance in different points of view. The mode of managing this buſineſs with propriety, according to a late writer, is, after aſcertaining the difference between the leaſe rent and the full rental value (incumbered with the ſame outgoings and repairs as the leaſe rent), to multiply it by the number of years that are unexpired, deducting the product in full from the value of the land free from ſuch incumbrance; and from the product thus found, to further deduct half the intereſt thereof during the ſaid number of years, together with that of one-half year over, where the rent is payable half yearly, and one year where it is payable annually; as all that a purchaſer of this ſort of property has a right to expect, is that of receiving the full rent for his land during the continuance of ſuch leaſe or engagement. See *Valuation of Landed* Property.

Lease, in *Agriculture*, a provincial term that implies graſſy ground, meadow-ground, or any unploughed ground kept for the uſe of cattle.

Lease *and Releaſe*, in *Law*, is a conveyance of the fee-ſimple, right, or intereſt in lands or tenements, under the ſtatute of Uſes, 27 H. VIII. cap. 10. giving firſt the poſſeſſion, and afterwards the intereſt, in the eſtate conveyed. This ſpecies of conveyance was firſt invented by ſerjeant Moore, ſoon after the ſtatute of Uſes, and it is now the moſt common of any, and not to be ſhaken. Though the deed of feoffment was the uſual conveyance at common law; yet ſince the ſtat. of 27 Hen. VIII. of uſes, the conveyance by leaſe and releaſe has taken place of it, and is become a very common aſſurance to paſs lands and tenements; for it amounts to a feoffment, the uſe drawing after it the poſſeſſion without actual entry, &c. and ſupplying the place of livery and ſeiſin, required in that deed: in the making of it, a leaſe, or bargain and ſale for a year, or ſuch like term, upon ſome pecuniary conſideration, is firſt prepared and executed, to the intent that by virtue thereof the leſſee may be in actual poſſeſſion of the lands intended to be conveyed by the releaſe, and thereby and by force of the ſtatute 27 Hen. VIII. c. 10. for transferring of uſes into poſſeſſion, be enabled to take and accept a grant of the reverſion and inheritance of the ſaid lands, &c. to the uſe of himſelf and his heirs for ever. Upon which the releaſe is accordingly made, reciting the leaſe and declaring the uſes; and in theſe caſes a pepper-corn rent in the leaſe for a year is a ſufficient reſervation to raiſe an uſe, to make the leſſee capable of a releaſe. (2 Vent. 35. 2 Mod. 262.) This is held to ſupply the place of livery of ſeiſin; and ſo a conveyance by leaſe and releaſe is ſaid to amount to a feoffment. (Co. Lit. 270. Cro. Jac. 204.) Black. Com. b. ii. Tomlin's Jacob Dict. vol. ii. tit. Lease and Release. See Bargain and Sale, and Conveyance.

The form of this conveyance is originally derived to us from the common law; and it is neceſſary to diſtinguiſh in what reſpect it operates as a common-law conveyance, and in what it operates under the ſtatue of Uſes. At the common law, where the uſual mode of conveyance was by feoffment with livery of ſeiſin, if there was a tenant in poſſeſſion, ſo that livery could not be made, the reverſion was granted, and the tenant attorned to the reverſioner. As by this mode the reverſion or remainder of an eſtate might be conveyed without livery, when it depended on an eſtate previouſly exiſting, it was natural to proceed one ſtep further, and to create a particular eſtate for the expreſs and ſole purpoſe of conveying the reverſion; and then by a ſurrender or releaſe, either of the particular eſtate to the reverſioner, or of the reverſion to the particular tenant, the whole fee veſted in the ſurrenderee or releaſee. It was afterwards obſerved, that there was no neceſſity to grant the reverſion to a ſtranger; and that if a particular eſtate was made to the perſon to whom it was propoſed to convey the fee, the reverſion might be immediately releaſed to him, which releaſe operating by way of enlargement, would give the releaſee (or releſſee as he is ſometimes termed) a fee. In all theſe caſes the particular eſtate was only an eſtate for years; for at the common law the ceremony of livery of ſeiſin is as neceſſary to create even an eſtate of freehold, as it is to create an eſtate of inheritance. Still an actual entry would be neceſſary on the part of the particular tenant; for without actual poſſeſſion the leſſee is not capable of a releaſe, operating by way of enlargement. But this neceſſity of entry for the purpoſe of obtaining the poſſeſſion, was ſuperſeded or made unneceſſary by the ſtatute of Uſes (27 Hen. VIII. c. 10. above alluded to); for by that ſtatute the poſſeſſion was immediately transferred to the *ceſtui que uſe*; ſo that a bargainee under that ſtatute is as much in poſſeſſion, and as capable of a releaſe before or without entry, as a leſſee is at the common law after entry. All, therefore, that remained to be done to avoid on the one hand the neceſſity of livery of ſeiſin from the grantor, and to avoid on the other the neceſſity of an actual entry on the part of the grantee, was, that the particular eſtate (which, for the reaſons above-mentioned, ſhould be an eſtate for years) ſhould be ſo framed as to be a bargain and ſale within the ſtatute. Originally it was made in ſuch a manner as to be both a leaſe at the common law, and a bargain and ſale under the ſtatute: but as it is held, that where conveyances may operate both by the common law and ſtatute, they ſhall be conſidered to operate by the common law, unleſs the intention of the parties appears to the contrary, it became the practice to inſert, among the operative words, the words *bargain* and *ſell* (in fact, it is more accurate to inſert no other operative words); and to expreſs that the bargain and ſale, or leaſe, is made to the intent and purpoſe that thereby, and by the ſtatute for transferring uſes into poſſeſſions, the leſſee may be capable of a releaſe. The bargain and ſale therefore, or leaſe for a year, as it is generally called, operates, and the bargainee is in the poſſeſſion, by the ſtatute. The releaſe operates by enlarging the eſtate or poſſeſſion of the bargainee to a fee. This is at the common law; and if the uſe be declared to the releaſee in fee-ſimple, it continues an eſtate at the common law; but if the uſe is declared to a third perſon, the ſtatute again intervenes, and annexes or transfers the poſſeſſion of the releaſee to the uſe of the perſon to whom the uſe is declared. It has been ſaid, that the poſſeſſion of the bargainee under the leaſe is not ſo properly merged in, as enlarged by, the releaſe; but at all events it does not, after the releaſe, exiſt diſtinct from the eſtate paſſed by the releaſe. 1 Inſt. 271. b. in n.

[†] On the fallow turnips ſhould be ſown, if a proper ſoil, or cabbages, or drilled beans, at thirty inches diſtance.

[‡] To theſe, upon light ſoils, are generally added three or four pounds of yellow hop-clover.

[||] This blank is ſometimes filled up with two or one, according to ſoil, ſituation, and circumſtances, and weak ſoils, improper for corn, generally continue in graſs five, ſix, or ſeven years, until it is thought they want refreſhing by tillage, which is only uſed in ſuch ſituations, as being ſubſervient to rearing ſtock.

[§] This covenant is uſed only in ſuch ſituations where there are any rich old grazing lands.

As the operation of a leaſe and releaſe depends upon the leaſe, or bargain and ſale; if the grantor is a body corporate, the leaſe will not operate under the ſtatute of Uſes; for a body corporate cannot be ſeiſed to an uſe, and therefore the leaſe of poſſeſſion, conſidered as a bargain and ſale under the ſtatute, is void; and the releaſe then muſt be of no effect for want of a previous poſſeſſion in the releaſee. In caſes of this nature, therefore, it is proper to make the conveyance by feoffment, or by a leaſe and releaſe with an actual entry by the leſſee previous to the releaſe; after which the releaſe will paſs the reverſion. It may alſo be obſerved, that in exchanges, if one of the parties die before the exchange is executed by entry, the exchange is void. But if the exchange be made by leaſe and releaſe, this inconvenience is prevented, as the ſtatute executes the poſſeſſion without entry; and all incidents annexed to an exchange at common law will be preſerved. 1 Inſt. 271. b. in n.

When an eſtate is conveyed by leaſe and releaſe, in the leaſe for a year there muſt be the words, *bargain* and *ſell* for money, and five ſhillings or any other ſum, though never paid, is a good conſideration, whereupon the bargainee for a year is immediately in poſſeſſion on the executing of the deed, without actual entry: if only the words *demiſe, grant and to farm let* are uſed, in that caſe the leſſee cannot accept of a releaſe of the inheritance, until he hath actually entered, and is in poſſeſſion. (2 Lil. Abr. 435.) But where Littleton ſays, that if a leaſe is made for years, and the leſſor releaſes to the leſſee before entry, ſuch releaſe is void; becauſe the leſſee had only a right, and not the poſſeſſion; and ſuch releaſe ſhall not enure to enlarge the eſtate, without the poſſeſſion: though this is true at common law, it is not ſo now upon the ſtatute of Uſes. (2 Mod. 250, 251.) And if a man make a leaſe for life, remainder for life, and the firſt leſſee dieth; on which the leſſor releaſes to him in remainder, before entry; this is a good releaſe to enlarge the eſtate, he having an eſtate in law capable of enlargement by releaſe, before entry had. 1 Inſt. 270.

No perſon can make a bargain and ſale, who hath not poſſeſſion of the lands: but it is not neceſſary to reſerve a rent therein; becauſe the conſideration of money raiſes the uſe. If a leaſe be without any ſuch conſideration, the leſſee hath not any eſtate till entry, nor hath the leſſor any reverſion; and therefore a releaſe will not operate, &c. (1 Inſt. 270. 278. Cro. Jac. 169. 1 Mod. 263.) On leaſe at will, a releaſe ſhall be good by reaſon of the privity between the parties; but if a man be only tenant at ſufferance, the releaſe will not inure to him; and as to the perſon who hath the reverſion it is void, for ſuch tenant hath not any poſſeſſion, there being no eſtate in him. Lit. § 461, 462. Cro. Eliz. 21. Dyer 251.

In a leaſe and releaſe, to make a tenant to the *præcipe* to ſuffer a recovery, where the releaſe is made to A. B., and his heirs (*viz.* the tenant to the *præcipe*), it muſt be alſo ſaid to the uſe of him the ſaid A. B., and his heirs and aſſigns for ever; for the releſſee muſt be abſolute tenant of the freehold. (2 Vent. 312. Lil. Conveyance, 251.) And a releaſe made on truſt, muſt be to A. B., his heirs and aſſigns, to the only uſe and behoof of the releſſee, his heirs and aſſigns for ever; in truſt for C. D., who is to be a party to the deed, and the purchaſe-money to be paid by the *ceſtui que truſt*. If the words *to the uſe*, &c. are not inſerted in the releaſe, the eſtate doth not execute by the ſtatute of Uſes, and the truſt is void. Lil. Conv. 231, 251. See RECOVERY and TRUST.

A leaſe and releaſe make but one conveyance, being in the nature of one deed. 1 Mod. 252. See RELEASE.

LEASEHOLD *Tenure of Lands*, in *Agriculture*, is that ſort of tenancy which is held under leaſe or ſpecial agreement for any definite term, whether of lives or years; which alſo admits of ſeveral diſtinctions, as, where the term is for a great length of time, as a thouſand years, and where it is for life, of which there are different kinds, as where the fine is certain, or under certain limitations on renewal, with an uncertain fine; payable to a proprietor or other ſuperior, who has merely reſerved a conventional rent, the tenant having given a ſum of money to obtain the leaſe and the right of alienation; this is a practice common in the weſtern counties: with an uncertain fine payable to a proprietor, who receives the full rent of the land at the time of granting the leaſe, the landlord having a power of alienation; this is a practice common in Wales, and ſome parts of this country: and where it is for an ordinary term, (as for leſs than 100 years,) with the power of alienation. They are all tenures, which give a ſort of temporary property or intereſt in the lands, by which they are rendered liable to bargain or ſale as other ſorts of property by the holders of them. See TENANT and TENURE.

LEASH, or LEASHE, among *Sportſmen*, denotes three creatures of any kind; but chiefly greyhounds, foxes, bucks, and hares.

We ſay a leaſh of greyhounds, a couple and a half of hounds.

LEASING, or LESING. See GLEANING.

LEAT, is uſed for a trench to convey water to or from a mill. It is mentioned in the ſtatute 7 Jac. I. cap. 19.

LEATHER, in *Commerce*, the ſkins of ſeveral ſorts of beaſts dreſſed and prepared for the uſe of various manufacturers, whoſe buſineſs is to make them up, according to their different employments. The butcher and others, who flay them off the carcaſes, diſpoſe of them raw or ſalted to the tanner and tawer; they to the ſhamoy, morocco, and other kind of leather-dreſſers, who prepare them according to their reſpective arts, in order to vent them among the curriers and leather-cutters, glovers, harneſs-makers, coach-makers, ſadlers, breeches-makers, gilt-leather-makers, chair-makers, ſhoe-makers, book-binders, and all in any way concerned in the article of leather.

Leather has divers names according to the ſtate wherein it is, and according to the different kinds of ſkins of which it is prepared, and its peculiar qualities when ſo prepared. 1. The ſkin is raw as it comes off the animal. 2. Some are ſalted with ſea-ſalt and alum, or with natron, which is a ſpecies of ſalt-petre, or white ſalt-wort, to prevent corruption in keeping, or ſending to diſtant tanneries during hot ſeaſons.

Skins dried with the hair on, are commonly thoſe of oxen and cows, or buffaloes, either tame or wild. Moſt of thoſe in France come from foreign countries. The places which furniſh the largeſt quantity, are Peru, the iſle of St. Domingo, Barbary, Cape Verde Iſles, the river Senegal in Africa, Muſcovy, Ireland, the iſland of Cuba. Thoſe of this latter place are the moſt eſteemed; they are called Havannah ſkins, from the name of the capital city of that iſland, whither they are carried in order to be ſent to Spain, and from thence into other parts of Europe. After theſe ſkins are ſtript of their hair, they are ſold to the tanners. See CURRYING, TANNING, and SKINS.

The three principal aſſortments of leather are tanned or tawed, and oil and alum leather, all which are dreſſed in ſome yards.

The art of dreſſing leather in oil conſiſts in firſt ſoaking the ſkins; then throwing them into the lime-pit; and when they are taken hence, pulling them and delivering them to the friezer; they are then ſtruck with the oil, and ſent to the mill; when they are milled ſufficiently, they are thrown into the ditch to be ſcoured, and by ſome ſcudded, and afterwards hung upon the hooks to dry. When they have been weighed and marked by the proper officers, in order to fix the exciſe duty, they are fit for ſale. The ſorts of ſkins dreſſed in oil are thoſe of deer, ſheep, and lambs, and ſome few of goat, and the oil uſed for this purpoſe is Newfoundland, or cod's liver oil. The alum leather-dreſſers' art conſiſts in properly ſoaking, liming, wringing, (an operation ſometimes omitted,) and ſtriking them in a liquor compoſed of water, ſalt, and alum, and then drying them properly. The ſorts of ſkins dreſſed in alum are thoſe of ſheep and lambs, and a large quantity of kid. Poſtleth. Dict. Com. art. *Leather*.

There are ſeveral ſtatutes relating to leather; the 27 Hen. VIII. c. 14. directs packers to be appointed for leather to be tranſported: but the 18 Eliz. c. 9. prohibits the ſhipping of leather on penalty of forfeiture, &c. Though by 20 Car. c. 5. tranſportation of leather was allowed to Scotland, Ireland, or any foreign countries paying a cuſtom or duty; which ſtatute was continued by divers ſubſequent acts.

No perſon ſhall ingroſs leather to ſell again, under the penalty of forfeiture. None but tanners are to buy any rough hides of leather, or calves' ſkins in the hair, on pain of forfeiture; and no perſon ſhall foreſtall hides, under the penalty of 6*s*. 8*d*. a hide. Leather not ſufficiently tanned is to be forfeited. In London, the lord mayor and aldermen are to appoint and ſwear ſearchers and ſealers of leather out of the company of cordwainers, &c. and alſo triers of the ſufficiency of leather; and the ſame is to be done by mayors, &c. in other towns and corporations; and ſearchers allowing inſufficient leather, incur a forfeiture of 40*s*. Shoemakers making ſhoes or boots of inſufficient leather are liable to forfeit for every pair 3*s*. 4*d*. and the value thereof. (1 Jac. I. c. 22.) Red tanned leather is to be brought into open leather markets, and ſearched and ſealed before it be expoſed to ſale, and on ſale is to be regiſtered, or ſhall be forfeited; and contracts for ſale otherwiſe to be void. (13 & 14 Car. II. c. 7.) Hides of leather are adjudged the ware and manufacture of the currier, and ſubject to ſearch, &c. All perſons dealing in leather may buy tanned leather, ſearched in open market, and any perſon may buy or ſell leather, hides, or ſkins, by weight. 1 W. & M. c. 33.

The firſt ſtatute concerning leather, which it is neceſſary for us to refer to in this article, is the 1 Jac. c. 22, which reduces all preceding acts relating to that commodity into one; and therefore to this we ſhall have a retroſpect in the progreſs of this article; premiſing that all forfeitures by this act, not otherwiſe ſpecially directed, ſhall be divided, one-third to the king, one-third to him that ſhall ſue, and one-third to the city, town, or lord of the liberty. By 9 Ann. c. 11. any two juſtices near the place where the forfeitures are incurred, or offence committed, may hear and determine the ſame. All forfeitures, by the act of 13 & 14 Car. II. c. 7. ſhall be recovered in any court at Weſtminſter, or in any court of record in the city, &c. where the offence ſhall be committed; to be diſtributed half to the king, and half to the informer. By 39 & 40 Geo. III. c. 66. it is enacted that proper places and times for inſpecting all raw hides and ſkins of cattle, ſheep, horſes, and hogs, ſhall be fixed by the mayor, bailiff, or head-officer of any city, town corporate, borough, or market-town, or any two magiſtrates acting for the ſame, or any two juſtices acting for the diviſion within or neareſt to ſuch city, &c. The manner of appointing inſpectors is alſo preſcribed by the ſaid acts. And by the ſame, butchers, &c. who are chargeable with wilfully or careleſsly injuring hides, ſo as to make them leſs valuable, are liable to penalties, not exceeding 5*s*. (41 Geo. III.) nor leſs than 1*s*. for the raw hide of every ox, bull, cow, or heifer, &c. ; and not exceeding 2*s.* 6*d.* (41 Geo. III.) nor leſs than 6*d.* for the ſkin of every calf ; and not exceeding 2*s.* 6*d.* (41 Geo. III.) nor leſs than 1*s.* for the hide of every horſe, mare, or gelding ; and not exceeding 6*d.* nor leſs than 3*d.* for the hide of every hog, pig, ſheep, or lamb. Inſpectors are required to take a preſcribed oath, and are allowed certain fees for examining and inſpecting hides. &c. (See alſo 43 Geo. III. c. 106.) Theſe inſpectors may impoſe penalties for damaging hides, &c. ; which penalties ſhall be recovered before a juſtice, one-half of which, by 41 Geo. III. c. 53. ſhall be given to the inſpector, and the other half applied to the purpoſe of better carrying on the objects of theſe acts. By the above-cited acts, 39 & 40 Geo. III. c. 66, the inſpectors of raw hides ſhall provide proper ſtamps, and ſtamp the hides, not damaged or otherwiſe ; and ſeize ſuch hides or ſkins as have been damaged, and ſell the ſame, provided the penalties be not paid in leſs than 48 hours after ſuch ſeizure. Butchers or others neglecting to bring hides to be marked, ſhall forfeit not exceeding 5*l.* nor leſs than 40*s.* for every ſuch hide. The regulations of this act ſhall extend to all hides found in Great Britain. (41 Geo. III. c. 53.) All diſputes ſhall be ſettled by any five impartial and reſpectable perſons concerned in the manufacture of leather, ſummoned by a magiſtrate, before whom ſuch diſpute ſhall be brought. All penalties and forfeitures ſhall be recovered before one juſtice or magiſtrate of any city, town, or place, where the offence ſhall be committed, upon conviction, confeſſion, or the oath of one witneſs, and levied by diſtreſs ; and for want of ſufficient diſtreſs, the offending party ſhall be committed by ſuch juſtice or magiſtrate to the common gaol or houſe of correction, for a time not exceeding one month. All penalties and forfeitures, not otherwiſe diſpoſed of, ſhall go, half to the informer, and half to the execution of the purpoſes of the act. Perſons aggrieved may appeal to the next ſeſſions. (39 & 40 Geo. III. c. 66.) By the ſame and 41 Geo. III. c. 53. informations for offences againſt this act for wilfully or careleſsly gaſhing raw hides, ſhall be laid within three days after the commiſſion of the offence ; and for any other offence within 14 days after the offence committed. By 43 Geo. III. c. 106. the proviſions of 39 & 40 Geo. III. c. 66. and 41 Geo. III. c. 53, are extended to London, Weſtminſter, and Southwark, and to all places within fifteen miles of the Royal Exchange. All raw hides within five miles of the Royal Exchange ſhall be brought to Leadenhall market, and the ſkins of ſheep and lambs to one of the three ſheep-ſkin markets in Southwark, the Whitechapel market, or the market at Wood's Cloſe. Proper places and hours for inſpection are to be appointed within three months after the paſſing of this act. For the market at Leadenhall, eight inſpectors are to be appointed ; four from the company of butchers, two by the company of curriers, and two by the company of cordwainers ; and beſides, there ſhall be appointed four inſpectors for the ſheep market at Wood's Cloſe, two for Southwark, and two for the market of Whitechapel. One half of the inſpectors at each of the three laſt-mentioned markets to be appointed by the company of butchers, and the other half at each of ſuch markets in equal proportions by the companies of curriers and cordwainers. Proviſion is made for increaſing their number and regulating their attendance. Inſpectors for Leadenhall market are required to attend on the uſual market days, from ſix in the morning till five in the afternoon, from the 25th of March to the 29th of September ; and from ſeven in the morning until four in the afternoon, from the 30th of September till the 24th of March.

The diſtribution of fines and fees is preſcribed, ſo that one-half ſhall be equally divided between the inſpectors, acting at the reſpective markets, and the remaining half-part ſhall be paid weekly to the arbitrator of the market, in reſpect to which they are received, and paid monthly by the ſaid arbitrators to the reſpective perſons appointed by the courts of aſſiſtants to receive the ſame. There is a penalty for impeding inſpectors, not exceeding 5*l.* nor leſs than 10*s.* for each offence, and alſo a penalty not exceeding 20*l.* on inſpectors receiving, and perſons offering bribes. Saleſmen are required to deliver an account of hides or ſkins ſold, under a penalty for every offence of 10*l.* The lord-mayor of London is empowered to increaſe the fees of the inſpectors, under the repreſentation of the courts of aſſiſtants of the companies concerned, to any ſum not exceeding 1*d.* for every hide, ½*d.* for every calf-ſkin, hog-ſkin, or pig-ſkin, and ¼*d.* for every ſheep or lamb-ſkin. The reſpective courts of aſſiſtants are required to appoint annually four arbitrators, to ſettle diſputes ariſing in any of the markets above-mentioned ; and theſe arbitrators are empowered to fine inſpectors, and alſo butchers and ſaleſmen, for frivolous deciſions and exorbitant impoſitions. Inſpectors and arbitrators are liable to be diſmiſſed for miſconduct in their reſpective offices, or to a fine not exceeding 5*l.* nor leſs than 10*s.* Buyers and ſellers of unſtamped hides or ſkins are liable to a forfeiture not exceeding 20*s.* nor leſs than 5*s.* for every hide ; and not exceeding 5*s.* nor leſs than 1*s.* for every ſkin of hogs, pigs, or calves ; and not exceeding 1*s.* nor leſs than 6*d.* for every ſheep or lamb-ſkin. The treaſurers are appointed by the reſpective courts of aſſiſtants to receive the ſums collected by the arbitrators ; one-half of which ſhall be paid to the treaſurer appointed by the company of butchers, one-fourth to the officer of the company of curriers, and one-fourth to the officer of the company of cordwainers ; which ſums ſhall firſt of all be applied for the execution of the acts, and to the uſe of the poor of the ſaid companies.

For particular regulations concerning *tanners* and *curriers* of hides, ſee theſe articles reſpectively. The mayor and aldermen of London (on pain of 40*l.* for every year they make default, half to the king and half to him that ſhall ſue) ſhall yearly appoint eight freemen of ſome of the companies of cordwainers, curriers, ſadlers or girdlers, of whom one ſhall be a ſealer, and keep a ſeal for the ſealing of leather ; they ſhall be ſworn to do their office truly ; and they ſhall ſearch and view all tanned leather brought to market, whether it is thoroughly tanned and dried : and if it is, ſhall ſeal the ſame. Four of theſe officers ſhall be changed every year ; no officer ſhall be continued above two years together, nor be re-elected till after the end of three years, on pain of 10*l.* a month. A ſimilar regulation extends to other places. The wardens of the curriers ſhall ſearch and ſeal curried leather, for which they are entitled to fees, to be paid by the currier ; on pain of forfeiture for every hide not ſearched and ſealed, 6*s.* 8*d.* If any ſearcher or ſealer ſhall neglect his office or miſbehave, he ſhall forfeit 40*s.* : if he ſhall take a bribe, or exact a fee not appointed, he ſhall forfeit 20*l.* ; and if he ſhall refuſe to execute his office, he ſhall forfeit 10*l.* If any perſon ſhall hinder the ſearcher in the execution of his office, he ſhall forfeit 5*l.* (1 Jac. c. 22.) The mayor of London (on pain of 5*l.* half to the king, and half to him that ſhall ſue) ſhall, within ſix days after notice given of any ſeizure of any leather, red and unwrought, appoint ſix triers, two of the cordwainers, two of the curriers, and two of the tanners, uſing Leadenhall market, who, upon their oaths taken before him, ſhall, on the ſecond or third market-day for leather, try the ſame, whether it be ſufficient or not. The ſame regulation extends to other places. Triers not doing their duty ſhall forfeit 5*l.* The offering for ſale of unſearched and unſealed leather incurs a forfeiture of the ſame, or its value, and for every hide or piece 6*s.* 8*d.*; and for every dozen of calves' ſkins, 3*s.* 4*d.*; but no perſon ſhall incur any penalty for ſelling or buying any ſheep-ſkins, unſearched or unſealed. (1 Jac. c. 22. 4 Jac. c. 6.) All red tanned leather ſhall be bought only in the open fair or market, and not in any houſe, yard, ſhop, or other place, on pain of forfeiting the ſame, or its value, and rendering the contract void: and ſuch leather ſhall be ſearched and ſealed before ſale, and on ſale ſhall be regiſtered, on pain of forfeiting the ſame, or its value. (13 & 14 Car. II. c. 7) Searchers and ſealers ſhall keep a regiſter of all bargains made for leather, during the fair or market, with the prices; taking for ſearching, ſealing, and regiſtering of every ten hides, or butts, of the ſeller 2*d.*, and ſo in proportion; and for every ſix dozen of calves'-ſkins, or ſheep-ſkins, 2*d.*: and of the buyer after the ſame rate. Red tanned leather, brought into London, or within three miles of it, ſhall be brought to Leadenhall, to be viewed and regiſtered by the ſearchers, with half ſuch fees to be paid for tanned leather bought out of London, or within three miles, and ſearched and ſealed before it be brought within the city; on pain that every perſon houſing, or not bringing his leather to Leadenhall, ſhall forfeit for every hide or ſkin 6*s.* 8*d.* No perſon ſhall buy any tanned leather, unwrought, but who ſhall work the ſame into wares, on pain of forfeiting the ſame, or value. (1 Jac. c. 22.) But by 12 Geo. II. c. 25, all perſons who deal or work in leather may buy all ſorts of tanned leather in open fair or market, whether curried or uncurried, being firſt ſearched and ſealed, and may cut and ſell the ſame in any ſmall pieces in their open ſhops. (See alſo 1 W. ſeſſ. 1. c. 33.) Within London, or within three miles, no perſon ſhall ſell any wares appertaining to the myſtery of any artificer cutting leather, but only in open ſhop, common fair, or market, whereby the wardens may have ſearch thereof: on pain of forfeiting the ſame, and alſo 10*s.* 1 Jac. c. 22

No ſhoemaker ſhall make any boots or ſhoes, or any part of them, except of leather, well and truly tanned and curried, or of leather well and truly tanned only; nor put into any part of any ſhoes or boots, any leather made of a ſheep-ſkin, bull-hide, or horſe-hide, &c. &c., on pain of forfeiting for every pair of ſhoes or boots 3*s.* 4*d.*, and the value. And if any artificer uſing leather do make any wares of any tanned leather inſufficiently tanned, or of tanned and curried leather, not ſufficiently tanned and curried, he ſhall forfeit the ſame, and value. If any ſhoemaker or cobler within London, or three miles of it, ſhall put any tanned leather into any boots or ſhoes, or other things made of tanned leather, which ſhall not be well and perfectly tanned, or do put any curried leather into boots or ſhoes, or any things made of leather, which ſhall not be ſufficiently tanned and curried, and alſo ſealed; he ſhall forfeit the ſame and value. 1 Jac. c. 22.

All ſorts of leather and ſkin, tanned or dreſſed, may be exported. 20 Car. II. c. 5. 9 Ann. c. 6.

By 43 Geo. III. c. 69, a duty is laid upon all hides and ſkins, vellum and parchment, imported; and drawbacks allowed on the exportation of them. Other duties are alſo impoſed by 49 Geo. III. c. 98. for which we refer to the act, ſched. A. After the duty on importation ſhall be paid, the officers of the cuſtoms ſhall cauſe every hide or ſkin to be marked, to denote the payment of the duty. (9 Anne. c. 11.) But by 15 Geo. III. c. 35, raw or undreſſed goat-ſkins may be imported for five years, duty free; and this act was made perpetual by 31 Geo. III. c. 43. The ſeveral duties for and upon all hides and ſkins, and parts and pieces of hides and ſkins, tanned, tawed, or dreſſed, to be paid by the tanners, tawers, and dreſſers of hides and ſkins reſpectively, and the duties upon vellum and parchment, to be paid by the reſpective makers thereof; and certain drawbacks are allowed on the exportation thereof. By *tanned* hides or ſkins, or pieces thereof, are meant only ſuch as are tanned in wooze, made of the bark of trees, or ſhumack; and by hides and ſkins, *dreſſed in oil*, are meant ſuch as are made into leather in oil, or with any materials, of which the chief ingredient ſhall be oil; and by *tawed* hides or ſkins, are meant ſuch as are dreſſed or made into leather, in alum and ſalt, or meal, or other ingredients properly uſed by tawers of white leather. 9 Ann. c. 11. ſ. 3.

By 43 Geo. III. c. 69, every tanner ſhall take out a licence annually, for which he ſhall pay, if within the bills of mortality, 5*l.*, elſewhere 2*l.* 10*s.*, on pain of 30*l.* (24 Geo. III. c. 41. Seſſ. 2. § 1.) And every tawer ſhall take out a licence annually, for which he ſhall pay 1*l.* on the penalty of 10*l.* And every dreſſer of hides in oil ſhall take out a licence annually, for which he ſhall pay 2*l.* on the penalty of 20*l.* And every currier ſhall take out a licence annually, for which he ſhall pay 2*l.* on the penalty of 20*l.* And every maker of vellum or parchment ſhall take out a licence annually, for which he ſhall pay 1*l.* on the penalty of 10*l.* And every perſon who ſhall take out ſuch licences ſhall renew them annually, ten days before their expiration, on the penalties above ſtated. Collar-makers, glovers, bridle-cutters and others, who dreſs ſkins or hides, or pieces thereof, in oil, alum, and ſalt, or meal, or other ingredients, and who cut and make the ſame into wares, ſhall be accounted tawers, or dreſſers. (2 Ann. c. 11. § 28.) Any hide or ſkin, which hath once paid the duty, ſhall not be charged under any other denomination (9 Ann. c. 11. § 3.) The commiſſioners of theſe duties, appointed by the commiſſioners of the treaſury, ſhall have the ſame power as the commiſſioners of exciſe. Tanners, tawers, curriers, or dreſſers of hides or ſkins, and makers of vellum or parchment, are required to give notice in writing to the officer, of their names and places of abode, and of their tan-houſes, yards, work-houſes, mills, or other places where they intend to tan, taw, or dreſs hides or ſkins, or make vellum or parchment, before they uſe the ſame; on pain of 50*l.* Thoſe who uſe ſuch places without entry of them, ſhall forfeit 20*l.*, and the goods found in them, or their value, ſhall alſo be forfeited. The officers, at all ſeaſonable hours, ſhall enter and ſurvey theſe places, and if the owner or occupier refuſe them entrance, he ſhall forfeit 10*l.* And if any hide or ſkin, tanned, tawed, or dreſſed in oil, be found in any place not entered, without a ſtamp denoting that the duty has been charged, the ſame ſhall be forfeited and ſeized; and the perſons in whoſe poſſeſſion it ſhall have been found, ſhall for each offence forfeit 100*l.* (41 Geo. III. c. 91. § 10.) Tanners and others ſhall give two days notice to the proper officers of the removal of goods to the drying place, that an account of them may be taken; and before they are carried away from the drying place, two days notice ſhall be given; and they ſhall be entered with the officer with reſpect to their number and quality, and verified on oath before a juſtice of peace, collector or ſuperviſor; nor ſhall they be removed, till the duty be firſt charged, entered and marked. The penalty for neglect is 20*l.* and forfeiture of the goods, or their value. Concealment of any hide or ſkin, vellum or parchment, in order to avoid the duty, incurs a forfeiture of 20*l.* and the goods or their value. If any tanner or other perſon ſhall ſhave any hide or calf-ſkin, before the ſame be thoroughly tanned, ſo as to impair it and diminiſh the duty, the ſame or its value ſhall be forfeited. Tanners or other ſuch perſon ſhall keep juſt ſcales and weights; and the penalty for neglect or not allowing the uſe of them, ſhall be a forfeiture of 50*l.* The uſe of falſe ſcales incurs a forfeiture of 100*l.* (10 Geo. III. c. 44. 28 Geo. III. c. 37.) Cheating or obſtructing officers ſubjects to a forfeiture of 100*l.* (26 Geo. III. c. 77.) When the duties are aſcertained, the officer ſhall enter them in a book, and return them to the commiſſioners, or a perſon appointed by them; and when the duty is ſettled, the officer ſhall cauſe every hide or ſkin, and every piece of both, and all vellum and parchment to be marked. And if the goods be removed before the duty is charged, and they are marked, the penalty is a forfeiture of 50*l.* and the ſaid goods; and any perſon counterfeiting the ſtamps, or knowingly ſelling any of the ſaid goods with a counterfeit ſtamp, is chargeable with felony without benefit of clergy. (9 Ann. c. 11. 5 Geo. II. c. 3. 33 Geo. III. c. 54.) Stamped and unſtamped goods ſhall be kept ſeparate, on pain of 10*l.* (5 Geo. c. 2.) And thoſe that have been ſtamped ſhall not be removed for 24 hours after ſtamping, &c. under a forfeiture of 20*l.* (5 Geo. III. c. 43.) Scales and weights ſhall be kept for reweighing them, and aſſiſtance given to the officer, on pain of 50*l.* Perſons within the bills of mortality ſhall pay off the duties within 14 days to the commiſſioners, and in other places in ſix weeks, after the goods have been marked. (9 Ann. c. 11.) Thoſe who do not pay in this manner ſhall forfeit double duty; and they ſhall not be delivered out till the duty be paid, on pain of double value. Every tanner, and other ſuch perſon, ſhall balance their accounts with the officers once in three months, on pain of 50*l.* Any two juſtices reſiding near the premiſes may hear and determine offences, and order the penalties to be levied by diſtreſs and ſale, if not redeemed in ſix days.

Foreign manufactured gloves imported ſhall be forfeited, and may be ſearched for and ſeized by any officer of the cuſtoms or exciſe; and every perſon importing or vending the ſame, ſhall alſo forfeit 200*l.* with double coſts. 6 Geo. III. c. 19.

LEATHER, *blacking for.* See BLACKING.

LEATHER, *buff.* See BUFF.

LEATHER, *foſſil, aluta montana*, is a foliated amianthus, conſiſting of ſoft fibres interwoven together and frequently containing ſparry cryſtals incloſed in it.

LEATHER, *gilt.* See *Japanner's* GILDING, and LACQUER.

LEATHER *mills.* See MILL.

LEATHER *money.* See MONEY.

LEATHER-*mouthed*, in *Ichthyography*, a term uſed as the Engliſh for malacoſtomous, the diſtinctive epithet of ſuch fiſhes as have thick lips and no teeth in their jaws; as the carp, tench, bream, roach, &c.

LEATHER-*ſellers, company of.* See COMPANY.

LEATHER, *ſhamoy*, or *ſhammy.* See SHAMMY.

LEATHER, *Turkey, method of preparing*, &c. See TURKEY *leather.*

LEATHERHEAD, in *Geography*, a large pariſh, formerly a market-town of Surry, England, is 12 miles E.N.E. from Guildford, and 19 S.W. by S. from London. In the year 1800, the town conſiſted of 200 houſes, and contained 1078 inhabitants. This place is chiefly remarkable for a large fair, held here on the 10th of October, for cattle, horſes, pigs, toys, &c. The river Mole paſſes through this pariſh, and emerges to day here, after having been hidden in a ſubterraneous channel from the foot of Boxhill. This is a ſingular character of the Mole. At this place it is croſſed by a bridge of 14 arches. In the vicinity of Leatherhead are ſeveral ſeats; ſome of which are particularly noted for the picturesque and beautiful character of their contiguous ſcenery, and fine proſpects. The principal of theſe is Norbury-park, the ſeat of William Lock, eſq.; a very intereſting deſcription of which, and its painted room, by Barret, will be found in Gilpin's "Obſervations on the weſtern Parts of England," 8vo. 1798. See alſo Manning and Bray's "Hiſtory and Antiquities of Surry."

LEATHERWOOD, in *Gardening.* See DIRCA.

LEAU, in *Geography*, a town of France, in the department of the Dyle, and chief place of a canton, in the diſtrict of Louvain. The place contains 715, and the canton 6264 inhabitants, on a territory of 97½ kiliometres, in 13 communes.

LEAVE *and Take.* See TAKE.

LEAVEN, any thing that will make a body ſwell and ferment.

The word is formed of the French *levain*, which ſignifies the ſame, of the verb *lever*, or Latin *levare, to raiſe.*

Beer, ale, wine, and cyder, only work by means of the leaven in them. Sour paſte, barm, rennets, &c. are leavens uſed in baking bread, brewing beer, making cheeſe, &c.

LEAVER. See LEVER.

LEBA, in *Geography*, a town of Pomerania; 16 miles N. of Lauenburg.

LEBACH, a town of France, in the department of the Sarre, and chief place of a canton, in the diſtrict of Sarrebruck. The place contains 506, and the canton 8392 inhabitants, in 66 communes.

LEBADEÆ, LIVADIA, in *Ancient Geography*, a town of Greece, in Bœotia, built on a plain upon the ſmall river Hercyna. The inhabitants at a former time occupied a town on an adjoining eminence, and their town was called Midæa; but an Athenian, named Lebadus, perſuaded them to build another on the plain, which was called after his name. On the banks of the Hercyna was a temple dedicated to Hercyna. The ſacred grove of Trophonius was near this town, in which was a temple of this name, with a ſtatue made by Praxiteles. Ceres, ſurnamed Europa, had a temple here, and Jupiter Pluvius had a ſtatue. Near this place was a temple of Proſerpina conſervatrix, and another of Jupiter rex. The ſtatue of Trophonius at Lebadeæ is ſaid to have been the work of Dædalus. Pauſanias, l. ix. Bœotic. c. 40.

LEBÆA, a town of Macedonia, anciently the capital of this kingdom, the preciſe ſituation of which cannot be aſcertained.

LEBANON, or LIBANUS, a celebrated mountain of Aſia, ſituated on the borders of Paleſtine and Syria. It takes its name, as ſome ſay, from the Hebrew *laban*, on account of the whiteneſs of its ſummits, which appear covered with ſnow a great part of the year. Others derive it from the Greek *libanos*, frankincenſe, alleging, without ſufficient reaſon as Reland obſerves, that it furniſhed this or any other aromatic gum. The *antilebanon*, or *antilibanus*, is ſo called from its parallel courſe in oppoſition to the other. Some ancient fathers, as St. Jerom and Euſebius, have deſcribed the libanus and antilibanus as one continued ridge, winding about in the form of an horſe-ſhoe, which begins about three or four leagues from the Mediterranean, a little above Smyrna, and running ſouthward towards Sidon, takes an eaſtern courſe towards Damaſcus; winding thence northward towards Laodicea Cabioſa. The weſtern ridge is that which is properly called Libanus; the eaſtern is Antilibanus, and the hollow between is Cœleſyria. (See ANTILIBANUS and CŒLESYRIA.) St. Jerom repreſents Libanus as by far the loftieſt hill in the whole land of promiſe, as well as the moſt woody and thick-ſet, and Theodoret alſo ſtates it to be the higheſt of all Paleſtine. Modern travellers concur in this account of its great height. "Scarcely," ſays Volney, "do we depart from Larnaca in Cyprus, which is 36 leagues diſtant, before we diſcover its ſummit capped with clouds. This is alſo diſtinctly perceivable on the map, from the courſe of the rivers. The Orontes, which flows from the mountains of Damaſcus, and loſes itſelf below Antioch; the Keſmia, which, from the north of Balbec, takes its courſe towards Tyre; the Jordan, forced by the declivities towards the ſouth, prove that this is the higheſt point." Although the height of this mountain has not been determined by the barometer, Volney deduces it from another conſideration. In winter the tops of the adjoining mountains are entirely covered with ſnow from Alexandretta to Jeruſalem; but after the month of March it melts, except on mount Lebanon, where, however, it does not remain the whole year, except in the higheſt cavities, and towards the N.E., where it is ſheltered from the ſea-winds and the rays of the ſun. Since it is well known that ſnow in this latitude requires an elevation of 15 or 16 hundred fathoms, we may conclude, ſays Volney, that to be the height of Lebanon, and that it is conſequently much lower than the Alps, or even the Pyreneés. Mount Blanc, the loftieſt of the Alps, is eſtimated at 2488 fathoms above the level of the ſea; and the peak of Oſſian, in the Pyreneés, at 1900. Lebanon, which gives its name to the whole extenſive chain of the Keſraouan, and the country of the Druzes, preſents us every where with majeſtic mountains. At every ſtep we meet with ſcenes, in which nature diſplays either taſte or grandeur, ſometimes ſingularity, but always variety. When we land on the coaſt, the loftineſs and ſteep aſcent of this mountainous ridge, which ſeems to incloſe the country, theſe gigantic maſſes, which ſhoot into the clouds, inſpire aſtoniſhment and awe. Should the curious traveller then climb theſe ſummits which bounded his view, the wide extended ſpace which he diſcovers becomes a freſh ſubject of admiration; but completely to enjoy this majeſtic ſcene, he muſt aſcend the very point of Lebanon, or the "Sannin." There, on every ſide, he will view an horizon without bounds; while, in clear weather, the ſight is loſt over the deſert, which extends to the Perſian gulf, and over the ſea, which bathes the coaſts of Europe. He contemplates, beſides rocks, woods, torrents, hill-ſides, villages, and towns, which are nearer and more diſtinct objects, the valley obſcured by ſtormy clouds, and ſmiles at hearing the thunder, which had ſo often burſt over his head, growling under his feet; while the threatening ſummits of the mountains are diminiſhed till they appear only like the furrows of a ploughed field, or the ſteps of an amphitheatre, and he feels himſelf flattered by an elevation above ſo many great objects, on which pride makes him look down with a ſecret ſatisfaction. Such is the pictureſque deſcription of Volney, which he purſues more in detail. Mount Lebanon is computed at about 100 leagues in compaſs, and is bounded by Meſopotamia on the E., Armenia on the N., Paleſtine on the S., and the Mediterranean on the W. It conſiſts of four ridges of mountains, which riſe one above the other; the firſt of theſe is very fertile in grain and fruit; the ſecond is barren and rocky, producing nothing but briars and thorns; the third, though ſtill higher, is ſaid to enjoy a conſtant verdure and ſpring, its gardens and orchards producing ſuch a variety of herbs, fruits, &c. that it hath been ſtyled an earthly paradiſe; the laſt and loftieſt is uninhabitable, by reaſon of its exceſſive coldneſs, being covered with deep ſnows almoſt all the year. It is moſtly inhabited by the Maronites below, and by the wild Arabs, called Amadea, of the ſect of Hali, every where elſe but on the top. Here are ſeveral churches, convents, and chapels, and caverns cut into the rock. The Monks that inhabit it are very poor, but courteous to travellers, from whom they expect ſome token of beneficence. The convent, or cœnobium, where the Maronite patriarch reſides, lies almoſt in a bottom; the deſcent to it is very ſteep, narrow, and winding, and it has only that one avenue, which makes it ſo much the ſafer, as well as the more retired. It chiefly conſiſts of ſundry grotts, cut into the rock; of which the church is one of the largeſt. A river which empties itſelf at Tripoli, runs a little below it, and ſupplies it with water. Near the grott of St. Marina, who is reputed to have lived here as an hermit, in man's clothes, are ſome vines, which afford excellent wine; and fine young mulberry trees, as well as cedars, and other curioſities. Of the boaſted cedars of Lebanon, there are no very magnificent remains; four or five of them only deſerving notice: but the number of firs, oaks, brambles, mulberry trees, figs, and vines, is much more conſiderable. The wines of Lebanon have been much extolled by the Grecian and Roman epicures. It is probable, that the inhabitants of this territory have made no change in their ancient method of making wines, nor in the culture of their vines. They are diſpoſed on piles of ſix or eight feet in height. They are not pruned as in France, which muſt certainly, ſays Volney, greatly injure both the quantity and quality of the crop. The vintage begins about the end of September. The convent of Mar-hanna makes about 150 rabia, or earthen jars, containing about 110 pints each. The price current in the country is about ſeven or eight ſols (fourpence) the French pint. Of the numerous kinds of wine made in Syria, the chief is the Vino d'Oro, or "golden wine" of mount Lebanon. This is not boiled, as is the caſe in the preparation of other wines, but left to purify itſelf by keeping: the quantity produced is ſmall. It is, as its name implies, of a bright golden colour, and is highly prized even on the ſpot. Several conſiderable rivers have their ſource in this mountain, *viz.* the Jordan, Rocham, Nahar-Roſſian, and Nahar-Cadicha; beſides many leſſer ſtreams, that run between the vallies; particularly that of Ahouali, which flows down into the "Romantic valley," ſo-called, becauſe it is ſurrounded on all ſides with high rocks. Theſe rivers, ruſhing down from ſuch heights, form ſeveral beautiful caſcades, like thoſe of the Nile. This mountain has been, and is ſtill to this day, a place of retreat and refuge for a great number of robbers, and other deſperate people. The ſtone which compoſes the mountains of Lebanon and Antilebanon, and thoſe of Syria in general, is a hard calcareous ſtone of a whitiſh colour, ſonorous like free-ſtone, and diſpoſed in ſtrata variouſly inclined. Of this ſtone the inhabitants build their houſes, and make lime.

Lebanon, a poſt-town of America, in York county, Maine, on the eaſt ſide of Salmon-Fall river; 100 miles N. of Boſton. It was incorporated in 1767, and in 1790 contained 1275 inhabitants.—Alſo, a poſt-town in Windham county, Connecticut, ſettled in 1697. The ſoil is equal to almoſt any in the ſtate, and the inhabitants are generally farmers, of whom many are rich. The number of inhabitants is 3652; 9 miles N. of Norwich.—Alſo, a poſt-town in Grafton county, New Hampſhire, on Muſcoury river, and on the eaſt ſide of Connecticut, 2 miles below Dartmouth college; incorporated in 1761, and in the year 1800 containing 1574 inhabitants.—Alſo, a poſt-town of Pennſylvania, ſituated on the ſouth ſide of Quitapehilla creek, in Dauphin county; containing about 300 houſes regularly built, many of them of brick and ſtone, a German Lutheran and a Calviniſt church; 82 miles N.W. by W. from Philadelphia.

Lebanon, *New*, a village in Canaan, New York, pleaſantly ſituated, partly on the declivity of a hill, and partly in a vale, and containing medicinal ſprings next in celebrity to thoſe of Ball-town, Saratoga.

LEBE, a town of Germany, in the lordſhip of Lauenburg, in a lake near the Baltic; 15 miles N.W. of Lauenburg. N. lat. 54° 40′. E. long. 17° 29′.

LEBEDIAU, a town of Ruſſia, in the government of Tambov; 100 miles W.N.W. of Tambov. N. lat. 53° 28′. E. long. 38° 50′.

LEBEDIN, a town of Ruſſia, in the government of Charkov; 60 miles N.W. of Charkov.

LEBEDOS, in *Ancient Geography*, a town of the Ionians, ſituated in Lydia, upon an iſthmus, north of Colophon, diſtant 120 ſtadia from this city. Lyſimachus demoliſhed it, and tranſported the inhabitants to Epheſus.

LEBERIS, in ſome *Medical Writers*, a word uſed to expreſs the exuviæ of ſerpents, or the ſkins which ſnakes caſt off every year. Theſe are by ſome greatly recommended for taking off freckles and ſun-burns from the face.

LEBIALNA, in *Geography*, an iſland of Ruſſia, in the Caſpian ſea. N. lat. 45° 55′. E. long. 53° 30′.

LEBIAR, a foreſt of Africa, in the country of Zenhaga, affording great quantities of gum; 100 miles E.N.E. of Portendic.

LEBIDA, or Lepda, a ſea-port town of Africa, in the country of Tripoli, on the coaſt of the Mediterranean; 30 miles E.S.E. of Tripoli. N. lat. 32° 40′. E. long. 13° 56′.

LEBIEDA, a town of Lithuania, in the palatinate of Wilna; 10 miles S. of Lida.

LEBIEDZIOW, a town of Lithuania, in the palatinate of Wilna; 56 miles E.S.E. of Wilna.

LEBLANC, Michael, in *Biography*, born at Dijon in the year 1653, entered into the order of the Jeſuits, and was one of the fourteen mathematicians whom Lewis XIV. ſent to the king of Siam in 1687. Leblanc went and reſided with the prieſts of the country, to learn their language; but the revolution taking place, which deprived the king of his crown, put an end to the hopes of the miſſionaries, and he was obliged to return to Paris. He had the misfortune of being taken priſoner by the Dutch, and thrown into priſon at Middleburg, in Zealand. In the year 1690 he was ſet at liberty, and returned to Dijon, where he was employed as profeſſor of mathematics in the Jeſuits' college. In 1691 he joined a new miſſion for China, and embarked at Liſbon. During the voyage he met with an accident, which put an end to his life at Mozambique, in the year 1693. As a writer he is principally known by "A Hiſtory of the Revolution of the Kingdom of Siam in 1688, and of the preſent State of the Indies," 2 vols. 12mo. Moreri.

LEBNA, in *Scripture Geography*, a ſtrong city of Paleſtine, in the tribe of Judah, ſituated on a narrow neck of land, which ran northwards between the tribes of Dan and Benjamin. Joſhua took it and gave it to the Levites of this tribe, and it becamn a city of refuge. This had been an encampment of the Iſraelites in the Deſert.

LEBNEK, in *Geography*, a town of Tranſylvania; 15 miles S.E. of Scheſburg.

LEBNI, in the *Materia Medica of the Ancients*, a name given by ſome to ſtorax. Avicenna has treated of this drug in three ſeparate chapters. The Greeks were very nice in diſtinguiſhing the ſeveral kinds of ſtorax, and the Arabians ſeem to have followed their example: nay, they have even borrowed ſome of the terms, by which they called the particular ſorts. The ſoft, or liquid ſtorax of the Greeks, ſeems to have been very common among theſe people, and they have called it *mel lebni*, the honey of ſtorax. This was a common word with them to expreſs any thing ſoft.

LEBO, in *Geography*, a river of Chili, which runs into the Pacific ocean, S. lat. 37° 50′.

LEBRILLA, a town or village of Spain, in the province of Murcia, containing about 1000 inhabitants; almoſt divided into two by a ſort of long, broad, and deep bog, formed by rains, over which is a bridge; 11 miles from Murcia.

LEBRIXA, or Lebrija, a town of Spain, in the territory of Seville, ſituated formerly on a branch of the Guadalquivir, but now, in conſequence of its being choaked up, 6 miles from the river. It has a caſtle; and the environs produce olives, which afford ſome of the beſt oil in Spain; 20 miles S. of Seville.

LEBSKOI, a town of Ruſſia, in the government of Archangel, near the union of the rivers Mezen and Pezna; 168 miles E. of Archangel.

LEBUS, a town of the Middle Mark of Brandenburg, ſituated on the Oder, containing about 14,000 inhabitants. Its ſcite is low, and among hills, which intercept the view of it; 5 miles N.W. of Franckfort on the Oder. N. lat. 52° 26′. E. long. 14° 44′.

LECA, a town of the iſland of Samos.

LECANOMANTIA, Λεκανομαντεια, in *Antiquity*, a kind of divination performed in a baſon with wedges of gold or ſilver. See Hydromancy.

LECASELLO, in *Geography*, a town of the Ligurian republic; 20 miles N.E. of Genoa.

LECCE, Aletium, a city of Naples, the capital of the province of Otranto, and ſometimes giving name to the province. It is a large, well-built town, the ſee of a biſhop, ſuffragan of Otranto. The wool produced in its environs was formerly much celebrated; and the adjacent country yields abundance of almonds and olives. It contains, beſides the cathedral, three pariſh churches and ſeveral convents. It is the reſidence of the governor, and the number of inhabitants is eſtimated by ſome at 13,000, by others at 18,000; 24 miles from Brindiſi, and as far from Otranto, and 8 miles from the eaſtern ſhore. N. lat. 40° 40′. E. long. 18° 8′.

LECCI, a town of the iſland of Corſica; 5 miles N. of Porto Vecchio.

LECCO, a town of Italy, and capital of the department of the Montagna, on the lake Como, whence a branch of the lake is called "the lake of Lecco; 14 miles E.N.E. of Como. N. lat. 45° 5′. E. long. 9° 23′.

LECETA, a town of Spain, in Navarre; 17 miles N.N.W. of Pamplona.

LECH, in *Metallurgy*, a term uſed by the miners to expreſs the gold ore which has been powdered and waſhed, and afterwards run with the aſſiſtance of lime-ſtone. The lech is afterwards burnt in a fire of charcoal, in order to render it fit for the ſeparation of the metal, by means of lead, which abſorbing and ſcorifying the extraneous matter, renders the gold pure.

LECHÆUM, in *Ancient Geography*, a town and promontory of Greece, on the gulf of Corinth, which ſerved as a port to Corinth. It had a temple of Neptune, in which was a bronze ſtatue of this deity. Venus had alſo a temple here.

LECHEA, in *Botany*, was ſo named by Linnæus, at the ſuggeſtion of Kalm, in honour of Profeſſor John Leche, of Abo in Finland, Member of the Stockholm Academy, ſeveral of whoſe memoirs, relating to zoology, botany, and rural economy, are found in the Tranſactions of that learned body. He has alſo left us three diſſertations, publiſhed under his preſidency: 1, *Primitiæ Floræ Scanicæ;* 2, *Novæ Inſectorum Species*, written by his pupil Uddman, a piece highly valued for its merit and rarity; 3, *De Commoratione hybernali et peregrinationibus hirundinum.* He died in 1764, aged 60. The name is pronounced *Lekéa.* Linn. Gen. 43. Schreb. 59. Willd. Sp. Pl. v. 1. 495. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 185. Juſſ. 303. Lamarck. Illuſtr. t. 52. Gærtn. t. 129. Michaux Boreali-Amer. v. 1. 76.—Claſs and order, *Triandria Trigynia.* Nat. Ord. *Caryophyllei*, Linn. Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of three ovate, concave, ſpreading, permanent leaves. *Cor.* Petals three, oblong, narrower than the calyx, but about as long, concave. *Stam.* Filaments three, ſometimes four or five, capillary, longer than the petals, lying over the piſtil, equal; anthers roundiſh. *Piſt.* Germen ſuperior, ovate; ſtyles none; ſtigmas three, feathery, ſpreading. *Peric.* Capſule ovate, ſlightly triangular, of three cells, and three valves, cohering at their baſe, with three central linear receptacles. *Seeds* ſolitary, ovate, angular at the inner ſide, where they are attached to each receptacle.

Eſſ. Ch. Calyx of three leaves. Petals three, oblong. Capſule ſuperior, of three cells, and three half-diſtinct valves, with three central linear receptacles. Seeds ſolitary.

1. L. *minor.* Leſſer Lechea. Linn. Sp. Pl. 133. Am. Acad. v. 3. 10. Lamarck. t. 52. f. 1? (L. major; Michaux n. 1, by the deſcription.)—Hairs of the ſtem and branches ſpreading. Lower leaves whorled, elliptical, with a ſmall point; upper alternate, lanceolate, acute. Flowers panicled, ſomewhat corymboſe.—Gathered by Kalm in the dry ſandy fir woods of Canada.—The *root* is perennial and woody. *Stems* ſeveral; the barren ones about a ſpan long, lax, and ſpreading, with numerous, ternate or quaternate, ſhort, leafy branches, all clothed with long, white, ſpreading hairs; flowering ſtems much taller and ſtouter, from one to two or three feet high, panicled, leafy, round, clothed with rather leſs ſpreading hairs. *Leaves* of the barren ſtems three or four in a whorl, on ſhort ſtalks, ſpreading, a quarter of an inch long, broadly elliptical, entire, with a ſhort point, the margin and rib fringed with long white ſpreading hairs; thoſe of the flowering ones ſcattered, longer, and narrower. *Flowers* numerous, ſmall, terminating the lateral branches, in ſmall corymboſe cluſters, whoſe ſtalks are hairy, and more or leſs furniſhed with lanceolate bracteas. *Calyx-leaves* broad, keeled, very concave, ſmooth. *Capſule* poliſhed.

This is certainly what Linnæus originally intended for *Lechea minor*, though he afterwards confounded other ſtill ſmaller ſpecies with it, and the name being oppoſed to his *major*, which is a nonentity, is unmeaning, if not falſe. Leſs inconvenience, however, muſt ariſe from retaining than from changing it, unleſs we were furniſhed with more ample and certain materials for new modelling the whole genus. Our aim here is to correct ſuch errors as we can, for the uſe of thoſe who may take up the ſubject hereafter.

2. L. *major.* Greater Lechea. Linn. Sp. Pl. 133. Am. Acad. v. 3. 11. t. 1. f. 4; copied in Lamarck, f. 2.—"Leaves ovato-lanceolate. Flowers lateral, ſcattered."—Native of dry ſituations in Canada. Linnæus, in his manuſcripts and Syſt. Veg. quotes for this, *Menandra ramis alternis*, Gron. Virg. ed. 2. 20, that is, *An Camerariæ ſpecies, foliis latioribus oblongis, ſubtùs argenteis, caule rubro, capſulâ amplâ triloculari* of Clayton, who found his plant, flowering in Auguſt, on ſandy hills at point Comfort, in the county of Glouceſter, Virginia. It is deſcribed as ſhrubby, with the aſpect of *Ciſtus Helianthemum* or of *Vaccinium Oxycoccus*, two plants between which it is difficult to find any point of reſemblance; the *leaves* alternate, oblong, and entire. *Corolla* none. *Stamens* four, as long as the calyx, the two uppermoſt ſpringing from the ſame point of the receptacle, the two lateral ones oppoſite. *Style* none. *Stigma* hiſpid. The reſt of the account accords with the generic character. It muſt be obſerved that when Clayton gueſſes his plant to belong to *Cameraria*, he means that of Dillenius, which is the Linnæan *Montia*. Linnæus, in the Amœnitates, deſcribes his *L. major* thus. "*Stems* purpliſh, round, with ſimple, alternate, diſtant branches. *Leaves* alternate, oval-lanceolate, rough above, downy beneath, reflexed at the margin, ſcarce perceptibly ſtalked. *Flowers* two, three or four from the ſmall uppermoſt branches." Now it happens that the ſpecimen in the Linnæan herbarium is no other than *Ciſtus canadenſis*, with the numerous ſtamens proper to that genus, and totally foreign to *Lechea*. The capſule alſo has imperfect partitions from the middle of the valves. The *ſeeds* indeed appear to be but one in each cell, and large, the only circumſtance which could induce a reference of this *Ciſtus* to *Lechea*. Yet there can be no doubt of the deſcription in the Amœnitates having been made from this plant, though the figure is unlike it, and more reſembles *L. minor*, for which indeed, as well as for the *major*, it is quoted by Linnæus in Sp. Pl, and being in itſelf too imperfect to convey a preciſe idea of any thing, it can determine nothing in the preſent caſe. What is *L. major* of Kalm we know not, nor that of Hort. Kew. That of Michaux appears clearly to be our *minor*, whoſe lower leaves are indeed ſo much like *Oxycoccus*, while its upper are not very unlike *Helianthemum*, that Clayton might poſſibly have that ſpecies in view when he made the above deſcription, but the "large capſule with three cells" agrees beſt with the above *Ciſtus*. Amid all this uncertainty we would rather ſtrike out *L. major*, and give a new name, perhaps *heterophylla*, to our *minor*.

3. L. *racemuloſa.* Many-cluſtered Lechea. Michaux Boreali-Amer. v. 1. 77. (Menandra ramis ternis; Gron. Virg. ed. 2. 21.)—Hairs cloſe-preſſed. Leaves linear-lanceolate, acute, hairy beneath. Flowers in numerous ſlender cluſters. Calyx hairy.—Gathered by Clayton in the ſame place, at point Comfort, with the laſt. Specimens from him are in the Linnæan herbarium, anſwering to the account of Michaux, who alſo gathered his plant in Virginia. We have others, probably of the ſame ſpecies, from Kalm, and from the Rev. Dr. Muhlenberg of Lancaſter in Pennſylvania. Thoſe of Clayton have a panicled *ſtem*, a foot or two high, clothed with cloſe-preſſed, ſomewhat ſilky, hairs; the branches either ternate, oppoſite, or ſcattered. *Leaves* of the ſtem lanceolate; thoſe of the branches linear, gradually ſmaller upwards, and often accompanying the *flowers*, but ſometimes the *cluſters* are leafleſs; they are elongated, ſlender, hairy or ſilky. The *calyx* alſo is hairy, and greatly reſembles that of a little annual *Ciſtus*.

4. L. *thymifolia.* Thyme-leaved Lechea. Michaux Boreali-Amer. v. 1. 77, excluding the ſynonym. (Capraria foliis integerrimis; Gron. Virg. ed. 1. 75. Herb. Linn. from the author.)—Hairs cloſe-preſſed. Leaves lanceolate. Stem panicled. Cluſters leafy. Bracteas linear, much longer than the flowers.—Gathered by Clayton in Virginia; by Michaux in dry expoſed ſituations in North and South Carolina. *Stem* a foot high, round, reddiſh, rough with cloſe-preſſed hairs; ſimple and naked below; panicled and leafy above. *Leaves* oppoſite or ſcattered, various in ſize,

ſlightly ſtalked, lanceolate, acute, the margin and rib fringed. *Flowers* in numerous, ſlender, hiſpid cluſters, furniſhed with copious linear *bracteas*, two of which, extremely narrow and obtuſe, accompany every flower at the baſe, and are twice as long as the *calyx;* which is likewiſe hairy or hiſpid.

5. L. *tenuifolia.* Slender-leaved Lechea. Michaux Boreali-Amer. v. 1. 77.—Stems buſhy, decumbent, aſcending, with ſpreading branches. Leaves linear-awl-ſhaped. Flowers ranged alternately, and rather remotely, along the branches. On ſandy hills near the Santee river, flowering in April and May. We know nothing of this ſpecies but from Michaux, who deſcribes it as of humble and buſhy growth, with *capſules* rather larger, in proportion to the plant, than is uſual in this genus.

6. L. *verticillata.* Whorled Lechea. Willd. n. 3.—Leaves elliptical, ſerrated. Flowers whorled.—Sent by Dr. Rottler from Madras. The *root* ſeems, as in all the former, to be perennial. *Stems* ſeveral, ſpreading or decumbent, ſimple or branched, a ſpan long, round, leafy, clothed with ſoft ſpreading hairs. *Leaves* oppoſite, ſtalked, half an inch long, elliptical, acute, finely and ſharply ſerrated, hairy, tapering at the baſe. *Flowers* numerous, in denſe axillary whorls, ſufficiently agreeing with the character of the genus, to which Willdenow has judiciouſly referred it. The ſerrated *leaves*, however, are very peculiar.

Another ſpecies, *L. chinenſis*, is mentioned in Loureiro, Cochinch. 60; but this, though adopted by profeſſor Martyn, cannot, in our opinion, have any right to a place here, the author's deſcription ſhewing it evidently to be nearly allied to *Commelina*, conſequenly more remote, if poſſible, than even the above *Ciſtus canadenſis* from *Lechea*. S.

LECHENAULTIA, named by Mr. R. Brown, in compliment to his friend Lechenault, an eminent French botaniſt and traveller, who has undertaken to illuſtrate the plants of the weſtern coaſt of New Holland more eſpecially, as well as thoſe of Java and Timor. Brown Prodr. Nov. Holl. v. 1. 581. Claſs and order, *Pentandria Monogynia.* Nat. Ord. *Campanaceæ*, Linn. *Campanulaceæ*, Juſſ. *Goodenoviæ*, Brown.

Eſſ. Ch. Calyx ſuperior. Tube of the corolla ſlit longitudinally on one ſide. Anthers cohering. Pollen of compound grains. Stigma obſolete, in the bottom of a two-lipped cover. Capſule priſmatic, of two cells, and four oppoſite valves with central partitions. Seeds cubical or cylindrical, ſhelly. *Brown.*

Obſ. The grains of pollen, in all the ſpecies, are compoſed of four combined globules, which mark, though minute, is eſteemed by Mr. Brown very eſſential to diſtinguiſh this genus from all the reſt of its natural order, and eſpecially from its near ally *Anthotium*.

The ſpecies are generally ſhrubs of humble growth, rarely herbaceous, and are ſmooth, with narrow entire leaves. Flowers axillary or terminal, moſtly ſolitary.

Sect. 1. Small ſhrubs, with heath-like leaves. Flowers axillary or terminal. Capſule valvular. Seeds cubical.

1. L. *formoſa.* Flowers axillary, ſolitary, drooping, without bracteas. Corolla ſmooth, two-lipped.—Gathered by Mr. Brown on the ſouth coaſt of New Holland.

2. L. *tubiflora.* Flowers nearly terminal, ſolitary, ſlightly ſtalked. Corolla tubular, curved, with a cloſed limb. Leaves awl-ſhaped, with a ſmall pellucid point.—Native of the ſame country.

3 L. *expanſa.* Corymbs axillary, of few flowers. Stalks with a pair of bracteas each. Corolla with one lip, in fringed ſegments.—Native of the ſame country.

Sect. 2. Herbaceous. Flower oppoſite to a leaf. Capſule opening only when far advanced, its valves cohering by a narrow neck. Seeds cylindrical.

4. L. *filiformis.* Leaves alternate, thread-ſhaped, ſomewhat compreſſed.—Gathered by Mr. Brown in the tropical part of New Holland.

LECHERAINE, in *Geography*, a town of France, in the department of Mont Blanc; 10 miles N.N.E. of Chambery.

LECHIA, in *Ichthyology*, a name given by Paulus Jovius, and others, to the fiſh called by others *amia* and *glaucus*, and by the ancient Greeks *amia* and *troctus*. See SCOMBER.

LECHLADE, or LEACHLADE, in *Geography*, a ſmall market-town and pariſh in the hundred of Brightwells-barrow, Glouceſterſhire, England, is ſituated, 76 miles diſtant from London, on the north ſide of the river Iſis, or Thames, near the point where the counties of Berks, Oxford, and Glouceſter unite; and not far from the place where the Leche rivulet empties itſelf into the Thames. From the latter circumſtance Lechlade is ſaid to have derived its name: *lade* being a contraction from the Saxon *ladean*, to unload or empty. In Domeſday book is the mention of a fiſhery here of 175 eels. The manor, at the period of that ſurvey, was the property of Henry de Fereres, anceſtor of the Ferrers, earls of Derby, from whom, by the marriage of Iſabel, an heireſs, it was conveyed to Roger Mortimer. A priory, or hoſpital for Black Canons, and conſiſting of a maſter and certain poor and infirm brethren, was founded here upon a piece of ground called Lade, near the ancient bridge over the Thames, given for that purpoſe by lady Iſabel Ferrers. The hoſpital was ſuppreſſed in the year 1473, and its revenues applied to the foundation of a chantry of three prieſts in the pariſh church. Some foundations of buildings, ſuppoſed to have belonged to the priory, have been dug up near the bridge. The church is a handſome ſtructure in the pointed ſtyle, and was erected, about the middle of the fifteenth century, at the joint expence of the then vicar, Conrade Ney, the inmates of the priory, and the inhabitants of the pariſh. The nave is ſpacious, and divided from the aiſles by light pillars; at the weſt end is a ſquare embattled tower, terminated by a well-proportioned ſpire: the pulpit is of ſculptured ſtone. At this town the Thames becomes navigable; and here the junction of the Thames and Severn is completed by the canal. Moſt of the Wiltſhire and Glouceſterſhire cheeſe, conſumed in the metropolis, is brought in waggons to this town, where it is put on board the veſſels which convey it down the Thames. A weekly market is held on Tueſdays, for which the grant was obtained by Richard, earl of Cornwall: an annual fair, held on the ninth of September, is much frequented. According to the returns made in 1800, under the population act, the inhabitants of this pariſh amounted to 917; the number of houſes to 193.

In a meadow near Lechlade, was lately diſcovered a large ſubterraneous building, ſuppoſed to have been a Roman bath: it was nearly fifty feet in length, forty in breadth, and four in height; the floor was ſupported by pillars of brick, and curiouſly inlaid with ſtones of variegated colours. Ridge's Hiſtory, &c. of Glouceſterſhire, 2 vols. 8vo. Beauties of England and Wales.

LECHNICH, a town of France, in the department of the Roer, and chief place of a canton, in the diſtrict of Cologne. The place contains 1053, and the canton 11,462 inhabitants, in 31 communes.

LECHONES, Os, a cluſter of ſmall iſlands in the Atlantic, near the W. coaſt of Portugal; three miles N. from the mouth of the Duero. N. lat. 41° 43′. E. long. 8° 25′.

LECHWAR, a town of Hindooſtan, in Bahar; 30 miles S. of Bahar.

LECK, a town of Denmark, in the duchy of Sleſwick; 14 miles N. of Bredſtede.

LECKNESS, a town of Norway; 22 miles W. of Chriſtianſand.

LE CLERC, Daniel, in *Biography*. See Clerk, Daniel le.

L'ECLUSE, in *Geography*. See Ecluse.

LE COQ, Anthony, in *Biography*, a Pariſian phyſician, graduated in the faculty of that city, and practiſed there with great reputation until his death, which took place on the 28th of March, 1550. He was elected dean of his faculty in 1538; and in the following year was called, in conſultation with Fernel, to viſit the French king, Francis I. who had contracted the venereal diſeaſe. He ſhewed his knowledge of the nature of the diſeaſe, by inſiſting, in oppoſition to Fernel, who was not diſpoſed to employ any other remedy than his antivenereal opiate, that mercurial frictions were neceſſary; but his mode of propoſing it evinced that he was a novice in the manners of a court. He obſerved to Fernel, ſpeaking of the king, "C'eſt un vilain qui a gágné la vérole; *frottetur* comme un autre, et comme le dernier de ſon royaume, puiſque il s'eſt gaté de la même manière." This was reported to the king, who laughed, and was pleaſed with his frankneſs. Le Coq left two works: 1. "De Ligno ſarcto non permiſcendo in imperitos fucatoſque medicos," Paris, 1548. 2. "Conſilia de Arthritide," Francfort, 1540. The latter comprehended alſo ſome other treatiſes on the gout, eſpecially thoſe of Sylvius and Fernel; in conjunction with whom, Le Coq had been conſulted on the ſubject by Louis of Flanders, and by Eleonora, queen of France. Eloy. Dict. Hiſt.

LECTICA, among the Romans, a litter, or vehicle, in which people were carried. The *ſella* differed from the *lectica*, as being higher, and becauſe people always ſat in it; on which account the ſella, from the time it was firſt brought into uſe, was eſteemed the more honourable carriage of the two. See Litter.

The lectica was alſo uſed as a bier for carrying out the dead, who were dreſſed in habits ſuitable to their quality and ſex. Pitiſc. in voc. See Burying.

LECTICARII, among the Romans, ſervants who carried the lectica.

LECTICARIUS, was alſo an officer in the Greek church, whoſe buſineſs it was to bear off the bodies of thoſe who died, and to bury them. Theſe were otherwiſe denominated *decani* and *copiatæ*.

LECTIO, Reading. Conſidered in a medicinal view, it is ſaid by Celſus, lib. i. cap. 4. to be bad, eſpecially after ſupper, for thoſe whoſe heads are weak: and in lib. 1. cap. 8. he recommends reading with an audible voice, for ſuch as have weak ſtomachs. It is alſo directed by Paulus Ægineta as an exerciſe, lib. i. cap. 19.

LECTISTERNIUM, a religious ceremony among the ancient Romans; being a feſtival prepared, and ſolemnly ſerved up, in a temple, at a time of public calamity and danger.

And becauſe, according to the cuſtoms of thoſe times, they placed beds around the tables, and ſet the ſtatues of the gods on thoſe beds, in the ſame manner as men ſat at meals, they called the ſolemnity lectiſternium, from *lectus*, *bed*, and *ſternere*, of *ſterno*, *to ſpread*, *prepare*.

In this ceremony the Sibylline decemvirs preſided, till the year of Rome 558, and afterwards the Epulones. See Epulo.

Caſaubon has obſerved, from a paſſage in the ſcholiaſt of Pindar, that the Greeks had alſo a ſort of lectiſternium in uſe.

Livy obſerves, that the firſt lectiſternium ſeen in Rome, was that which held for eight days ſucceſſively, in honour of Apollo, Latona, Diana, Hercules, Mercury, and Neptune; on occaſion of a contagious diſeaſe which killed almoſt all their cattle, in the year of Rome 354; though Valerius Maximus mentions one before that.

LECTORES, among the Romans, ſervants in great men's houſes, who were employed in reading while their maſters were at ſupper. They were called by the Greeks *anagnoſtæ*.

LECTOURE, in *Geography*, a town of France, and principal place of a diſtrict, in the department of the Gers, ſeated on a mountain, having acceſs only on one ſide, near the Gers, and well defended. Before the revolution it was the reſidence of a governor, and ſee of a biſhop. The place contains 5433, and the canton 13,655 inhabitants, on a territory of 265 kiliometres, in 17 communes; 16 miles S. of Agen. N. lat. 45° 56′. E. long. 0° 22′.

LECTUM, in *Ancient Geography*, *Cape Baba*, a promontory of Aſia Minor, belonging to the Troades, ſituated between the iſle of Leſbos to the ſouth, and that of Tenedos to the north, at the extremity of Mount Ida. To the north it terminated the gulf of Adramyttium.

LECTURERS, in England, are an order of preachers in pariſh churches, diſtinct from the rector, vicar, and curate. They are choſen by the veſtry, or chief inhabitants of the pariſh, ſupported by voluntary ſubſcriptions and legacies, and are uſually the afternoon preachers in the Sunday ſervice. The term is alſo more generally applied to thoſe who preach on Sunday, or on any ſtated day of the week, in churches, or other places of public worſhip. By 13 & 14 Car. II. cap. 4. lecturers in churches, unlicenſed, and not conforming to the liturgy, ſhall be diſabled to preach, and ſhall alſo ſuffer three months' impriſonment in the common gaol: and two juſtices, or the mayor, or other chief magiſtrate, in a town corporate, ſhall, upon certificate of the offence from the ordinary, commit them accordingly. Where there are lectures founded by the donations of pious perſons, the lecturers are appointed by the founders, without any interpoſition or conſent of rectors of churches, &c. though with the leave and approbation of the biſhop: ſuch as that of lady Moyer's at St. Paul's. But the lecturer is not entitled to the pulpit, without the conſent of the rector or vicar, who is poſſeſſed of the freehold of the church.

LECTURES. See Boyle's *Lectures*.

Lectures *of Divinity*, &c. in the univerſities. See Regius *Profeſſors*.

LECTUS Igneus, among the Romans, a kind of inſtrument of torture firſt invented by Decius. The bottom of it was ſet with ſerrated teeth or ſpikes, and ſtrewed with ſalt; while melted tallow was poured from above on the unhappy tortured perſon.

LECYTHIS, in *Botany*, ſo denominated by Lœfling, from the Greek word ληκυθος, *an oil jar*, or *large pot*. He confounds it with λεκιθος, *the yolk of an egg*. The latter has been uſed for the pea, alluding to the yellow colour of its internal ſubſtance: ληκυθος applies to the form of the ſeed-veſſel, which is that of a great pot with a cover. Lœfl. It. 189. Linn. Gen. 268. Schreb. 359. Willd. Sp. Pl. v. 2. 1172. Mart. Mill. Dict. v. 3. Jacq. Amer. 168.

Juſſ. 327. Lamarck Illuſtr. t. 476.—Claſs and order, *Polyandria Monogynia.* Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth ſuperior, of ſix roundiſh, concave, permanent leaves. *Cor.* Petals ſix, very large, oblong, obtuſe, flat, the two uppermoſt widely ſpreading. Nectary petal-like, of a ſingle tongue-ſhaped leaf, flat and perforated at the baſe to admit the germen, bordered; its oblong part bent inwards and upwards from the bottom of the flower, linear, externally convex, thicker and ovate at the extremity, covering the piſtil with the ſtamens. *Stam.* Filaments very numerous, inſerted upon the diſk of the baſe of the nectary at the inner ſide, very ſhort, ſwelling upwards; anthers oblong, ſmall. *Piſt.* Germen inferior, depreſſed, pointed, encompaſſed with the receptacle of the flower, ſtyle very ſhort; ſtigma bluntiſh, conical. *Peric.* Capſule woody, roundiſh at the baſe, abrupt at the top, encompaſſed with the remains of the calyx, cut round, and opening by a circular lid, imperfectly divided into four, ſometimes two or ſix cells. *Seeds* few, poliſhed, with rough edges.

Eſſ. Ch. Petals ſix. Calyx of ſix leaves. Nectary tongue-ſhaped, bearing the ſtamens. Capſule with a lid, and many ſeeds.

1. L. *ollaria.* Linn. Sp. Pl. 734. Loefl. It. 189. (Jacapucaya; Marcgr. Braſ. 128. Piſ. Braſ. 135.)—Leaves ſeſſile, ovate, ſomewhat heart-ſhaped, nearly entire.—Native of Braſil and the Caracaos. This, according to Lœfling, is a vaſt *tree*, with large unequal branches, bent in various directions, and a rough bark. *Leaves* about the ends of the branches, alternate, ſeſſile, ovate inclining to heart-ſhaped, firm, ſmooth, nearly entire, ſlightly waved, of a browniſh green. *Flowers* in terminal cluſters, ſlightly drooping, on alternate, horizontal, ſomewhat angular ſtalks, with ovate, concave, ſoon deciduous *bracteas*. *Corolla* white, with a yellow nectary.—Marcgraave ſays the *leaves* are ſerrated, the *fruit* like a pot with its cover, as big as a child's head, containing ſeeds like cheſnuts, eatable either raw or roaſted, and that the bark of the tree ſerves to make ink.

2. L. *minor.* Linn. Syſt. Veg. ed. 14. 494. Jacq. Amer. 168. t. 109.—Leaves ſtalked, lanceolate, ſerrated.—Obſerved by Jacquin in woods near Carthagena, South America, flowering in June and July, ripening fruit in December. An elegant branching *tree*, 60 feet high. *Leaves* numerous, ſix inches long, alternate, ſpreading in two directions, lanceolate-oblong, pointed, ſerrated, ſmooth. *Spikes* terminal, each often accompanied by a ſmaller axillary one below, ſhorter than the leaves; the *flowers* nearly ſeſſile, ſlightly ſcented. *Petals* and *nectary* white. *Stamens* yellow. *Fruit* very hard, brown, two inches wide. *Seeds* about eight. Jacquin thought he experienced a giddineſs and ſickneſs after eating one of them, though its taſte proved very agreeable. Some perſons told him theſe ſeeds were eatable, others reported them to be poiſonous. Monkies are ſaid to be fond of them. The flowers are infeſted with a kind of black waſps, very troubleſome to thoſe who attempt to gather any.

3. L. *grandiflora.* Aubl. Guian. v. 2. 712. t. 283—285. (L. Ollaria; Linn. Am. Acad. v. 8. 258; Herb. Linn.)—Leaves ſtalked, obovate, entire. Cluſters many times longer than the footſtalks. Petals obtuſe. Native of Guiana and Surinam. A large *tree*. *Leaves* from four to ſeven inches in length, and two or three broad, obovate-oblong, with a little point, entire, ſlightly wavy, ſmooth, with one rib and many parallel tranſverſe veins. *Footſtalks* an inch long. *Cluſters* about the ends of the branches, axillary, pendulous, of numerous large roſe-coloured *flowers*, whoſe partial ſtalks are an inch long, bearing a pair of blunt *bracteas*, and whoſe blunt concave petals are nearly an inch and half in length. *Calyx-leaves* rounded, obtuſe, flat. *Fruit* about ſeven inches long, and four wide; the opening about 2½. *Seeds*, according to Aublet, very good to eat. The *flowers* appear in January, the fruit is ripe in April.

4. L. *amara.* Aubl. Guian. 716. t. 286 and 285.—Leaves elliptic-oblong, pointed, entire. Cluſters axillary and terminal, twice the length of the footſtalks. Petals acute.—Found in the woods of Guiana, by Aublet, whoſe figure and deſcription afford all the knowledge we have of this ſpecies. He ſays the *trunk* is 10 feet high, bearing at the top many ſtraight and horizontal *branches*, whoſe ſubdiviſions are pendulous and leafy. In his French deſcription, which will generally be found the moſt original and authentic throughout his work, he ſays this is a very lofty tree. The *flowers* are ſmall, yellow, with two or three ſcales upon their footſtalks. *Fruit* the ſize of an egg, its coat thin though hard. *Seeds* bitter, but eaten by monkies.

5. L. *Zabucajo.* Aubl. Guian. 718. t. 288.—Leaves elliptic-oblong, pointed, entire. Cluſters terminal. Petals obtuſe. Calyx-leaves lanceolate.—Gathered by Aublet in the deſert woods of the interior of Guiana, flowering in March, and bearing fruit in July. We have from ſir Joſeph Banks a ſpecimen of this ſpecies, gathered in Dutch Guiana by Mr. Alexander Anderſon, which agrees well with Aublet's deſcription, and helps us better to underſtand the diſtinctive characters, than profeſſor Willdenow was able to do from his incorrect figure. The profeſſor rightly expunges the quotations of Piſo, which belong to the firſt; but it is unlucky that the ſpecific name belongs to them, or rather perhaps is common to many ſpecies. This is a vaſt *tree*; its *trunk* 60 feet, or more, in height. *Wood* white, red in the centre. *Leaves* ſtalked, from ſix to ten inches long, and two or more in breadth. *Cluſters* at the ends of the branches, pendulous. Partial *flower-ſtalks* an inch long, ſwelling upward. *Calyx-leaves* broadiſh at the baſe, tapering, concave, ſharpiſh from the inflexion of their edges at the ſummit, fleſhy, one-third of an inch in length, reddiſh when freſh. *Petals* large, rounded, fleſhy, white bordered with roſe-colour, two of them much bigger than the reſt, being equal to thoſe of *L. grandiflora.* The *fruit* is about four inches in diameter. *Seeds* ſweet, eatable, preferable to our almonds.

6. L. *Idatimon.* Aubl. Guian. 721. t. 289.—Leaves elliptical, pointed, entire. Cluſters axillary. Stalks glandular. Calyx-leaves ovate, acute. Petals obtuſe.—Native of wild foreſts in Guiana. A *tree* agreeing with the laſt in height, and in the general aſpect of its *leaves*. *Cluſters* axillary, with zigzag, glandular red ſtalks. *Flowers* roſe-coloured, not half the ſize of the laſt, with broader calyx-leaves. *Fruit* little more than an inch in diameter. Aublet obſerved what he deemed a variety only, with yellow flowers.

7. L. *parviflora.* Aubl. Guian. 717. t. 287 and 285.—Leaves elliptic-oblong, pointed, entire. Cluſters terminal, panicled. Petals acute. Capſule of two cells.—Found about the banks of rivers in Guiana. *Aublet.* A ſmall *tree*, with drooping branches. *Leaves* three or four inches long. *Flowers* much ſmaller than even thoſe of *L. amara*, bright yellow, and very fragrant. *Fruit* ſmall, thin and brittle, of only two cells. *Seeds* ſolitary, bitter.

8. L. *multiflora.*—Leaves .... Cluſters terminal, panicled. Petals obtuſe. Calyx-leaves broader than long, rounded, blunt, downy.—A native of Guiana, communicated by E. Rudge, eſq. as a new ſpecies of *Lecythis*,

which it really appears to be. The *leaves* are wanting in our ſpecimen. *Cluſters* plentifully terminating the little branches at the ends of the main ones, bearing many *flowers*, which are of a moderate ſize, and ſeem to be yellow, their petals rounded and blunt. The partial *ſtalks* are an inch long, ſwelling upwards, downy or glandular, naked. *Germen* hemiſpherical, downy, crowned with the ſix calyx-leaves, which are very ſhort, rounded or heart-ſhaped, blunt, minutely fringed, very like thoſe of a *Myrtus* or *Eugenia*.

9. L. *bracteata*. Willd. n. 8. (Couroupita guianenſis; Aubl. Guian. 708. t. 282. Pekia fructu maximo globoſo; Barrere France Equinoxiale, 92.)—Leaves ſtalked, obovate, pointed, entire. Cluſters lateral. Calyx with a pair of acute bracteas at its baſe. Fruit of ſix cells.—Native of Cayenne, where the fruit is known by the name of *the cannon ball*. This is a large *tree*, with a thick rugged bark, and white ſoft and indifferent wood, red in the middle. The ſhape of the *leaves* ſeems moſt to approach thoſe of *L. grandiflora*, and theſe two ſpecies agree alſo in having a pair of *bracteas* on each partial ſtalk, juſt below the calyx. Theſe are acute in the preſent, blunt in the former. Both alſo have a deciduous bractea at the baſe of each partial ſtalk. All this confirms the propriety of reducing them to one genus, though the *fruit* of that now under conſideration has ſix cells, and its coats are ſeparated by an intermediate pulpy and fibrous ſubſtance, which may alſo be the cauſe of its lid not falling off, as in all the above-deſcribed. *L. bracteata* is in flower and fruit nearly all the year round. Its *corolla* is of a full roſe-colour, beautiful and fragrant. The *fruit* is as large as a cannon ball of 36 pounds, and Aublet remarks that its weight is ſuch as to render it dangerous in falling. The pulp is red, acid, and not diſagreeable, diffuſed, as the fruit ripens, through all the internal part, among the ſeeds.

LECYTHUS, in *Ancient Geography*, a town of Greece, in Eubœa. Thucydides.

LECZENGA, in *Geography*, a river of Africa, which runs into the Mozambique gulf, S. lat. 17° 20′.

LECZNA, a town of Poland, in the palatinate of Chelm; 24 miles N.W. of Chelm.

LEDA NEGUS, a town of Abyſſinia, in the province of Gojam; 120 miles S.S.W. of Gondar.

LEDAH, a town of Hindooſtan, in the circar of Gangpour; 20 miles S. of Gangpour.

LEDBURY, an ancient borough, and market town in the hundred of Radlow, and county of Hereford, England, is ſituated on a declivity within a ſmall valley, formed by the Dog-hill and other eminences, about one mile weſt from the river Leddon, from which it derives part of its name. The town conſiſts chiefly of two ſtreets, croſſing each other at right angles; the principal ſtreet runs north and ſouth, and has a middle row near the old market houſe. This building is elevated on ſtrong oak pillars, and compoſed of timber and lath plaſtered and white-waſhed; the beams being coloured black. This mode of building is prevalent in the more ancient parts of the town; and many of the houſes have projecting ſtories: the modern houſes are of red brick, and of a reſpectable appearance. The pavement, even in the high ſtreet, is very bad, and full of inequalities; the ſmall ſtones that form it being preſſed into the ſtiff clay, which is the general ſoil of the county. Ledbury formerly belonged to the ſee of Hereford; and biſhop Bohun procured the charter of a market from king Stephen, to be held on Saturdays; but this having fallen into diſuſe, queen Elizabeth granted a new charter for a Tueſday market, and two annual fairs; the tolls ariſing from which were to be given to the poor. This borough had once the privilege of ſending two members to parliament, but ſurrendered the right, on the plea of inability to ſupport them. The church, which is a large edifice, of Saxon origin, conſiſts of a nave, ſide aiſles, and chancel; a chapel called St. Catherine's, and a detached tower, terminated by a finely proportioned ſpire, about ſixty feet high. Biſhop Foliot founded an hoſpital in this town in the year 1232 for the maintenance of poor men and widows: it was refounded and further endowed by queen Elizabeth. The hoſpital is a very ancient timber and plaſter building. Here are alſo a free-ſchool, a charity-ſchool, and ſeveral alms-houſes. The clothing trade was, at one period, very flouriſhing in this town; but the principal buſineſs now carried on is the manufacture of ropes, lines, and ſacks. The cyder trade is very conſiderable; great quantities being made in the vicinity. Ledbury is diſtant from London 121 miles; the inhabitants, as aſcertained under the act of 1800, amounted to 3058; the number of houſes being 618. The biſhops of Hereford formerly had a palace here.

On the Dog-hill, to the north of Ledbury, is Hope End, the ſeat of ſir Harry Vane Tempeſt, bart. About two miles ſouth of the town is the Vineyard camp; the works of which have been almoſt defaced by the plough, and the area is cultivated. Beauties of England.

LEDER, a lake of the county of Tyrol; 18 miles W. of Trent.

LEDESMA, an ancient town of Spain, formerly called *Bletiſa*, in the province of Leon, ſituated four or five leagues from the mouth of the Tormes, and defended both by nature and art. In its juriſdiction are 380 villages, which have about 16,000 houſes. To the E. of Ledeſma and near it is a medicinal bath, made by a Moor for the uſe of the public. The water is moderately warm, and is reckoned good for the cure of different diſeaſes, particularly the itch; 18 miles W. of Salamanca.

LEDETSCH, a town of Bohemia, in the circle of Czaſlau; 13 miles S. of Czaſlau. N. lat. 49° 40′. E. long. 15° 15′.

LEDETZ, a town of Bohemia, in the circle of Boleſlaw; ſeven miles S.E. of Jung-Buntzel.

LEDGER. See BOOK and BOOK-KEEPING.

LEDGERS, among *Builders*. See PUTLOGS.

LEDGES, in a *Ship*, oak or fir ſcantling, uſed in framing the decks, which are let in the carlings athwart the ſhip. Thoſe for gratings arch upwards, agreeable to the head ledges, which form the hatchways, &c.

LEDIANAIA, in *Geography*, a bay or gulf of the Frozen ſea, on the coaſt of Nova Zembla. N. lat. 76° 40′. E. long. 59° 14′.

LEDIANOI, a cape on the N. coaſt of Nova Zembla. N. lat. 78°. E. long. 73° 24′.

LEDIGNAN, a town of France, in the department of the Gard, and chief place of a canton, in the diſtrict of Alais. The place contains 666, and the canton 3965 inhabitants, on a territory of 102½ kiliometres, in 13 communes; 15 miles N.W. of Niſmes.

LEDON, in *Gardening*. See CISTUS.

LEDONG, in *Geography*, a town on the E. coaſt of the iſland of Borneo. N. lat. 4° 33′. E. long. 116° 42′.

LEDOREN, a ſmall iſland on the W. ſide of the gulf of Bothnia. N. lat. 63° 12′. E. long. 20° 56′.

LEDOYRA, a town of Spain, in Galicia; 12 miles N.E. of Santiago.

LE DRAN, HENRY FRANCIS, in *Biography*, a celebrated ſurgeon of the 18th century, was a native of Paris, where his father practiſed the ſame profeſſion with conſiderable reputation, and was deemed the firſt operator of his time. He ſoon equalled his father in reputation; and uniting with great dexterity, an excellent judgment and much acuteneſs of mind, learning, and experience, he not only practiſed with great ſucceſs, but was the author of ſeveral works, which gave him a high rank among the ſurgeons of France. Theſe are, "Parallele des différentes manières de tirer la pierre de la veſſie," Paris, 1730. "Obſervations de Chirurgie, auxquelles on a joint pluſieurs Reflexions en faveur des Etudians," Paris 1731, two vols. 12mo. Both theſe works were tranſlated into other languages, and paſſed through ſeveral editions. "Traité des Operations de Chirurgie," ibid. 1731, 8vo. This was alſo a valuable work, was tranſlated into Engliſh, and ſeveral times reprinted. "Reflexions ſur les plaies d'armes à feu," ibid. 1737, &c. 12mo. A ſhort treatiſe, but full of judicious and intereſting obſervations, the reſult of the author's practical obſervation during ſeveral campaigns, in which he accompanied the French armies. "Suite du parallele de la taille," ibid. 1756, 8vo. "Conſultations ſur la plupart des maladies qui ſont du reſſort de la Chirurgie," ibid. 1765; another judicious and valuable work, which contributed to ſupport the eminent character of the author. But his laſt work, "Traité économique de l'Anatomie du corps humain," ibid. 1768, was inferior to the reſt, his genius ſeeming to partake of the debility which age had now occaſioned in his frame. Eloy. Dict. Hiſt.

LEDUM, in *Botany*, a name adopted from the Greeks, whoſe λῆδον is generally believed to be a ſpecies of *Ciſtus*. Linnæus, in applying it to deſignate a not very diſſimilar genus of ſhrubs, whoſe ſcent is ſo powerful as to be unpleaſant and hurtful, offers an etymology expreſſive of that circumſtance, *a lædendo*; but ſuch explanations have ſcarcely more than the merit of a pun, and none in this caſe was wanting. Linn. Gen. 218. Schreb. 294. Willd. Sp. Pl. v. 2. 602. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 48. Juſſ. 159 Lamarck Illuſtr. t. 363. Gærtn. t. 112. Claſs and order, *Decandria Monogynia*. Nat. Ord. *Bicornes* Linn. *Rhododendra*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, minute, of one leaf, with five teeth, permanent. *Cor.* of one petal, wheel-ſhaped, regular, in five deep, ovate, concave, rounded ſegments. *Stam* Filaments ten, thread-ſhaped, ſpreading, as long as the corolla; anthers ovate-oblong, vertical, opening by two terminal pores. *Piſt.* Germen ſuperior, roundiſh; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma obtuſe. *Peric.* Capſule roundiſh-oblong, of five cells, and five valves, ſeparating from the baſe, their inflexed margins forming the partitions. *Seeds* numerous, oblong, narrow, their extremities acute and very thin, attached to five linear pendulous receptacles, proceeding from the central column.

Eſſ. Ch. Calyx five-cleft. Corolla flat, in five deep regular ſegments. Capſule of five cells, ſplitting from the baſe; partitions from the margin of the valves.

1. L. *paluſtre*. Marſh Ledum. Linn. Sp. Pl. 561 Fl. Lapp. ed. 2. 127. Ehrh. Arb. 113. Fl. Dan. t. 1031. (L. ſileſiacum; Cluſ. Pann. 69. Hiſt. v. 1. 83. Ger. em. 1288. Roſmarinum ſylveſtre; Camer. Epit. 546)—Leaves linear, revolute, woolly beneath.—Native of ſpongy bogs in the north of Europe, very plentiful in Lapland. With us it flowers in April and May, being cultivated in bog earth, like the ſhrubs of North America. The *ſtem* is ſhrubby, erect, much branched in a determinate manner, about two feet high; the young branches woolly. *Leaves* ſcattered, numerous, ſtalked, an inch or more in length, linear, obtuſe, entire, revolute; dark green and ſmooth above; clothed with denſe ruſty wool beneath. *Flowers* numerous, in denſe, ſimple, terminal, bracteated corymbs, white and very pretty. The whole plant, eſpecially when bruiſed, has a ſtrong aromatic oppreſſive ſcent, ſomewhat like hops, inſtead of which the inhabitants of Dalecarlia are ſaid by Linnæus ſometimes to make uſe of it, but the conſequences are a moſt pernicious kind of intoxication, with obſtinate head-aches. The Swedes waſh their oxen and ſwine with a decoction of it, to kill lice, and the ſettlers in Lapland ſtrew its branches among their grain to drive away mice.—A procumbent variety, a ſpan long, is ſaid to be found at Hudſon's bay, juſt as the birch grows humble, and almoſt proſtrate, in the upper parts of Lapland.

2. L. *latifolium*. Labrador Tea, or broad-leaved Ledum. Ait. Hort. Kew. ed. 1. v. 2. 65. Jacq. Ic. Rar. t. 464. (L. groenlandicum; Fl. Dan. t. 567.)—Leaves elliptical, revolute, woolly beneath. Stamens ſcarcely more than five.—Native of bogs in Greenland, Labrador, Newfoundland, &c. Differs from the laſt chiefly in the broad form of its *leaves* and the very conſpicuous denſe ruſty wool of their under ſide. The *ſtamens* are uſually from five to ſeven or eight, ſeldom ten.

3. L. *buxifolium*. Box-leaved Ledum. Bergius in Act. Petrop. for 1777. part 1. 213. t. 3. f. 2. *Dryand.* Leaves elliptical, ſmooth on both ſides, nearly flat. Native of Carolina and New Jerſey. Introduced to our gardens by the celebrated Peter Collinſon in 1736. It is a much ſmaller *ſhrub* than either of the foregoing, with *leaves* reſembling thoſe of *Azalea procumbens* at firſt ſight. They are about $\frac{1}{4}$ of an inch long, elliptical or obovate, ſmooth on both ſides, moſt ſhining above, their edges ſcarcely revolute, their midrib prominent underneath. *Flowers* white, about a quarter of the ſize of the firſt ſpecies.

LEDUM, in *Gardening*, comprehends plants of the hardy evergreen kind, as the marſh ciſtus, or wild roſemary. The ſpecies cultivated is the marſh ledum, (L. paluſtre.)

It has varieties with erect and decumbent branches.

Method of Culture.—Theſe plants are increaſed by ſowing the ſeeds in pots filled with boggy earth, or in ſhady borders of the ſame kind of mould, in the ſpring ſeaſon. But the beſt method is to take up the plants in their native ſituations, with balls of earth about their roots, and plant them in borders of the above kind, keeping them well watered.

It is alſo found that layers of the young ſhoots will ſometimes grow.

Theſe plants afford variety in ſhady ſituations, where the ſoil is of the boggy kind.

LEDYARD, in *Biography*, a native of America, who ſeems from his youth to have indulged an invincible deſire of acquainting himſelf with the unknown, or imperfectly diſcovered regions of the globe. His hiſtory is ſo extraordinary, that a detail of ſome of its leading particulars cannot be unamuſing to our readers. Having lived for ſeveral years with the Indians of America, he had ſtudied their manners, and had practiſed in their ſchool the means of obtaining the protection, and of recommending himſelf to the favour of ſavages. In the humble ſituation of a corporal of marines, to which he ſubmitted rather than relinquiſh his purſuit, he had made with captain Cook the voyage of the world; and feeling on his return an anxious deſire of penetrating from the north-weſtern coaſt of America, which Cook had partly explored, to the eaſtern coaſt, with which he himſelf was perfectly familiar, he determined to traverſe the vaſt continent from the Pacific to the Atlantic ocean. His firſt plan for the purpoſe was that of embarking in a veſſel, which was then preparing to ſail, on a voyage of commercial adventure, to Nootka ſound, on the weſtern coaſt of America; and with this view he expended in ſea-ſtores the greateſt part of the money with which he had been ſupplied by the liberality of ſir Joſeph Banks, who has eminently diſtinguiſhed himſelf in this way on other occaſions for the promotion of every kind of uſeful ſcience. But this ſcheme was fruſtrated by the rapacity of a cuſtom-houſe officer; and therefore Mr. Ledyard determined to travel over land to Kamtſchatka, from whence the paſſage is extremely ſhort to the oppoſite coaſt of America. Accordingly, with no more than ten guineas in his purſe, which was all that he had left, he croſſed the Britiſh channel to Oſtend, towards the cloſe of the year 1786, and by the way of Denmark and the Sound, proceeded to the capital of Sweden. As it was winter, he attempted to traverſe the gulf of Bothnia on the ice, in order to reach Kamtſchatka by the ſhorteſt courſe; but finding, when he came to the middle of the ſea, that the water was not frozen, he returned to Stockholm, and taking his courſe northward, walked to the Arctic circle, and paſſing round the head of the gulf, deſcended on its eaſtern ſide to Peterſburg, where he arrived in the beginning of March 1787. Here he was noticed as a perſon of an extraordinary character; and though he had neither ſtockings nor ſhoes, nor means to provide himſelf with any, he received and accepted an invitation to dine with the Portugueſe ambaſſador. From him he obtained twenty guineas for a bill, which he took the liberty, without being previouſly authorized, to draw on ſir Joſeph Banks, concluding, from his well known diſpoſition, that he would not be unwilling to pay it. By the intereſt of the ambaſſador, as we may conceive to have been probably the caſe, he obtained permiſſion to accompany a detachment of ſtores, which the empreſs had ordered to be ſent to Yakutz, for the uſe of Mr. Billings, an Engliſhman, at that time in her ſervice. Thus accommodated, he left Peterſburg on the 21ſt of May, and travelling eaſtward through Siberia, reached Irkutſk in Auguſt; and from thence he proceeded to Yakutz, where he was kindly received by Mr. Billings, whom he recollected on board captain Cook's ſhip, in the ſituation of the aſtronomer's ſervant, but who was now entruſted by the empreſs in accompliſhing her ſchemes of diſcovery. He returned to Irkutſk, where he ſpent part of the winter; and in the ſpring proceeded to Oczakow, on the coaſt of the Kamtſchatkan ſea, intending, in the ſpring, to have paſſed over to that peninſula, and to have embarked on the eaſtern ſide in one of the Ruſſian veſſels that trade to the weſtern ſhores of America; but finding that the navigation was completely obſtructed, he returned to Yakutz, in order to wait for the termination of the winter. But whilſt he was amuſing himſelf with theſe proſpects, an expreſs arrived, in January 1788, from the empreſs, and he was ſeized, for reaſons that have not been explained, by two Ruſſian ſoldiers, who conveyed him in a ſledge through the deſerts of Northern Tartary to Moſcow, without his clothes, money, and papers. From Moſcow he was removed to the city of Moialoff, in White Ruſſia, and from thence to the town of Tolochin, on the frontiers of the Poliſh dominions. As his conductors parted with him they informed him, that if he returned to Ruſſia he would be hanged, but that if he choſe to go back to England, they wiſhed him a pleaſant journey. Diſtreſſed by poverty, covered with rags, infeſted with the uſual accompaniments of ſuch clothing, haraſſed with continual hardſhips, exhauſted by diſeaſe, without friends, without credit, unknown, and reduced to the moſt wretched ſtate, he found his way to Konigſberg. In this hour of deep diſtreſs, he reſolved once more to have recourſe to his former benefactor, and fortunately found a perſon who was willing to take his draft for five guineas on the preſident of the Royal Society. With this aſſiſtance he arrived in England, and immediately waited on ſir Joſeph Banks. Sir Joſeph, knowing his diſpoſition, and conceiving, as we may well imagine, that he would be gratified by the information, told him, that he could recommend him, as he believed, to an adventure almoſt as perilous as that from which he had juſt returned; and then communicated to him the wiſhes of the Aſſociation for diſcovering the Inland Countries of Africa. Mr. Ledyard replied, that he had always determined to traverſe the continent of Africa, as ſoon as he had explored the interior of North America, and with a letter of introduction by ſir Joſeph Banks, he waited on Henry Beaufoy, eſq. an active member of the fore-mentioned aſſociation. Mr. Beaufoy ſpread before him a map of Africa, and tracing a line from Cairo to Sennar, and from thence weſtward in the latitude and ſuppoſed direction of the Niger, informed him that this was the route by which he was anxious that Africa might, if poſſible, be explored. Mr. Ledyard expreſſed great pleaſure in the hope of being employed in this adventure. Being aſked when he would ſet out? "To-morrow morning" was his anſwer. The committee of the ſociety aſſigned to him, at his own deſire, as an enterpriſe of obvious peril and of difficult ſucceſs, the taſk of traverſing from eaſt to weſt, in the latitude attributed to the Niger, the wideſt part of the continent of Africa. On the 30th of June, 1788, Mr. Ledyard left London; and after a journey of 36 days, ſeven of which were conſumed at Paris, and two at Marſeilles, he arrived in the city of Alexandria. On the 14th of Auguſt, at midnight, he left Alexandria, and ſailing up the Nile, arrived at Cairo on the 19th. From Cairo he communicated to the committee of the ſociety all the information which he was able to collect during his ſtay there: and they were thus ſufficiently apprized of the ardent ſpirit of inquiry, the unwearied attention, the perſevering reſearch, and the laborious, indefatigable, anxious zeal with which he purſued the object of his miſſion. The next diſpatch which they were led to expect, was to be dated at Sennar: the terms of his paſſage had been ſettled, and the day of his departure was appointed. The committee, however, after having expected with impatience the deſcription of his journey, received with great concern and grievous diſappointment, by letters from Egypt, the melancholy tidings of his death. By a bilious complaint, occaſioned probably by vexatious delay at Cairo, and by too free an uſe of the acid of vitriol and tartar emetic, the termination of his life was haſtened. He was decently interred in the neighbourhood of ſuch of the Engliſh as had ended their days in the capital of Egypt.

Mr. Ledyard, as to his perſon, ſcarcely exceeded the middle ſize, but he manifeſted very remarkable activity and ſtrength: and as to his manners, though they were unpoliſhed, they were neither uncivil nor unpleaſing. "Little attentive to difference of rank," ſays his biographer, "he ſeemed to conſider all men as his equals, and as ſuch he reſpected them. His genius, though uncultivated and irregular, was original and comprehenſive. Ardent in his wiſhes, yet calm in his deliberations; daring in his purpoſes, but guarded in his meaſures; impatient of controul, yet capable of ſtrong endurance; adventurous beyond the conception of ordinary men, yet wary and conſiderate, and attentive to all precautions, he appeared to be formed by nature for achievements of hardihood and peril."—"They who compare the extent of his pilgrimage through the vaſt regions of Tartary with the ſcantineſs of his funds, will naturally aſk, by what means he obtained a ſubſiſtence on the road? All that I have ever learned from him on the ſubject was, that his ſufferings were exceſſive, and that more than once he owed his life to the compaſſionate temper of the women. This remark is ſtrongly confirmed by the following extract from his account of his Siberian tour: "I have always remarked, that women, in all countries, are civil, obliging, tender, and humane : that they are ever inclined to be gay and cheerful, timorous and modeſt ; and that they do not heſitate, like men, to perform a generous action.—Not haughty, not arrogant, not ſupercilious ; they are full of courteſy, and fond of ſociety ; more liable, in general, to err than man ; but in general, alſo, more virtuous, and performing more good actions than he. To a woman, whether civilized or ſavage, I never addreſſed myſelf in the language of decency and friendſhip, without receiving a decent and friendly anſwer. With man it has often been otherwiſe. In wandering over the *barren* plains of *inhoſpitable Denmark*, through *honeſt Sweden* and *frozen Lapland*, *rude* and *churliſh Finland*, *unprincipled Ruſſia*, and the *wide-ſpread regions* of the *wandering Tartar*, if hungry, dry, cold, wet, or ſick, the women have ever been friendly to me, and uniformly ſo ; and to add to this virtue (ſo worthy the appellation of benevolence), theſe actions have been performed in ſo free and ſo kind a manner, that if I was dry, I drank the ſweeteſt draught ; and if hungry, I eat the coarſe morſel with a double reliſh." Similar to this was the experience of Mr. Park. (See Africa.) Nevertheleſs, though Mr. Ledyard found frequent relief and aſſiſtance from female attention and kindneſs, he ſeems on many occaſions to have endured the utmoſt preſſure of diſtreſs. "I am accuſtomed," ſaid he, in his laſt converſation with the writer to whom we are indebted for this account of him, "to hardſhips. I have known both hunger and nakedneſs to the utmoſt extremity of human ſuffering. I have known what it is to have food given me as charity to a madman ; and I have at times been obliged to ſhelter myſelf under the miſeries of that character to avoid a heavier calamity. My diſtreſſes have been greater than I have ever owned, or ever *will* own to any man. Such evils are terrible to bear ; but they never yet had power to turn me from my purpoſe. If I live, I will faithfully perform, in its utmoſt extent, my engagement to the ſociety ; and if I periſh in the attempt, my *honour* will ſtill be ſafe, for death cancels all bonds." Proceedings of the Aſſociation for promoting the Diſcovery of the Interior Parts of Africa. London, 1790.

LEE, Nathaniel, ſon of a clergyman, was educated at Weſtminſter ſchool under Dr. Buſby. He was admitted a ſcholar of Trinity college, Cambridge, in 1668, but quitted the univerſity without a fellowſhip, and attempted to puſh his fortune at court. In this he was unſucceſsful, and then began to write for the ſtage. His firſt piece was the tragedy of Nero, produced in 1675, and from this time, till 1681, he produced one tragedy every year, all which appear to have had temporary ſucceſs. He made a trial of his talents as an actor, but did not ſucceed in the attempt. About the year 1684, he was bereaved of his underſtanding, an affliction which proved ſo ſevere as to baffle the powers of his medical friends, and which obliged his relatives to obtain for him an aſylum in Bedlam. Here he remained about four years, during which he was able to write two tragedies. He died, in 1690, ſo poor, as to have been buried by the pariſh of St. Clement Danes. According to Addiſon, Mr. Lee was equal to any of his contemporaries in a natural genius for tragedy, but his impetuoſity led him into a turgid ſtyle, approaching to bombaſt, and he was apt to bury his thoughts in ſuch a cloud of words, that it was difficult to diſcern their beauty. He is reckoned to excel in repreſenting the paſſion of love, which he ſometimes touched with exquiſite tenderneſs and force. Two of his pieces only are, at this time, ever brought on the ſtage, *viz.* his "Theodoſius," and his "Rival Queens." Biog. Brit.

Lee, in *Geography*, a river of Ireland, which riſes in the mountains, on the weſtern border of the county of Cork, and having paſſed Loughs Gougane-barra and Allua, flows eaſtward through the barony of Muſkerry. It receives in its way the rivers Sullane, Dripſy, Blarney, and Bride, with ſeveral ſmaller ſtreams, and below the city of Cork, which is built chiefly on iſlands formed by it, it expands into that capacious and beautiful harbour, called Cork harbour. (See Cork.) There is alſo a ſmall river of this name, which runs into Tralee bay, in the county of Kerry.

Lee, a county of Virginia, in the S.W. corner of the ſtate, bounded S. by North Carolina, and W. by Kentucky : its form is triangular, two ſides being 60 miles long, and the other about 30. In this county is Powel's fertile valley, but a third part of the county is mountainous. It contains 3295 free inhabitants, and 243 ſlaves. The chief town is Joneſville.—Alſo, a ſmall town in Strafford county, New Hampſhire, about 12 miles N. of Exeter ; formerly part of Dover and Durham ; incorporated in 1766, and containing 978 inhabitants.—Alſo, a townſhip in Berkſhire county, Maſſachuſetts ; 140 miles W. of Boſton ; incorporated in 1777, and containing 1267 inhabitants. Houſatonick river runs towards the ſouth through this town.

Lee, a term variouſly uſed at ſea ; though its general uſe be to ſignify the part towards, or oppoſite to the wind.

This expreſſion is chiefly uſed when the wind croſſes the line of a ſhip's courſe, ſo that all on one ſide of her is called *to windward*, and all on the oppoſite ſide, *to lee-ward.* Hence,

Lee-*Shore* is that on which the wind blows ; ſo that to be under the lee of the ſhore, is to be cloſe under the weather-ſhore, or under wind ; or at a ſhort diſtance from the ſhore which lies to windward.

A-Lee *the Helm.* See A-Lee.

Lee, *Hard a.* See Hard.

Lee-*Hatch, take care of the,* is a word of command to the man at the helm, to take care that the ſhip do not go to the lee-ward of her courſe.

To Lee-*ward*, denotes towards that part of the horizon which lies under the lee, or whither the wind bloweth.

Lee-*ward Ship,* is one that is not faſt by the wind, or which doth not ſail ſo near the wind, nor make ſo good way as ſhe ſhould ; or which is much to leeward of her courſe, when ſailing cloſe-hauled.

Lee, *To lay a Ship by the,* or *to come up by the Lee,* is to bring her ſo, that all her ſails may lie flat againſt her maſts and ſhrouds, and that the wind may come right upon her broadſide.

Lee-*Fangs,* are ropes reeved into the cringles of a yacht's or hoy's ſails.

Lee-*Larches,* ſignify the ſudden and violent rolls which a ſhip often takes to the leeward in a high ſea, particularly when a large wave ſtrikes her on the weather-ſide.

Lee-*Side,* denotes all that part of a ſhip or boat, which lies between the maſt and the ſide fartheſt from the direction of the wind ; or that half of a ſhip which is preſſed down towards the water by the effort of the ſails, as ſeparated from the other half by a line drawn through the middle of her length ; that part of the ſhip, which lies to the windward of this line, is accordingly called the weather-ſide. Thus, if a ſhip ſails ſouthward, with the wind at eaſt, then is her ſtarboard, or right ſide, the lee-ſide ; and the larboard, or left, the weather-ſide.

Lee-*Way,* or *Lee-ward Way of a Ship,* is the angle made by the line on which the ſhip ſhould run according to her courſe, or the point of the compaſs ſteered upon, and the real line of the ſhip's way occaſioned by contrary winds, and a rough ſea.

All ſhips are apt to make ſome lee-way ; ſo that in caſting up the log-board, ſomething muſt be allowed for lee-way. But the lee-way made by different ſhips, under the ſame circumſtances of wind and ſails, will be different; and even the ſame ſhip, with different lading, and having more or leſs ſail abroad, will make more or leſs lee-way. The ordinary rules of allowing for it are theſe: they were given by Mr. John Buckler to the late Mr. William Jones, who firſt publiſhed them about the year 1702.

1. When a ſhip is cloſe-hauled, has all her ſails ſet, the water ſmooth, and a moderate gale of wind, ſhe is then ſuppoſed to make little or no lee-way. 2. Allow one point, when it blows ſo freſh, that the ſmall ſails are taken in. 3. Allow two points, when the top-ſail muſt be cloſe-reefed. 4. Allow two points and a half, when one top-ſail muſt be handed. 5. Allow three points and a half, when both top-ſails are to be taken in. 6. Allow four points, when the fore-courſe is handed. 7. Allow five points, when trying under the main-ſail only. 8. Allow ſix points, when both main and fore-courſes are taken in. 9. Allow ſeven points, when the ſhip tries a-hull, or all ſails are handed. When the wind has blowed hard in either quarter, and ſhifts acroſs the meridian into the next quarter, the lee-way will be leſſened. But in all theſe caſes, reſpect muſt be had to the roughneſs of the ſea with the trim of the ſhip; and hence the mariner will be able to correct his courſe.

LEEA, in *Botany*, ſo named by Linnæus, at the ſuggeſtion of Profeſſor David Van Royen of Leyden, in honour of the late Mr. James Lee, of the Vineyard at Hammerſmith, author of an Introduction to Botany, of which the firſt edition appeared in 1760, the fourth in 1810. This book, whoſe principles are borrowed from Linnæus, but which is particularly valuable for its gloſſaries and tables of ſynonyms, has been of primary uſe in making the Linnæan ſyſtem popular here. Its author was one of the beſt practical botaniſts, and moſt experienced and ſucceſsful cultivators. He loved to encourage and aſſiſt all who had a taſte for natural hiſtory, and died generally eſteemed, at an advanced age, in July 1795, leaving a ſon in every reſpect worthy to ſuſtain and extend his reputation. Linn. Mant. 17. Schreb. 638. 796. Willd. Sp. Pl. v. 1. 1177. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 50. Juſſ. 153. (Aquilicia; Linn. Mant. 2. 146. Schreb. 154. 824. Juſſ. 266. Lamarck. Illuſtr. t. 139. Gærtn. v. 1. 275. t. 57. f. 7.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Meliæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, coriaceous, bell-ſhaped, five-toothed. permanent. *Cor.* of one petal; tube the length of the calyx; limb in five ovate, acute, recurved ſegments. Nectary attached to the inſide of the tube, erect, pitcher-ſhaped, ſhorter than the tube, with five notched lobes. *Stam.* Filaments five, connected with the nectary, between the lobes, a little way down, incurved; anthers ovate, verſatile, cohering together before impregnation and covering the ſtigma. *Piſt.* Germen ſuperior, nearly globular; ſtyle ſimple, ſhorter than the nectary; ſtigma capitate. *Peric.* Berry orbicular, depreſſed, with five prominences, of one cell. *Seeds* five, gibbous at the outſide, angular at the inner.

Eſſ. Ch. Corolla of one petal; limb in five ſegments. Nectary of one leaf attached to the tube, five-cleft, erect, bearing the ſtamens. Berry inferior, with five ſeeds.

1. L. *ſambucina*. Elder-leaved Leea. Willd. n. 1. (Aquilicia ſambucina; Linn. Mant. 2. 211. Cavan. Diſſ. 372. t. 218. Lamarck. Dict. v. 1. 217. Staphylea? indica; Burm. Ind. 75. t. 24. f. 2. Frutex aquoſus fœmina; Rumph. Amboin. v. 4. 103. t. 45. Nalugu; Rheede Hort. Mal. v. 2. 43. t. 26.)—Stem furrowed and angular, ſmooth. Leaves ſmooth, doubly pinnate; the terminal leaflet largeſt.—Native of the Eaſt Indies, from whence it was procured for the Kew garden, by Sir Joſeph Banks, in 1790. It is a ſmooth *ſhrub* or ſmall tree ten or twelve feet high, with the aſpect of Elder; the branches tumid at the inſertion of the leaves, ſtriated and more or leſs angular. *Leaves* alternate, large, doubly pinnated; leaflets ſtalked, oppoſite, elliptic-oblong, pointed, veiny, ſtrongly ſerrated, very ſmooth, paler beneath; the odd ones largeſt. *Panicles* cymoſe, oppoſite to the leaves, pubeſcent. *Flowers* ſmall, whitiſh. *Berries* rather acrid, the ſize of a pea, depreſſed, black, purpliſh internally. A decoction of the roots or wood ſeems, by the accounts given of its uſes, to be a valuable tonic medicine.

2. L. *æquata*. Downy Leea. Linn. Mant. 124. (Cajoe toea of the Malays.)—Stem round, downy. Leaves doubly pinnate, rough.—Native of the Eaſt Indies, from whence Mr. Lee received and cultivated it before the year 1777. We find no figure of this ſpecies. Linnæus did not diſtinguiſh it from the former, but they are very different. In both the *leaves* are bipinnate, or rather ternate in their firſt diviſion, pinnate in the ſecond; but in this ſpecies the terminal leaflet is not larger than the reſt, except in ſome of the lateral diviſions, and all the leaflets, as well as their ſtalks, are rough with minute rather rigid pubeſcence. The ſerratures are leſs ſtrong than in L. *ſambucina*.

3. L. *criſpa*. Wing-ſtalked Leea. Linn. Mant. 124. Meerburgh Ic. v. 1. t. 50. (L. pinnata; Andr. Repoſ. t. 355.)—Stem angular, with criſped wings. Leaves ſimply pinnate.—Native of the Eaſt Indies, not, as Linnæus ſuppoſed, of the Cape of Good Hope. The *roots* are tuberous. *Stem* ſcarcely ſhrubby, remarkably bordered, as are the leaf-ſtalks, with parallel, partly criſped, wings. *Leaves* pinnate, generally of two pair, with an odd one, of elliptical, pointed, ſtrongly ſerrated and copiouſly veined leaflets, roughiſh to the touch when dry, but not pubeſcent. *Flowers* much as in the former, with channelled, angular, or winged ſtalks. Each ſegment of the corolla, according to Andrews, is hooded at the point. We have ſeen one leaf imperfectly bipinnate.

It appears, from the Linnæan herbarium, that Linnæus originally deſtined the name of *Hippia* for his *Leea*; but he afterwards applied the former to a very different genus. (See Hippia.) From the ſame ſource the identity of his *Leea* and *Aquilicia* was firſt diſcovered, and the latter name gives place, as being the more recent, to ſay nothing of the claims of the former reſpecting the perſon it commemorates.

LEEBYRAN, in *Geography*, a ſmall iſland in the Eaſt Indian ſea, near the north-eaſt coaſt of Borneo. N. lat. 6° 1'. E. long. 118° 12'.

LEECH, in *Zoology*. See Hirudo.

The hiſtory of this animal, and the ſtructure of its parts, by means of which it becomes uſeful to us, in ſupplying very happily the place of the lancet, with every other particular circumſtance of its life and food, have been very accurately given by Mr. Morand, in the Memoirs of the Academy of Sciences, in the year 1739.

The more vulgarly known particulars of this animal are briefly mentioned by this gentleman; ſuch are the cutaneous annules of its outer coat, the beautiful arrangement of the ſeveral rays, the colours, the pyramids, and points, with which it is ornamented; the avidity with which this creature ſeizes the fleſh of animals; the manner of its applying its mouth; the vermicular motion obſerved within it while ſucking, which reſembles the common motion of deglutition; the time they have been known to live in the water without any viſible food; and the faculty they have, in common with many other animals, of moving when cut into ſeveral pieces: theſe the author ſuppoſes already ſufficiently known, and paſſes on to what is leſs ſo, the ſtructure of its inner parts.

The part of this animal, by which it pierces the ſkin of any creature to get at its blood, is generally called, ſimply, its *mouth;* but it really conſiſts of five different parts, which are confounded under that general name. Theſe are two regular lips, a cavity, which is properly the mouth, certain inſtruments to pierce with, others which ſerve it for ſucking, and finally a ſort of throat, or œſophagus, through which it ſwallows the blood. When the leech is in a ſtate of reſt, its upper lip forms a regular ſemicircle, and the lower a portion of a much larger circle.

When the creature lengthens its head to move, the ſemicircle of the upper lip becomes two oblique lines, the junction of which makes a ſaliant angle, which the creature applies to whatever it would fix itſelf to. That angle is marked by a regular black ſpot on the outer edge of the lip. The extreme ſoftneſs of the fibres of this part makes it very ſerviceable to the animal, in that it readily aſſumes any figure, according to the occaſion of ſeizing any thing ſolid, in order to move the reſt of its body; or on the fleſh of an animal, to give opportunity to the piercing inſtruments to exert their force and action.

Whether it be for either of theſe purpoſes, that the creature fixes its mouth, the two lips regularly fix, and make in this ſtate a ſort of acetabulum, like the hollow of the tail. This may be ſeen in their fixing on the ſides of a glaſs-veſſel in which they are kept, and the mouth, or aperture between the lips, is diſtinctly ſeen. This mouth is formed, like the lips, of ſuch extremely ſupple fibres, that it takes the figure of the part to which it is applied, and fixes perfectly cloſe to it. When the lips are fixed on the fleſh, in order to ſuck, this little mouth continues moveable under them, and ſearches over the compaſs of fleſh, incloſed in the larger circle of the lips, for the ſpot where it will be eaſieſt to draw much blood.

Within this mouth is placed the inſtrument for piercing the ſkin, which is more than the mere ſucker of the gnat, or the like kind of flies; ſince the quantity of blood to be ſucked by the leech, is much larger, and the aperture of the veſſel muſt therefore alſo be larger. The ſhape of this weapon may be diſcovered by examining the wound it leaves. This is compoſed of three cuts, making three rays, and uniting in a centre, under equal angles. This ſtructure of the wound is moſt diſtinctly ſeen when the ſwelling is gone down, and the ſkin is clean; and this is uſually on the fourth day after the application. The three openings are then plainly ſeen not to be punctures, but abſolute wounds, or cuts, as if made by a fine lancet. In examining the creature, the organ, deſtined for making the wound, is found to be placed between the aperture of the lips, and the bottom of the mouth; and on cutting up the animal, and drawing the finger carefully over this part of it, there is felt a roughneſs like that of a fine file, which evidently is owing to ſome rough ſubſtance, of the hardneſs of bone. This is, in reality, a number of fine and ſharp teeth; and when examined by a microſcope, they are found to be diſpoſed in three ſeries on three ribs, or, as they may be called, jaws; each of which is placed along the middle of a ſtrong muſcle of its own length; and theſe correſponding regularly to a triangular opening, which the creature has in its mouth. When that has ſeized on a proper part for the getting blood, and is fixed, theſe muſcles exert their action, and ſtrike in the teeth through the ſkin.

Theſe are the inſtruments which pierce the veſſel which is to afford the blood; and for the receiving it into the body of the animal, there is between theſe rows of teeth, or in the common centre of the mouth, a ſmall aperture; and within this there is a little body to be diſcovered, which by its motion ſeems very plainly to be a tongue, and which probably acts as a piſton to take up the blood flowing from the triple wound, in the centre of which it naturally ſtands, while the larger circle of the lips, &c. perform the office of the body of the pump, and the blood is eaſily, by this means, conveyed into the body of the animal. Finally, between the root of the tongue and the beginning of the ſtomach, there is a ſpace of two lines in length, in which it is eaſy to diſcover two different arrangements of fibres; the one ſet are flat and plain, the others are circular. Theſe evidently have a power of widening or contracting the cavity of the pump, and by that means facilitate its office; the plane ones contracting in length, to enlarge the capacity, and the circular ones determining the blood towards the ſtomach, by their power of contracting the hollow, when the blood is received. The blood from hence enters into a membranaceous ſort of ſack, which ſerves the animal for the ſtomach and guts, and occupies the greateſt part of the body of the creature. If the air is admitted into the body by the mouth, it may be ſeen to make its way down a longitudinal canal, and fill, as it goes, a number of ſacks, or little bags, which are on each ſide. Theſe veſicles receive the blood, and becoming filled with it, ſwell out the body of the animal to a great ſize. It remains here many months, and nouriſhes the creature; and if any thing is excreted from it, it muſt be merely by an inſenſible perſpiration; ſince the creature has no anus, ſo far as can be yet diſcovered, nor any aperture which can ſupply the place of one.

Leeches are able to live in oil; and when removed out of this liquor into water again, they throw off a tender ſkin, or film, of the regular ſhape of their body, and reſembling the ſkin of an eel in miniature. Their living in oil ſeems a proof, that their organs of reſpiration are not placed on the outſide of their bodies, as they are in many ſmall animals, which therefore die on being only rubbed over with oil. But the leech ſeems to reſpire by the mouth; and this may be the more plainly diſcovered, if the water, in which it is kept, be gently heated; for then the animal, being uneaſy, breathes hard, and very viſibly.

If a leech be kept in an eight-ounce glaſs phial, about three-fourths filled with water, it will indicate the changes of the weather, in the manner of a weather-glaſs. Thus, if the weather continues ſerene and beautiful, the leech lies motionleſs at the bottom of the phial, rolled in a ſpiral form: if it rains either before or after noon, it is found at the top of its lodging, where it will remain until the weather be ſettled: if we are to have wind, the leech gallops about its limpid habitation with amazing ſwiftneſs, and ſeldom reſts until it begins to blow hard: if a remarkable ſtorm of thunder or rain is to ſucceed, for ſome days before, it lodges almoſt continually without the water, and diſcovers great uneaſineſs, in violent throws and convulſive like motions. In froſt, as in clear ſummer weather, it lies conſtantly at the bottom; and in ſnow, as in rainy weather, it dwells at the very mouth of the phial.

The phial ſhould be covered at the mouth with a piece of linen rag, and the water ſhould be changed once a week in the ſummer, and once a fortnight in the winter. Gent. Mag. vol. xxiii. p. 28.

LEECH, *Sea.* See HIRUDELLA *marina.*

Leech is alſo a name given by Boccone to a very particular water-animal, which he found ſticking to the ſides of the *xiphias*, or ſword-fiſh.

He calls it *hirudo*, or *acus cauda utrinque pennata*, and obſerves, that it is ſlightly mentioned by Geſner, and by Johnſon, in their books of fiſhes. It is about four inches long; the belly is white and cartilaginous, and tranſparent; there is no regular head to be ſeen, but only a hollow ſnout in the place of the head; this is covered with a very hard membrane, and differs extremely from the ſkin of the belly: this ſnout it thruſts up to the end into the body of the fiſh, and ſucks its blood with it; it has a tail ſhaped like a feather, and under it two ſlender filaments of fibres, longer than its whole body. By means of theſe, when it is not faſtened to the body of the fiſh, it clings to ſtones, or ſea-plants, to prevent its being carried away by the motion of the water; and when it is on the body of the fiſh, theſe ſerve it to hold much more faſtly with, than it otherwiſe could do. This creature miſerably afflicts the ſword-fiſh, but it is itſelf as much tormented by an animal that preys on its blood and juices. This is a ſort of louſe, which is always found upon it; it is of a browniſh colour, and it is generally found faſtened toward the tail of the creature, ſticking as firmly as a limpet to a rock; it is nearly of the bigneſs of a pea, and when cruſhed a little, will thruſt out ſeveral ſlender filaments. This leech is not found, ſo far as has yet been obſerved, on any other fiſh but the ſword-fiſh; nor this louſe among other creatures, beſides this leech. Phil. Tranſ. Nº 100.

Leeches, *Utility of, in the Cure of Diſeaſes.*—Bleeding, or the taking away of blood, for the alleviation and cure of diſeaſes, is frequently one of the moſt powerful means to which the phyſician and ſurgeon can have recourſe for the relief of their patients. It is divided into *general* and *topical;* the firſt ſignifying the evacuation, as made from a large vein in the arm, or the temporal artery, the external jugular vein, &c; the ſecond denoting the evacuation of blood directly from the veſſels of the part affected, or its vicinity, by ſcarifications, cupping, or leeches. In the article Bleeding are deſcribed moſt of the ſurgical methods of taking away blood, with the exception of that by leeches, which more properly belongs to the preſent place, and of *Cupping* and *Scarifications*, for an account of which the reader is referred to theſe reſpective terms.

The hirudo medicinalis, as the term denotes, is the proper kind for medical purpoſes; and, when it has been caught in a clear piece of water, is not full of blood, and is hungry, in conſequence of being kept for ſome time in a veſſel of pure water, it is in the beſt condition for uſe. According to Schmucker, even the medicinal leech, if taken out of unclear, muddy, ſtagnant water, will cauſe pain, ſwelling, and inflammation, after being applied. Vermiſchtæ Chir. Schriften, vol. i. p. 86. edit. 2.

With reſpect to the art of collecting medicinal leeches, the beſt time for taking them is when they ſpawn in the earlieſt warm weather of the year. June and July are accounted favourable months, if there is a good deal of ſun, and the wind is either very ſtill, or blows gently from a ſoutherly point. It would be in vain to endeavour to catch them in cold weather attended with northerly winds. The hirudo medicinalis inhabits clear lakes and ponds in warm ſituations, and ſtreams flowing through vallies. In cold and woody countries, the horſe leech can only be met with. The warmer the ſituation of the water is, and the fatter the ſoil, the thicker and larger are the leeches. Thoſe which are caught in waters abounding with fiſh, do not bite and ſuck ſo well, as others taken out of poorer places. Freſh lively leeches bite the moſt readily; but when they have been kept a long while, or have been put out of temperate into very cold water, they generally bite with leſs avidity.

With regard to the mode of applying leeches, the part on which they are about to be put may firſt be waſhed with ſome clean water and well dried. The leeches are then to be placed on it with the fingers, either one by one, or all of them together, by putting them firſt into a tumbler, and then applying this to the ſkin, in the manner of a cupping glaſs. The leeches ſhould generally be ſuffered to fall off the part ſpontaneouſly, which they commonly do, as ſoon as they are well diſtended. But when the patient's weakneſs, or any other circumſtance, requires them to be more ſpeedily removed, they may eaſily be made to drop off by ſprinkling them with a little ſalt or ſnuff. For the purpoſe of inducing leeches to bite with greater facility, ſome practitioners firſt wet the part on which they are to be put with a little milk, or milk and ſugar.

On ſome occaſions, the application of leeches will procure as copious an evacuation as phlebotomy itſelf. The quantity of blood which may ſometimes be taken away by twelve leeches, would ſurpriſe the inexperienced. When the bites are expoſed to the ſteam of warm water, or fomented after the leeches have dropped off, the bleeding may often be kept up for an extraordinary length of time. The writer of this article has known inſtances, where ſurgeons have been detained for nearly twenty-four hours, in employing means to ſuppreſs the continuance of the bleeding from the bites of leeches on inflamed parts. In caſes of hernia humoralis, where the ſcrotum has been much reddened and inflamed, he has often ſeen the hemorrhage, from the application of leeches, laſt a very unpleaſant length of time. Indeed, the records of ſurgery prove, that the bleeding from the bites of leeches may even continue to a dangerous extent. Pelletan mentions a caſe, where an infant, four months old, bled to death, in conſequence of the application of ſix leeches to the cheſt, ſome women who were in attendance having contented themſelves with merely wiping away the blood with cloths, as faſt as it flowed out. (See his Clinique Chirurgicale, tom. ii. p. 243.) In general, however, the bleeding, after leeches have dropped off, readily ceaſes, either of itſelf or on cold being applied; and it is only when the part is highly inflamed, or exceſſively vaſcular, as we know the ſkin of a very young infant to be, that the ſubſequent hemorrhage is diſpoſed to continue long. In many inſtances, the continuance of the bleeding a certain time is a moſt deſirable circumſtance, as by this means a more effectual quantity of blood can be taken away than could otherwiſe be accompliſhed.

We learn from Galen, that Hippocrates was acquainted with the medical utility of leeches. (De Hirudinibus cum comment. Scbizii). In inflammation of the liver, they were preferred by Aretæus, of Cappadocia, to cupping-glaſſes; and they are made frequent mention of in the writings of Dioſcorides, Celſus, and Paulus Ægineta. Pliny thought, that leeches might be employed with ſeveral intentions, as, in plethoric caſes, they extract the blood like cupping-glaſſes, and, according to his conjectures, alſo opened the pores. (Hiſt. Natural. l. xxxii. c. 10.) Horace has taken notice of theſe uſeful little animals in the following line of his ſatires.

"Non miſſura cutem niſi plena cruoris hirudo."

The Arabian phyſicians well knew the uſefulneſs of leeches, and were in the habit of directing them to be applied in melancholic and hypochondriacal caſes. Rhazes, in particular, recites numerous cures which he effected with their aſſiſtance. Paracelſus uſed to apply them in caſes of jaundice. By the chemical practitioners of medicine, leeches were not at all employed, becauſe they were accuſtomed to reprobate all evacuations of blood as uſeleſs and hurtful; and Van Helmont would not ſuffer them to be applied to an hemorrhoidal ſwelling.

The uſe of leeches, in the practice of phyſic and ſurgery, appears to have been revived by Sennertus and Zacutus Luſitanus.

It would be almoſt an endleſs taſk to enumerate the great variety of medical and ſurgical caſes in which leeches may be uſed with advantage. We may ſtate, indeed, that in all inflammatory affections they are frequently of conſiderable ſervice. In inflammations about the throat, in the abdomen, thorax, or cranium, or in the limbs and more ſuperficial ſituations, the benefit derived from the application of leeches, can often be obtained by no other means. The great good which they often do in inflammatory diſeaſes of the eye, joints, and teſtis, is acknowledged by every practitioner, as well as the relief which they ſpeedily afford in caſes of inflamed hemorrhoidal tumours. Their utility in inflammations of the breaſt, and in alleviating the pain, and even retarding the progreſs of ſchirrous ſwellings of the ſame part, deſerves alſo to be mentioned. That they ſometimes prove even capable of curing and reducing many indurations of the breaſt, is a fact proved by daily experience. Nor muſt we forget the beneficial effects, frequently ariſing from the application of leeches in various examples of buboes, ſcrofulous and ſympathethic, as well as venereal.

In the majority of caſes, however, we are not to imagine that one application of three, four, or even a dozen leeches, is enough to try their efficacy; in general their application muſt be repeated from time to time, and, in ſome inſtances, once or twice a-day, according to the urgency of the ſymptoms.

In infants of tender years, and perſons who have a particular dread of veneſection, leeches may be uſed for the relief of all diſeaſes which require blood to be taken away; and this method of bleeding has the advantage of not being likely to induce ſwooning, debility, and languor, by the blood being drawn too ſuddenly.

In many caſes, where the practitioner is fearful of venturing upon general bleeding, the employment of leeches may often be tried with greater ſafety.

In painful affections of the ear and teeth, in inflammations and ſwellings of the gums, and in numerous inflammatory diſeaſes affecting the parts about the neck and throat, topical bleeding with leeches proves of infinite ſervice, either alone, or in conjunction with general bleeding, according to the nature and circumſtances of the caſe.

In numerous inſtances of extravaſations of blood under the ſkin, ecchymoſes, contuſions, &c. leeches are frequently applied with great benefit to the patient.

In caſes of quinſy, when deglutition has been quite obſtructed, and repeated veneſection has proved unavailing, Schmucker aſſures us, that he has found the application of leeches attended with an extraordinary degree of efficacy. The ſame experienced practitioner alſo obſerves, that in pleuriſies, he has found topical bleeding with leeches even more uſeful than bliſters.

Whitlows, which can ſo ſeldom be cured without ſuppuration, Schmucker has ſometimes reſolved, by applying to them leeches and the ſaturnine lotion in an early ſtage of the complaint.

This diſtinguiſhed ſurgeon likewiſe confirms, how ſuperiorly uſeful the application of ſixteen or twenty leeches to the perineum frequently proves in caſes of retention of urine, when veneſection, the warm bath, and other means alone are ineffectual. Vermiſchte Chirurgiſche Schriften, vol. ii. art. 2.

Leech, or Leetch *of a Sail*, in a *Ship*, the outward edge or ſkirt of the ſail from the earing to the clew, or rather the middle of the ſail between theſe two.

The leeches of all ſails, whoſe tops and bottoms are parallel to the deck, and at right angles with the maſts, are denominated from the ſhip's ſide, and the ſail to which they belong, as the ſtarboard leech of the main-ſail, the lee-leech of the fore-top-ſail, &c. But the ſails which are fixed obliquely upon the maſts, have their leeches named from their ſituation with reſpect to the ſhip's length; as the fore-leech of the mizen, the after-leech of the jib, or fore-ſtay-ſail, &c. Falconer.

Leech, or *Leetch-lines*, are certain ropes faſtened to the leeches of the main-ſail and fore-ſail, and communicating with blocks under the oppoſite ſides of the top, whence they paſs downwards to the deck, ſerving to truſs up thoſe ſails to the yard, as occaſion requires. See Brails.

Leech-*rope*, is a name given to that part of the bolt-rope, to which the border of a ſail is ſewed. In all ſails, whoſe oppoſite leeches are of the ſame length, it is terminated above by the earing, and below by the clue. Falconer.

LEECHMAN, William, in *Biography*, a learned and excellent Scotch divine, was born at Dolphinton, in Lanerkſhire, in the year 1706. He was initiated in grammar-learning at his native place, from whence he removed to the univerſity of Edinburgh. Here he diſtinguiſhed himſelf by his great proficiency in different branches of learning. He began his theological ſtudies in 1724, and in 1727 he was introduced into the weſtern part of Scotland, which was deſtined hereafter to be the principal ſcene of his uſefulneſs. He undertook the education of a young gentleman at Caldwell, in Renfrewſhire, where he reſided in the ſummer months, but during the remainder of the year he lived at Glaſgow, and was honoured with the friendſhip of profeſſors Hutcheſon and Dunlop. About the beginning of 1731 he was licenſed as a preacher, but it was not till the year 1736 that he had any proſpect of preferment. He was now ordained miniſter of Beith, and remained in the diſcharge of the duties attached to that office during ſeven years. In 1740 he was elected moderator of a meeting of the ſynod at Irvine, and opened the aſſembly at Glaſgow on the 7th of April, 1741, with a ſermon to the clergy "On the temper, character, and duty of a miniſter of the goſpel." This is thought to be one of the ableſt charges ever delivered from the pulpit: it has paſſed through many editions, and is ſtill in very high reputation. In 1743 he publiſhed a much longer diſcourſe on "The Nature, Reaſonableneſs, and Advantages of Prayer; with an Attempt to anſwer the Objections againſt it." This ſermon, as well as that juſt noticed, excited great attention at the time of the publication, and it has been frequently reprinted ſince. He was, about this time, invited to ſettle with a congregation at Belfaſt, in Ireland, with the promiſe of a better ſalary than that which he enjoyed at Beith. This offer, upon due deliberation, he declined, and he was ſhortly after elected to the profeſſorſhip of theology at the univerſity of Glaſgow; an honour which he obtained only by the caſting vote of the preſident. The oppoſite party did all in their power to prevent his being fixed in the ſituation: they even commenced a proceſs of hereſy againſt him, which had a direct tendency to injure his reputation and uſefulneſs, and to expoſe him to general odium. The charge was founded on the ſermon on prayer, which his enemies conſidered as having laid too little ſtreſs on the atonement and interceſſion of

Chriſt. A paper of remarks was produced, conſiſting of eight articles, of what they deemed heretical omiſſions. To each of the remarks the profeſſor gave in written anſwers, which were neither deemed ſatisfactory to the committee nor to the preſbytery, under whoſe authority they acted. Mr. Leechman appealed to a higher court, *viz.* the ſynod, the members of which, after hearing all that could be adduced on both ſides of the queſtion, almoſt unanimouſly determined, that there was no reaſon to charge him with any unſoundneſs in the paſſages of the ſermon complained againſt. "Mr. Leechman's character, both as a preacher and profeſſor, ſhone out the brighter after this cloud was diſſipated. Some of thoſe who had appeared his keeneſt adverſaries in the church proceſs, lived with him afterwards on terms of ſincere friendſhip: even the prejudices of the common people in Glaſgow gradually ſubſided; ſo that he came to be conſidered there, as he had always been in every other place, a very acceptable preacher." Soon after he had been eſtabliſhed in the profeſſorſhip, he took the degree of doctor in divinity. He continued in the theological chair ſeventeen years, vindicating and eſtabliſhing the grand truths of natural and revealed religion, in anſwer to the principal objections made to them by Mr. Hume, lord Bolingbroke, and other ſceptical writers. He had, in his lectures, a remarkable talent of ſelecting what was moſt important and ſtriking on every ſubject that he handled: his arguments were ſolid, founded on indiſputable facts; and they were urged with a degree of warmth which carried his auditors along with him; for they were addreſſed equally to the judgment and the heart. Dr. Leechman's fame extended far and wide, the Divinity-hall at Glaſgow was crowded, in his time, with a greater number of ſcholars than any other in Scotland: and his numerous ſcholars, however they might differ in their ſentiments on ſpeculative theology and church government, were all cordially united in their affection and veneration for their maſter. In the year 1761, Dr. Leechman was raiſed to the office of principal of the univerſity of Glaſgow by a preſentation from the king. He had previouſly to this been in a very bad ſtate of health, and this change in his avocations was probably the means of prolonging his valuable life for five-and-twenty years. Though releaſed from the more fatiguing part of his duties, he could not remain inactive, but entered warmly into every ſcheme for the benefit and improvement of the ſociety, propoſed by other profeſſors, and proſecuted ſome ſchemes of his own ſuggeſtion. He gave a lecture, for ſome time, once a week, to the ſtudents in divinity, and weekly lectures to the whole univerſity. Dr. Leechman's faculties remained in full vigour amidſt the increaſing infirmities of old age, and his taſte for valuable knowledge continued as acute as ever. His mind ſeemed to be in a great meaſure independent of all bodily infirmities and connections. In September, 1785, he experienced a violent paralytic ſtroke, from the effects of which he ſpeedily recovered: but a ſecond ſhock of the ſame kind in the following month deprived him of the power of his whole left ſide. Still he continued in the full poſſeſſion of his mental faculties, and was as intelligent, judicious, and even as acute as ever. Another attack carried him off on the third of December, 1785, when he was almoſt eighty years of age. Dr. Leechman committed nothing to the preſs, except nine ſermons, which went through ſeveral editions during his life-time. Theſe were re-publiſhed, with others, forming together two volumes, in the year 1789. To the firſt of theſe volumes is prefixed an account of the author, to which the reader is referred for more particulars relating to Dr. Leechman.

LEEDS, in *Geography*, a populous market-town in the wapentake of Skyrack, in the Weſt Riding of the county of York, England, is ſituated on the north ſide of the river Aire, over which is a handſome ſtone bridge. It is a place of great antiquity, and its name is regiſtered in the Domeſday ſurvey. Here was formerly a ſtrong caſtle, probably built by Ilbert de Lacy, which was beſieged by king Stephen in 1139; and here the unfortunate Richard II. was confined about the year 1399. No veſtige of this fortreſs remains; but its ſcite is ſaid to have been at a place called Mill-hill. Leeds has long been diſtinguiſhed as a clothing town; though the pre-eminence it now enjoys is not of a very remote date. Leland ſays it is "a pretty market-town, ſubſiſted chiefly by clothing, reaſonably well builded, and as large as Bradford, but not ſo *quick* as it." Its growth, however, probably ſoon became conſiderable, as it was incorporated by king Charles I. At the commencement of the troubles of that reign, it was held for the king by ſir William Saville; but after a ſharp action, its fortifications were ſtormed by the forces which marched out of Bradford under ſir Thomas Fairfax. A ſecond charter was granted on the 13th of Charles II., under which the town is now governed. The trade in woollen cloth, which has raiſed Leeds to its preſent conſequence, is carried on here to an extent unequalled in any place in the kingdom. The cloth-markets are held only on Tueſdays and Saturdays, and then only for an hour and a half each day; and the merchants are not allowed to buy, or even to look at cloth, but at theſe appointed hours. At ſix in the morning in ſummer, and ſeven in winter, the market-bell rings; and in a few minutes, without the leaſt diſorder, the whole market is filled, and all the benches are covered with cloth, each proprietor at the ſame time ſtanding behind his own cloth. As ſoon as the bell has ceaſed the buyers enter, and having fixed on certain lots, or pieces of cloth, they proceed in a very expeditious and ſecret manner to bargain for the ſame. (A particular account of the modes of tranſacting buſineſs, &c. is given in the Monthly Magazine, vol. iii. p. 123, and vol. iv. p. 174.) In theſe places it is related that from ten to twenty thouſand pounds worth of cloth, and ſometimes more, is ſold with a whiſper only; the laws of the market are certainly more ſtrictly obſerved than in any other place in England: the time of ſale is terminated by another bell; and any merchant ſtaying in the hall after the bell has ceaſed, forfeits five ſhillings. This extenſive buſineſs, which uſed formerly to be carried on in the open ſtreet, is now conducted in two halls, which have been built for the accommodation of the clothiers. The Mixed-cloth Hall, which is the principal, was erected in 1758; it is a quadrangular building, incloſing an open area of about an hundred yards ſquare, and is divided into ſeven partitions or ſtreets, each of which contains four rows of ſtands; and theſe are the freehold property of ſeparate manufacturers. The whole number of ſtands is 1770. The White-cloth Hall, built in 1775, is partitioned in a ſimilar manner, and contains 1210 ſtands. Over the former building is an aſſembly-room, and over the latter a muſic-hall. The manufacture of broad cloth is now almoſt wholly performed by machinery, which has occaſioned a conſiderable reduction in the price. By this means, very few hands are wanted in the firſt ſtages of the manufacture, particularly in carding and ſcribbling the wool, and in ſpinning it. This circumſtance, on the firſt introduction of machinery, deprived great numbers of people of their cuſtomary employment.

Previous to the reign of Charles I. Leeds had but one church: here are now, however, ſeveral eccleſiaſtical edifices, appropriated to the eſtabliſhed religion, and to different ſects of Diſſenters. The church of St. Peter, the original, is built in the form of a croſs, with a tower in the middle ; and has a painting in freſco of the Aſcenſion, by Parmentier, who preſented the town with this ſpecimen of his genius. St. John's church was erected in 1634, at the ſole expence of Mr. Harriſon, who alſo built a free-ſchool and a market-croſs, and was in other reſpects a great benefactor to the town. The church of the Holy Trinity, which is an elegant ſtructure, with a ſpire, was built in the eighteenth century. Eight other places of worſhip are appropriated to the ſeveral denominations of diſſenters. Here are three alms-houſes, a charity-ſchool, and an extenſive work-houſe, in which children are taught the eaſy branches of the woollen manufacture. A ſpacious infirmary was built by ſubſcription in the year 1786. The ſtreets, in the upper part of the town, are narrow; but in the other parts they are broad, and the houſes are moſtly uniform, and many of them elegant. Here are ſeveral large open ſquares, the areas of which are in ſome caſes planted, and in others uſed as tenter grounds. The buildings are chiefly of brick, and covered with white ſlate ; and every ſtreet has a flagged foot-way on each ſide. The civil government of the town is veſted, by the charter of Charles II., in a mayor, twelve aldermen, and twenty-four common-council men.

Leeds is 192 miles diſtant from London, and 25 miles from York. In the year 1800, it contained, according to the return made to parliament, 11,599 houſes, and 53,162 inhabitants: of the latter, 20,367 were ſtated to be employed in trade and manufacture, particularly that of woollen cloth. Two fairs are held annually; and two weekly markets, on Tueſdays and Saturdays, are well ſupplied with all kinds of proviſions. A conſiderable pottery is eſtabliſhed here, which furniſhes large quantities of earthen ware, both for home conſumption and exportation. By means of the rivers Aire and Calder, and the Canal Navigation, Leeds has communication with Wakefield, York, and Hull; from which latter place the woollen goods are uſually ſhipped to foreign parts. The carriage of coals from the interior of Yorkſhire is alſo a great ſource of traffic: theſe are carried in veſſels from 45 to 60 tons burthen, to Selby, York, Howden, Hull, Beverley, and all the intermediate towns ſituated on the rivers Ouſe and Humber. Three miles from this town are the grand and pictureſque ruins of Kirkſtall Abbey, ſeated on the banks of the river Aire. For an account of theſe, with an intereſting print, ſee Day's Tour in Yorkſhire, 8vo. 1805. Weſt of the town is an ancient ſeat of the Vavaron family. Aikin's Deſcription of the Country round Mancheſter, 4to., and Monthly Magazine.

Leeds, a county of Upper Canada, bounded on the eaſt by the county of Grenville, on the ſouth by the river St. Lawrence, and on the weſt by the boundary line of the late townſhip of Pittſburg, running north until it interſects the Ottawa or Grand river, and thence deſcending until it meets the north-weſternmoſt boundary of the county of Grenville. This county comprehends all the iſlands in the river St. Lawrence that are near it. The greater part of it lies fronting the St. Lawrence.—Alſo, a townſhip in the county of Leeds, being the twelfth townſhip in aſcending the river St. Lawrence. It is watered by the Gananoque river, which has a good harbour at its entrance. There is a port of entry on the weſt bank of the Gananoque, near its mouth in the St. Lawrence.—Alſo, a town of America, in the eaſtern part of Glouceſter county, New Jerſey; 4 miles weſt of the mouth of Mullicus river.—Alſo, a town in Kennebeck county, on the eaſt bank of Amereſkoggin river, oppoſite to the mouth of Twenty miles ſtream, in the town of Turner, in Cumberland county.—Alſo, a town, or rather village, of Richmond county, Virginia, on the north bank of Rappahannock river; 70 miles N.E. of Richmond; near which is a famous courſe for horſe-racing.

LEEDSTON, a poſt-town of Weſtmoreland county, Virginia; 105 miles from Waſhington.

LEEGELLAN, a ſmall iſland in the Eaſt Indian ſea, near the eaſt coaſt of Borneo. N. lat. 4° 10'. E. long. 118° 40'.

LEEHEEM, a ſmall iſland nearly north-eaſt of Borneo. N. lat. 6° 9'. E. long. 118° 16'.

LEEK, in *Botany*, *Gardening*, and the *Materia Medica*. See Allium.

Leek, in *Geography*, a ſmall iſland of Pennſylvania, in Delaware river.

Leek-*Head*, in the *Manege*. See Wart.

LEEKE, or Leek-*in-the-Moorlands*, formerly called *Lee*, in *Geography*, a market-town and pariſh in the hundred of Totmanſlow, and county of Stafford, England, is ſeated at the northern extremity of that county, at the diſtance of 154 miles from London, and 31 from Mancheſter. Here are a weekly market on Wedneſday, and ſeven annual fairs. In the year 1800, this pariſh contained 780 houſes, and 3489 inhabitants. Many of them are employed in the manufacture of ribbons, ſilk-twiſt, and buttons; which may be conſidered the ſtaple articles of the place. But of late years this latter branch has very much diminiſhed, and at preſent the chief trade is in thrown ſilk, and the manufacture of bandana and other handkerchiefs. The cotton buſineſs has alſo been introduced, within theſe few years, into this town. The church here is a large building, with a lofty ſquare tower. In the church-yard is an ancient ſtone-croſs, the ſhaft of which is about ten feet in height. It has been called Daniſh, from "the imagery and fret-work," as Mr. Gough obſerves, with which it is ornamented. Near the town was formerly a Ciſtertian abbey, called Delacres, or Dieulacres, which was founded in the year 1214 by Ranulph, earl of Cheſter; to whom the lordſhip of this town formerly belonged. In the vicinity of Leeke are ſome lofty bare crags, called Leek-rocks and Henclouds. Blue-hills, in this neighbourhood, abound with coal-mines; and a ſalt-ſpring iſſues from one of theſe hills. Eight alms-houſes were endowed here in 1696, by Mrs. Elizabeth Aſh, for as many widows.

LEER, in *Glaſs-making*, a ſort of third furnace, intended to anneal and cool, by proper means, the veſſels when made. See Furnace and Glass-house *Furnace*.

Leer, *Lehr*, or *Lier*, in *Geography*, a town of Eaſt Frieſland, on a river of the ſame name, which ſoon after joins the Ems; 11 miles S. of Emden. N. lat. 53° 12'. E. long. 7° 20'.

LEERDAM, a town of Holland, on the river Linghe, which gave title of count to the noble houſe of Egmont, and afterwards to that of Naſſau; 11 miles S. of Utrecht. N. lat. 51° 55'. E. long. 4 59'.

LEERSIA, in *Botany*, a genus of graſſes, received its appellation from Dr. Swartz, in order, with peculiar propriety, to honour the memory of John Daniel Leers, an apothecary at Herborn in Naſſau, author of the *Flora Herbornenſis*, publiſhed in 1775. This little octavo volume, now very rare, contains ſixteen plates, in which all the graſſes are engraved by the hand of the author, with ſuch exquiſite and minute preciſion, that they will bear inſpection with a magnifier, almoſt like the plants themſelves, and are unrivalled in natural hiſtory. A life of the author by his ſon is prefixed to this book, by which we learn that he died December 7, 1774, aged 47. The narrative contains few ſtriking particulars, but the effuſions of filial piety, with which it abounds, muſt ever be intereſting, and do honour both to the father and the ſon. A ſecond edition of this work, from another hand, was publiſhed many years afterwards, of which the plates are extremely faulty and inaccurate copies of the firſt. Swartz. Prodr. 21. Ind. Occ. v. 1. 129. Schreb. 818. Willd. Sp. Pl. v. 1. 325. Mart. Mill. Dict. v. 3. Brown Prodr. Nov. Holl. v. 1. 210. Michaux Boreali-Amer. v. 1. 39. (Aſprella; Schreb. 45. Homalocenchrus; Mieg. Act. Helvet. v. 4. 307. Hall. Helvet. v. 2. 201. Allion. Pedem. v. 2. 232. Ehrhartia; Wiggers Primit. 63.)—Claſs and order, *Triandria Digynia.* Nat. Ord. *Gramina*, Linn. Juſſ.

Gen. Ch. *Calyx* none. *Cor.* Glume of two cloſed, boat-ſhaped, concave, compreſſed valves, often fringed with prickles at the back, and nearly equal in length; the outer one larger, oblong, pointed; inner but half as broad, linear, acute. Nectary of two lanceolate acute leaflets. *Stam.* Filaments three, in ſome caſes one or ſix, capillary, ſhorter than the corolla; anthers oblong. *Piſt.* Germen ſuperior, ovate, compreſſed; ſtyles two, capillary, ſhort; ſtigmas feathery. *Peric.* none except the permanent cloſed corolla. *Seed* ſolitary, obovate, compreſſed.

Eſſ. Ch. Calyx none. Corolla of two cloſed valves.

Obſ. Homalocenchrus, the name given to this genus by Mieg, was juſtly, as compounded of another, thought exceptionable by Wiggers, who therefore preferred *Ehrhartia;* but the latter is now otherwiſe employed. (See Ehrharta.) Dr. Solander it ſeems originally diſtinguiſhed this genus from *Phalaris*, and the name applied to it by Swartz, was adopted from his manuſcripts. We cannot account for the error of Wiggers, who aſſerts it to be gynandrous, the ſtamens growing out of the top of the germen. We find no traces of any ſuch inſertion, which would be truly ſingular in a graſs.

1. L. *oryzoides.* Swartz. Prodr. 21. Willd. n. 1. (Phalaris oryzoides; Linn. Sp. Pl. 81. Swartz. Obſ. 34. Schreb. Gram. faſc. 2. 6. t. 22.—Panicle ſpreading. Flowers ſpreading, triandrous; their glumes fringed at the keel.—Native of watery places in Germany, France, Switzerland, Auſtria, Italy, and Perſia. Seguier ſays it is frequent in the rice-fields about Verona, "in weeding which this graſs is detected, in its youngeſt ſtate, by its glaucous foliage, and, at a more advanced period, by the minute prickles at the edges of its leaves." The roughneſs ariſing from theſe prickles ſeems the origin of the Italian name, *Aſperella.* The *roots* are perennial, with long runners. *Stems* four or five feet high, leafy, erect, ſmooth, with hairy joints. *Leaves* linear-lanceolate, pointed, ſtriated, rough, eſpecially at the edges, ſlightly glaucous; with long, ſtriated, roughiſh ſheaths; and a ſhort notched ſtipula. *Panicle* at firſt enveloped in the upper ſheath, then ſpreading, a ſpan high, with numerous, drooping, compound, zigzag branches. *Flowers* light green, very much reſembling thoſe of rice, but ſmaller.

2. L. *virginica.* Willd. n. 2. (L. oryzoides; Michaux Boreali-Amer. v. 1. 39. Oryza glumis carinà hiſpidis; Gronov. Virgin. ed. 1. 153. Phalaris oryzoides; ed. 2. 11.)—Panicle looſe. Flowers moſtly triandrous, erect, cloſe-preſſed; their glumes fringed at the keel.—Found in Kentucky, Pennſylvania, and Carolina. *Michaux.* In marſhes in Virginia, amongſt *Smilaces* and *Rubi*, flowering in Auguſt. *Clayton.* Michaux thinks this is not ſpecifically diſtinct from the former; but Willdenow, who has obſerved them both in a garden, ſays that, "though much alike, they are conſtantly different. The preſent has ſhorter and broader *leaves;* a ſhorter *panicle*, whoſe *branches* are not zigzag but ſtraight, and whoſe *flowers* are cloſely preſſed to the ſtalks. The *glumes* are ſmaller, narrower, ſparingly fringed. The *panicle* of this is never covered by a leaf, but always expoſed and ſpreading." We have ſeen no ſpecimen of this *Leerſia.* Willdenow enquires "whether the Jamaica ſpecies be the ſame with it?" By this he ſeems to mean, whether *L. oryzoides* of Swartz, which he had already quoted with a doubt under the former, be this *L. virginica.* But Swartz no where mentions the *oryzoides* as a Weſt Indian plant. He merely gives its character in italics, as uſual in his *Prodromus*, to contraſt it with his own new ſpecies, and thereby indicates it not to be a native of the Weſt Indies.

3. L. *hexandra.* Willd. n. 4. Swartz. Ind. Occ. v. 1. 131.—Panicle nearly erect. Flowers alternate, cloſe-preſſed, hexandrous; their glumes fringed at the keel, roughiſh.—Native of watery places in the ſouthern part of Jamaica, where it was gathered by Browne and Swartz. *Stem* two feet high, nearly erect, with hairy joints, but otherwiſe ſmooth, ſlender, leafy, ſometimes a little branched. *Leaves* rather glaucous, lanceolate, acute, ſpreading, ſtriated, rough at the edges. *Stipula* pointed, beardleſs. *Panicle* nearly erect, the branches a little ſpreading in every direction, by no means inclined to droop; the flowering part zigzag. *Flowers* alternate, crowded, erect, ſo as to approach the ſtalk, purpliſh, ſmaller than in *L. oryzoides*, but otherwiſe much like that ſpecies. The *ſtamens* however are conſtantly ſix. It flowers in the ſpring.

4. L. *auſtralis.* Brown Prodr. Nov. Holl. v. 1. 210.—Panicle looſe, with alternate branches; the lower ones divided. Flowers hexandrous; their glumes fringed at the keel, finely toothed at their ribs; ſmooth at the ſides.—Gathered by Mr. R. Brown at Port Jackſon, as well as in the tropical part of New Holland. He thinks it ſo near the laſt, as to be doubtful of their being diſtinct.

5. L. *lenticularis.* Michaux. Boreali-Amer. v. 1. 39.—Branches of the panicle nearly ſolitary, their ſecondary diviſions ſpiked. Flowers imbricated; their glumes orbicular, fringed. Native of marſhes in the country of the Illinois. Michaux deſcribes the *glumes* as rather large, lenticular, and conſpicuouſly fringed.

6 L. *monandra.* Willd. n. 3. Swartz. Ind. Occ. v. 1. 130.—Panicle ſimple, looſe. Spikes remote, lax. Flowers monandrous, ſomewhat imbricated, ſingle-ranked; their glumes roundiſh, ſmooth.—Obſerved by Swartz in chalky groves in Jamaica, flowering in the ſpring. He deſcribes it as very different from all the other ſpecies known to him. The *ſtem* is two or three feet high. *Leaves* long, upright and ſmooth, of a bright green. *Flowers* the ſize of Millet-ſeed, green, ſmooth, with only one ſtamen in each.

Leersia, Hedw. Fund. v. 2. 88. See Encalypta.

LEERSTRAND, in *Geography*, a town of Norway; eight miles S.W. of Drontheim.

LEES, the groſſeſt and thickeſt parts of wine, oil, and other liquors; or the ſediment found at the bottom of the veſſel. See Lixivium.

The word comes from the French *lie*, and that either from *limus, mud*, or from *Lyæus*, one of the ſurnames of Bacchus; or, according to Du-Cange, from *lia*, a corrupt Latin word, ſignifying the ſame.

A kind of potaſh, called *cineres clavellati*, is made with the lees of wine burnt, and prepared, uſed by dyers, &c. which ought to be remembered by people troubled with the ſtone, &c.

The vinegar-makers make a great trade of the lees of wine dried, and made into cakes, after having ſqueezed out the remains of the liquor in preſſes.

All the various kinds of lees, ſuch as thoſe of wine, beer, ale, oil, &c. may be made uſe of as manures, when they can be had in ſufficient quantities for the purpoſe.

LEESBURG, in *Geography*, a poſt-town of Maryland, in America; 25 miles from Frederickſtown.—Alſo, a poſt-town of Virginia, and the capital of Loudon county; ſituated ſix miles S.W. of the Patowmac, and containing about 60 houſes, a court-houſe, and gaol; 20 miles from Saliſbury.

LEESNITZ, or Legnica, a town of Sileſia, in the principality of Oppeln; 18 miles S.S.E. of Oppeln.

LEET, James, in *Biography*, was born at Geneva in 1560. He received the early part of his education at home; ſtudied law under Cujas, and, through the influence of Beza, obtained a chair in that faculty at Geneva in 1583. In the following year he was made counſellor of ſtate, and the zeal and intelligence which he diſplayed in the public ſervice cauſed him four times to be appointed to the ſyndicate, or firſt office in government, and likewiſe to be employed in important negociations; one of which was with Elizabeth, queen of England, in order to obtain ſome pecuniary aid for the republic. He was employed upon a ſimilar miſſion to Holland, and obtained a ſum from the prince of Orange, and the ſtates general, upon the condition that the academy of Geneva ſhould be re-eſtabliſhed. Leet ſupported this meaſure, and delivered an oration "De ſtudiis liberalibus publica ob mala non deſerendis." He was employed to defend the rights of the republic with his pen againſt the duke of Savoy; and he vindicated the Proteſtant religion in oppoſition to the attacks of the preſident Favre. He was author of various publications in juriſprudence, and in polite literature. He died in 1611, highly reſpected by his countrymen as the model of a good citizen and magiſtrate. His principal works are, "Theſaurus Juris Romani, continens rariora meliorum Interpretum Opuſcula;" five vols. folio. His other publications conſiſt chiefly of poems, orations, pieces of biography, &c. Gen. Biog.

Leet, *Leta*, (*leth*, *læthe*, *lathe*,) is a term of Saxon original, and ſeems to be no other than the court of the *lathe*; as the county court is the court of the county. For in ancient times the counties were ſub-divided into *lathes*, rapes, wapentakes, hundreds, and the like; and the ſheriff twice a year performed his *tourn* or perambulation, for the execution of juſtice through the county. Afterwards the power of holding courts was granted to divers great men, within certain diſtricts. And from hence, theſe courts, holden within particular parts of the county, have deſcended unto us without variation, under the name of the *leet*, *leth*, or *lathe* courts. See Court-*leet*, and Frank-*pledge*.

LEETAKOO, in *Geography*, a large and populous city of Africa, the capital of a tribe of Kaffers called "Booſhooanas," and the reſidence of their chief, ſituated at the diſtance of 16 days' journey beyond the Orange river in the direction of N.E. from the Cape of Good Hope. The palace of the chief, like the other houſes in the town, was built in a circular form, being about 16 feet in diameter. The lower part, to the height of four feet from the ground, was ſtone laid in clay, and wooden ſpars erected at certain diſtances. On the eaſt ſide of the circle, about the fourth part of the houſe was open, the other three-fourths entirely cloſed. A round pointed roof covered the whole in the form of a tent, well thatched with long reeds, or with the ſtraws of the holcus. From the centre to the back part of the houſe, a circular apartment is made off, with a narrow entrance into it, where the head of the family takes his nightly reſt; the other members of the family ſleep in the fore part, or between the large and ſmall circles of the houſe. All the houſes are encloſed with paliſades; and the ſpace between theſe and the dwelling ſerves for a granary, and ſtore for their grain and pulſe. Theſe granaries are conſtructed in the form of oil-jars, of baked clay, the capacity of each being at the leaſt 200 gallons; and they are ſupported on tripods, compoſed of the ſame material, which raiſe them about nine inches above the ground. They are covered with a round ſtraw roof erected on poles, and ſufficiently high to admit an opening into the jars, the upper edges of which are from five to ſix feet from the ground. Within and without the town are plantations of that ſpecies of Mimoſa, which conſtitutes the principal food of the camelopardalis. The city in its circumference is eſtimated as large as Cape Town, with all the gardens of Table valley; but it is impoſſible to aſcertain the number of houſes, by a general ſurvey, on account of the irregularity of the ſtreets, and lowneſs of the buildings; but they are ſuppoſed to amount to between two and three thouſand, of the ſame kind, but not ſo large, as that of the chief. The whole population, including men, women, and children, were eſtimated at between ten and fifteen thouſand perſons. The ſituation of Leetakoo was calculated to be S. lat. 26° 30′, and E. long. 27°.

LEEUWE, or Leeuwen, a town of France, in the department of the Dyle, called by the Flemings "Sout. Leeuwe," ſituated on the river Geeta, in the midſt of a moraſs; formerly a place of ſtrength, to which perſons condemned to baniſhment were ſent; 20 miles W.N.W. of Liege.

LEEWARD Islands, ſo called in contradiſtinction to the *Windward iſlands*, an appellation given to them from their ſituation in a voyage from the ports of Spain to Carthagena, or Porto Bello. Thoſe that lie to leeward extend from Porto Rico to Dominica.

LEFCA, a town of the iſland of Cyprus, the reſidence of an aga and a cadi. It was one of the four cities that bore the name of Arſinöe; 28 miles N.E. of Baffa.

LEFIKEH, a town of Aſiatic Turkey, in the province of Natolia; near it is a convent, which is the reſidence of a Greek biſhop; 16 miles S.E. of Iſnik.

LEFOOGA, one of the Friendly iſlands in the South ſea, near Hapaee; in reality forming with three other iſlands, *viz.* Haanno, Foa, and Hoolaiva, a group, diſtinguiſhed by the general name Hapaee. Each is about ſix or ſeven miles long, and of a ſimilar height and appearance. Lefooga is joined by a reef to Foa. Lefooga is in ſeveral reſpects ſuperior to Annamooka; its plantations were more numerous and more extenſive. Towards the ſea, indeed, on the eaſt ſide, the country is ſtill waſte, which is probably owing to its ſandy ſoil, as it is much lower than Annamooka and its ſurrounding iſles. Towards the middle of the iſland the ſoil was better, and here were exhibited conſpicuous marks of conſiderable population, and improved cultivation. The plantations were regularly fenced, and the fences, in a manner running parallel to each other, formed ſpacious public roads, not only convenient but ornamental. Large ſpots were covered with the paper mulberry trees, and the plantations were generally ſtocked with ſuch roots and fruits as are the natural produce of the iſland. At one place was a houſe, four or five times as large as thoſe of the common ſort, to which, it is ſuppoſed, the people reſort on certain public occaſions. Near the landing place was obſerved a mount, two or three feet high, covered with gravel; and upon it ſtood four or five ſmall huts, in which, as the natives ſaid, the bodies of ſome of their principal people had been interred. This iſland is not above ſeven miles long; and, in ſome places, not above two or three broad. The reef on the eaſt ſide, conſiderably broad, and on which the ſea breaks with great violence, is a continuation of that which joins Leſcoga to Foa, not above half a mile diſtant; and at low water, the natives can walk on this reef, which is then partly dry, from one iſland to the other. The ſhore itſelf is either a coral rock, ſix or ſeven feet high, or a ſandy beach; but higher than the weſt ſide, which is not, in general, more than three or four feet from the level of the ſea, with a ſandy beach through its whole length. S. lat. 19° 47′. E. long. 185° 40′.

LEFT, a town on the N. coaſt of the iſland of Kiſhma; 12 miles N.E. of Kiſhma.

LEG, CRUS, in *Anatomy*. See EXTREMITIES.

LEG, *Amputation of*, in *Surgery*. See AMPUTATION.

LEG, *Diſlocations of*. See LUXATION.

LEG, *Fractures of*. See FRACTURE.

LEG, *Mortification of*. See GANGRENE.

LEGACY, LEGATUM, in the *Civil Law*, a donation by teſtament; anſwering to what in common law is called a *demiſe*; and the perſon to whom it is given is ſtyled the *legatee*.

Legacy is uſually defined ſome particular thing given by a laſt will and teſtament; becauſe if a man thus diſpoſe, or transfer his whole eſtate to another, it is called *hæreditas*; and he to whom it is given is called *hæres*. Though in common law, the diſtinction is this: that he to whom all a man's lands and hereditaments deſcend by right of blood, is *hæres natus*; the other, to whom it is bequeathed, is called *hæres factus*.

This bequeſt transfers an inchoate property to the legatee; but the legacy is not perfect without the aſſent of the executor; for if I have a *general* or *pecuniary* legacy of 100*l.*, or a *ſpecific* one of a piece of plate, I cannot in either caſe take it without the conſent of the executor. (Co. Litt. 111. Aleyn. 39) For all the chattels are veſted in him; and it is his buſineſs firſt of all to ſee whether there is a ſufficient fund left to pay the debts of the teſtator; the rule of equity being, that a man muſt be juſt before he is permitted to be generous, or, as Bracton expreſſes the ſenſe of our ancient law, "de bonis defuncti primo deducenda ſunt ea quæ ſunt neceſſitatis, et poſtea quæ ſunt utilitatis, et ultimo quæ ſunt voluntatis." In caſe of a deficiency of aſſets, all the general legacies muſt abate in due proportion to pay the debts; but a ſpecific legacy, as of a piece of plate, a horſe, or the like, is not at all to abate, unleſs there be not ſufficient without it. A ſpecific legacy is where, by the aſſent of the executor, the property of the legacy will veſt. As in one way there is a benefit to a ſpecific legatee, that he ſhall not contribute, in caſe of a deficiency, to pay all the legacies, ſo there is a hazard in another way: *e. g.* if ſuch ſpecific legacy, being a *leaſe*, be evicted; or being *goods*, be loſt or burnt; or, being a *debt*, be loſt by the inſolvency of the debtor; in all theſe caſes, ſuch ſpecific legatee ſhall have no contribution from the other legatees, and therefore ſhall pay none towards them. (1 P. Wms. 539.) Hence a queſtion of ſome importance has ariſen, *viz.* whether a legacy was *ſpecific* or *general?* A ſpecific legacy (ſtrictly ſpeaking) is ſaid by lord Hardwicke (1 Atk. 417.) to be a bequeſt of a particular chattel, *ſpecifically* deſcribed and diſtinguiſhed from all other things of the ſame kind; or, in other words, an *individual* legacy. Money, ſufficiently diſtinguiſhed, may be the ſubject of a ſpecific bequeſt; as money in a certain cheſt, or a particular debt. So a bequeſt of a part of a ſpecific chattel may be equally a ſpecific legacy. (3 Atk. 103.) Legatees, however, of ſpecific parts, though not liable to abatement with *general* legatees, muſt nevertheleſs abate proportionably among themſelves, upon deficiency of the ſpecific thing bequeathed (2 Vez. 563.); or on deficiency of the general aſſets for payment of debts. (1 P. Wms. 403.) And ſpecific legatees of diſtinct chattels ſhall abate proportionably on a deficiency of general aſſets. 2 P. Wms. 382.

On the other hand, a mere bequeſt of *quantity*, whether of money or any other chattel, is a *general* legacy; as of a quantity of ſtock (1 Atk. 414. 2 Vez. 562.); and where the teſtator has not ſuch ſtock at his death, it is a direction to the executor to procure ſo much ſtock for the legatee. (Talb. 227.) The purpoſe to which a *general* legacy is to be applied will not alter its nature. (1 P. Wms. 539.) Perſonal annuities given by will are general legacies. 3 Atk. 693. 2 Vez. 417. See EXECUTOR and LEGATEE.

With regard to the payment of legacies, if a legacy when due be paid to the father of an infant, it is no good payment: and the executor may be obliged in equity to pay it again; and where any legacy is bequeathed to a feme-covert, paying it to her alone is not ſufficient, without her huſband. 1 Vern. 261.

Executors are not bound to pay a legacy without ſecurity to refund; and if ſentence be given for a legacy in the eccleſiaſtical court, a prohibition lies, unleſs they take ſecurity to refund. (2 Ventr. 358.) As an executor is not obliged to pay a legacy without ſecurity given him by the legatee to refund, if there are debts, becauſe the legacy is not due till the debts are paid, and a man muſt be juſt before he is charitable; ſo in ſome caſes, the executor may be compelled to give ſecurity to the legatee for the payment of his legacy; as where a teſtator bequeathed 1000*l.* to a perſon, to be paid at the age of 21, and appointed an executor, and died; afterwards the legatee exhibited a bill in equity againſt the executor, ſetting forth that he had waſted the eſtate, and praying that he might give ſecurity to pay the legacy when it ſhould become due: and it was ordered accordingly. 1 Ch. Rep. 136. 257.

If a legacy is deviſed, and no certain time of payment is fixed, and the legatee is an infant, he ſhall have intereſt for the legacy from the expiration of one year after the teſtator's death; but if the legatee be of full age, he ſhall have no intereſt but from the time of the demand of his legacy. Where a legacy is payable at a day certain, it muſt be paid with intereſt from that day. (2 Salk. 415. 2 Nelſ. Abr. 1114.) (See *Lapſed* LEGACY, and INTEREST *on Legacies.*) It has been decreed in equity, that although a legacy be deviſed to be paid at a certain time, it carries intereſt only from ſuch time as it is demanded. A perſon having a legacy, of which he was unapprized till a great while afterwards, when the executors publiſhed it in the gazette; here chancery would allow no intereſt, but the bare debt. Pr. Chanc. 11.

As legacies are gratuities, and no duties, action will not lie at common law for the recovery of a legacy; but remedy muſt be had in the chancery or ſpiritual court. (Allen. 38.) If a legacy is payable out of the land, or its profits, an action on the caſe lies at common law; but the uſual remedy is in chancery. (Sid. 44. 3 Salk. 223.) By chief juſtice Holt, a legatee may maintain an action of debt at common law, againſt the owner of land, out of which the legacy is to be paid; and ſince the ſtatute of Wills gives him a right by conſequence he ſhall have an action at law to recover it. (2 Salk. 415.) It is now, however, poſitively determined, that no action at law lies for a legacy; the court of chancery being the proper juriſdiction for that purpoſe. (5 Term Rep. 690.) An executor being in equity conſidered as a truſtee for the legatee, with reſpect to his legacy, and as a truſtee in certain caſes for the next of kin as to the undiſpoſed ſurplus, we hence derive the true ground of equitable juriſdiction in enforcing the payment of a legacy, or diſtribution of perſonal eſtate. (1 P. Wms. 544. 575.) The ſpiritual court adminiſters redreſs in the caſe of ſubtraction, or the withholding or detaining of legacies, as a conſequential part of their teſtamentary juriſdiction; but in this caſe the courts of equity exerciſe a concurrent juriſdiction, as incident to ſome other ſpecies of relief required; and as it is beneath the dignity of the king's courts to be merely auxiliary to other inferior juriſdictions, the cauſe, when once brought there, receives there alſo its full determination. Blackſt. Com. b. iii.

Where a teſtator gives his debtor a legacy greater than his debt, it ſhall be taken in ſatisfaction of it; though where the legacy is leſs, it ſhall not be deemed as any part thereof; but as a legacy is a gift, the legatee has been ſometimes decreed both. (1 Salk. 155. 2 Salk. 508.) If a greater legacy is given by a codicil, to the ſame perſon that was legatee in the will, it ſhall not be a ſatisfaction, unleſs ſo expreſſed. (1 P. Wms. 424.) Although a legacy is a gift, yet upon a principle already ſtated, that a man ſhould be juſt before he is kind, a bequeſt of the ſame ſum by the debtor to the creditor, ſhall be applied in ſatisfaction of the debt. (Pr. Ch. 394. 2 P. Wms. 130. 3 P. Wms. 354. 1 Vez. 123. 4 P. Wms. 616.) Yet when there are aſſets, and the teſtator intended both, it may be as good equity to conſider him as both juſt and kind; and the conſtruction of making a gift a ſatisfaction has, in many caſes, been carried too far. (1 Salk. 155. 1 P. Wms. 410. 2 P. Wms. 616.) Caſes of this nature depend upon circumſtances; and where a legacy has been decreed to go in ſatisfaction of a debt, it muſt be grounded upon ſome evidence, or at leaſt a ſtrong preſumption that the teſtator did ſo intend it; for a court of equity ought not to hinder a man from diſpoſing of his own as he pleaſes; and therefore the intention of the party is to be the rule; for where he ſays he gives a legacy, the court cannot contradict him, and ſay he pays a debt. (Treat. Eq. lib. 4. p. 1. c. 1. §. 5.) Jacob's Law Dict. by Tomlins, tit. *Legacy*. See WILL.

LEGACY, *Contingent*. See CONTINGENT.

LEGACIES, *Intereſt on*. See INTEREST.

LEGACY, *Lapſed*, is where the legatee dies before the teſtator, in which caſe the legacy ſhall ſink into the reſiduum. (See CONTINGENT.) A legacy *to be paid*, when he attains the age of 21 years, is a *veſted* legacy; an intereſt which commences *in preſenti*, although it be *ſolvendum in futuro*; and if the legatee dies before that age, his repreſentatives ſhall receive it out of the teſtator's perſonal eſtate, at the ſame time it would have become payable, in caſe the legatee had lived. But if ſuch legacies be charged upon a real eſtate, they ſhall lapſe for the benefit of the heir; for in regard to deviſes affecting lands, the eccleſiaſtical court hath no concurrent juriſdiction with chancery. And yet where 1000*l.* was given by a perſon out of lands to his daughter, and intereſt to be computed from his death, &c. here, though the legatee died before the time appointed for paying the ſame, it was held the legacy ſhould be raiſed notwithſtanding, and the lord chancellor ſaid that this legacy was a veſted one. (2 Vern. Rep. 617. Barnardiſt. 328. 330.) In caſe of a veſted legacy, due immediately, and charged on land, or money in the funds, which yield an immediate profit, intereſt ſhall be payable thereon from the teſtator's death. See INTEREST *on Legacies*, and LEGATEE.

LEGACIES, *Subtraction of*. See SUBTRACTION.

LEGACY, in an *Eccleſiaſtical Senſe*, was a ſoul-ſeat, a bequeſt to the church, or accuſtomed mortuary; which was to hold good, even though the teſtament itſelf were declared null and invalid.

LEGAL *Column*, *Œconomy*, *Subrogation*, and *Tutorage*. See the ſeveral ſubſtantives.

LEGALIS, HOMO, in *Law*, a perſon who ſtands *rectus in curia*, not outlawed, nor excommunicated, nor infamous. And in this ſenſe are thoſe words ſo often uſed, *probi et legales homines*.

Hence, alſo, legality is taken for the condition of ſuch a man.

LEGATA, fem. LEGATE, plu. in *Muſic*. See NOTES and SYNCOPATION.

LEGATE, a prelate, whom the pope ſends as ambaſſador to any ſovereign prince.

The term legate comes from *legatus*, which Varro derives from *legere, to chooſe*; and others from *legare, delegare, to ſend*, or *delegate*. Wicquefort.

There are three kinds of legates; *viz.* legates *a latere*, legates *de latere*, and legates *by office*, or *legati nati*.

Of theſe, the moſt conſiderable are the legates *a latere*; ſuch are thoſe whom the pope commiſſions to take his place in councils; who are thus called, becauſe the pope never gives this office to any but his greateſt favourites and confidants, who are always at his ſide, *a latere*; that is, to the cardinals.

A legate *a latere* may confer benefices without mandate, legitimate baſtards to hold offices, and has a croſs carried before him as the enſign of his authority.

The legates *de latere* are thoſe who, not being cardinals, are yet entruſted with an apoſtolical legation.

LEGATES *by office*, *legati nati*, are thoſe who have not any particular legation given them; but who, by virtue of their dignity, and place in the church, become legates. Such are the archbiſhop of Rheims and Arles. But the authority of theſe legates is much inferior to that of the legates *a latere*. The power of a legate is ſometimes alſo given without the title; ſome of the nuncios are inveſted with it.

LEGATE, *Court of the*. See COURT.

LEGATEE, or LEGATARY, in *Law*, the perſon to whom a legacy is left; which every perſon is capable of being, unleſs particularly diſabled by the common law or ſtatutes, as traitors, and ſome others.

Formerly Papiſts were under ſeveral diſabilities, both as to purchaſing lands, and taking them by deſcent or deviſe; but in theſe more liberal and enlightened times, ſuch diſabilities are removed, and Papiſts, or as we ſhould rather call them, Roman Catholics, are rendered capable of purchaſing and deviſing lands, and having them by deſcent, purchaſe, and deviſe, on taking the oath preſcribed to them by 18 Geo. III. c. 60.

It ſeems to be neceſſary that a legatee ſhould be born at the time of making the will; and it has been adjudged, where legacies were given to a man's children, that thoſe who were born afterwards ſhould have no ſhare. (1 Bulſt. 153.) But it has been otherwiſe decreed in chancery. (1 Ch. Rep. 301.) The general rule with regard to legatees is, that if the legatee die before the teſtator, or before the condition upon which the legacy is given be performed, or before it be veſted in intereſt, the legacy is extinguiſhed. (Treat. Eq. lib. 4. part 1. c. 2.) But a bequeſt may be ſo ſpecially framed as to prevent the death of the legatee from occaſioning a lapſe of the legacy. (3 Atk. 572. 580.) Nor will the rule extend to a legacy bequeathed to two or more; for though, by the civil law, there is no ſurvivorſhip among legatees, yet it is ſettled that a legacy to two or more is not extinguiſhed by the death of one, but will veſt in the ſurvivor. (Gilb. Rep. 137. 2 Atk. 220.) Nor will the rule extend to thoſe caſes where the legacy is given over after the death of the firſt legatee; for in ſuch caſes the legatee in remainder ſhall have it immediately. (1 And. 33. pl. 82. 2 Vern. 207. 1 P. Wms. 274. 3 P. Wms. 113. Pr. Ch. 37. Moſch. 319. 2 Vern. 378.) Nor will a legacy lapſe by the death of the legatee in the teſtator's life-time, if he be to take as a truſtee; (See 1 Vez. 140; and 2 Vern. 468.) in which latter caſe the point is doubted. When a father makes proviſion for a child by his will, and afterwards gives to ſuch child, being a daughter, a portion in marriage; or, being a ſon, a ſum of money to eſtabliſh him in life, (ſuch portion or ſum being in amount equal to, or greater than, the legacy,) it is an implied ademption of the legacy; for the law will not intend that the father deſigned two portions to one child. (1 P. Wms. 680. 2 Ch. Rep. 85. 2 Vern. 115. 257. 2 Atk. 216. Ambl. 325. 2 Bro. C.R. 307.) But this implication will not ariſe, if the proviſion by the will be by bequeſt of the reſidue (2 Atk. 216.); or if the proviſion in the father's life-time be ſubject to a contingency (2 Atk. 491.), or be not *ejuſdem generis* with the legacy (1 Bro. C. R. 425.); or if the teſtator be a ſtranger (2 Atk. 516. 2 Bro. C. R. 499.); and ſuch implication is always liable to be refuted by evidence. 2 Atk. 516. 2 Bro. C. R. 165. 519.

A bequeſt of money to one at the age of 21, or day of marriage, without ſaying, *to be paid* at that time, the legatee dying before the term, is a lapſed legacy; and ſo it would have been, if the deviſe had been to her when ſhe ſhall marry, or when a ſon ſhall come of age, and they die before. (Godb. 182. 2 Vent. 342.) But a deviſe of a ſum of money, *to be paid* at the day of marriage, or age of 21 years, if the legatee die before either of theſe events happen, ſhall go to the legatee's adminiſtrator, becauſe the legatee had a preſent intereſt, though the time of payment was not yet come; and it is a charge on the perſonal eſtate which was in being at the teſtator's death; and if it were diſcharged by this accident, then it would be for the benefit of the executor, which was never intended by the teſtator. (2 Vent. 366. 2 Lev. 207.) If the legacy be to the legatee *payable to him* at a certain age, and the legatee die before he attain that age, this is a veſted and tranſmiſſable intereſt in the legatee. (2 Vent. 342. 2 Ch. Car. 155. 3 Vern. 462. 3 P. Wms. 138. 2 Vern. 199.) Otherwiſe, if the legacy be to the legatee generally, at or when he attains ſuch age. (2 Vent. 342. 2 Salk. 415. 1 Eq. Ab. 259, 6. 1 Bro. C. R. 119.) If the legacy be made to carry intereſt, though the words *to be paid* or *payable* are omitted, it is a veſted and tranſmiſſable intereſt. (2 Vent. 342. 2 Ch. Car. 155. 2 Vern. 673. 2 Vez. 263. 3 Atk. 645.) So if the bequeſt be to A. for life, and after the death of A. to B., the bequeſt to B. is veſted upon the death of the teſtator, and will not lapſe by the death of B. in the life-time of A. (2 Vent. 347. 1 P. Wms. 566. 2 Vern. 378. Ambl. 167. 1 Bro. C. R. 119. 181.) A perſon by will, &c. gives a portion or legacy to a child, payable at 21 years of age, out of a real and perſonal eſtate, and the child dies before the legacy becomes payable; in that caſe, ſo much of it as the perſonal eſtate will pay, ſhall go to the child's executors and adminiſtrators; but ſo far as the legacy is charged upon the land, it is ſaid that it ſhall ſink. (2 P. Wms. 613.) Jacob's Law Dict. by Tomlins, vol. ii. See LEGACY and EXECUTOR.

LEGATEE, *Reſiduary*, is the perſon to whom the reſiduum, or what remains of an eſtate, after funeral charges, debts, and legacies, are paid, is left by will. See EXECUTOR.

LEGATINE CONSTITUTIONS. See CONSTITUTIONS.

LEGATIS TENEMENTIS. See TENEMENTIS.

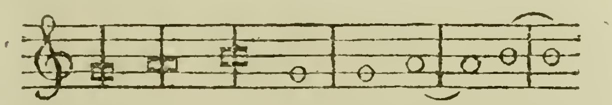
LEGATO, *Ital.*, in *Muſic*, bound, tied, connected, ſuſtained.

LEGATORY, or LEGATARY, a term uſed in ſpeaking of the government of the ancient Romans: Auguſtus divided the provinces of the empire into conſular, legatory, and preſidial. The legatory provinces were thoſe of which the emperor himſelf was governor, but where he did not reſide, but adminiſtered affairs by his lieutenant, or legatus.

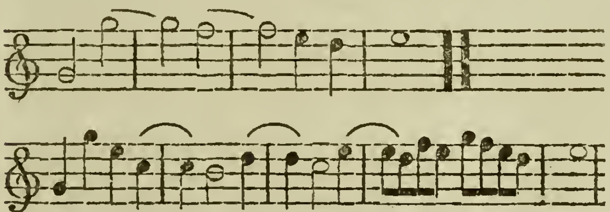
LEGATORY, or *Legatary*, the ſame with legatee of a will. (27 Eliz. cap. 16.) It is derived from the Latin *legatarius*.

LEGATUM, in an *Eccleſiaſtical Senſe*, was a legacy given to the church, or accuſtomed mortuary.

LEGATURA, *Ital.*, in *Modern Muſic*, implies a binding note; as when the bar goes through the middle of the note, or two notes of the ſame kind are tied together by a ſemicirle.



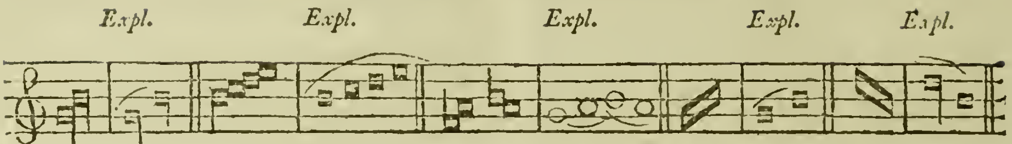
The bar is ſeldom drawn through the head of the note, except in alla breve time: notes of leſs value are linked together by a ſemicircle, or tie. See SYNCOPATION.



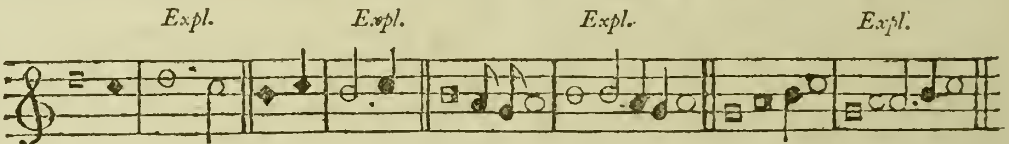
In old church muſic, before the uſe of bars, and when the notes were chiefly ſquare, ſuch as the *large*, the *long*, and the *breve*, the laws of ligature conſtituted the moſt difficult and tedious part of a practical muſician's ſtudy. The value or length of a note, in the fifteenth or ſixteenth centuries, was changed, by the poſition of the tail being upwards or downwards, on the left or right ſide of a note, or in the middle of a meaſure. In the muſic-ſchool at Oxford, a ſet of maſs books is preſerved, containing compoſitions by Dr. Fairfax, Taverner, and other old Engliſh maſters, of Henry VII.'s and Henry VIII.'s time, that are totally unintelligible, except to very curious and ſtudious profeſſors, who have made the ligatures their peculiar ſtudy.

Ligatures were uſed by the early contrapuntiſts, in vocal muſic, to connect ſuch ſounds as were to be ſuſtained or ſung to one ſyllable, as is done at preſent by ſemicircular marks, called binding-notes, and ſlurs. The rules for theſe are too numerous and vague to be explained without a long diſcuſſion, and their powers will perhaps be beſt comprehended in the examples of ancient compoſition of different parts, in partition, and barred. However, it may be uſeful to thoſe who undertake to decypher ſuch muſic, to remember that all the ſquare notes in ligature, with tails on the *right hand*, *deſcending*, are longs; on the *left*, breves; and all with tails on the *left*, *aſcending*, are ſemibreves. Square notes, without tails, in ligature, are in general breves, though there are ſome exceptions to this rule, for which it is not eaſy to aſſign a cauſe.

Ligatures explained by equivalent Notes.



Black, ſquare, and lozenge notes, when mixed with white, are diminiſhed one-fourth of the value they have, while open or vacuate. And a note partially black, or demivacuate, is ſtruck twice, in the following proportions:



LEGATUS, among the Romans, a military officer, who commanded as deputy of the chief general.

Of theſe there were divers kinds; *viz.* a legatus in the army under the imperator, or general, anſwering to our lieutenant-general; and a legatus in the provinces, under the proconſul, or governor.

When any conſiderable perſon among the Roman citizens had occaſion to paſs through any of the provinces, the ſenate gave him the title of legatus; that is, of envoy from the ſenate, to the end that he might be received with the greater reſpect, and that the cities and towns, through which he travelled, might defray his expences. This they called a *free legation, libera legatio;* becauſe the perſon was not incumbered with any truſt, and might lay it aſide as ſoon as he pleaſed.

LEGAU, in *Geography*, a town of Bavaria, belonging to the abbey of Kempten; 2 miles N.N.W. of Kempten.

LE'GE', a town of France, in the department of the Lower Loire, and chief place of a canton, in the diſtrict of Nantes; 21 miles S. of Nantes. The place contains 2893, and the canton 5227 inhabitants, on a territory of 167½ kiliometres, in 5 communes.

LEGEM, *ad communem, entry*, in *Law*, a writ of entry which lies where tenant for term of life, or for term of another's life, or by courteſy, &c. aliens and dies, when he in the reverſion ſhall have his writ againſt any one that is in poſſeſſion of the land. New Nat. Brev. 461. See ENTRY.

LEGEM *facere*, to make law, or oath; and *legem habere*, is to be capable of giving evidence upon oath. "Minor non habet legem." Selden's Notes on Heng. 133.

LEGEND, LEGENDA, was originally a book uſed in the old Romiſh churches, containing the leſſons that were to be read in divine ſervice.

Hence alſo the lives of ſaints and martyrs came to be called legends; becauſe the chapters were read out of them at matins, and in the refectories of the religious houſes.

The firſt Greek legend which is known is that of Simon Metaphraſtus of the tenth century, who writ the lives of ſaints adapted to every day of the year. The firſt Latin legend is,

LEGEND, *Golden*, or a collection of the lives of the ſaints, compiled by James de Varaſe, better known by his Latin name of J de Voragine, vicar-general of the Dominicans, and afterwards archbiſhop of Genoa, who died in 1298.

It was received into the church with great applauſe, which it maintained for two hundred years; but, in effect, it is ſo full of ridiculous and romantic accounts, that the Romaniſts themſelves are now generally aſhamed of it. The word legend itſelf is, on that account, come into diſrepute.

LEGEND is alſo uſed by authors to ſignify the words or letters engraven about the margins, &c. of coins.

Thus, the legend of a French crown is, SIT NOMEN DOMINI BENEDICTVM; that of a moidore, IN HOC SIGNO VINCES: on thoſe of the laſt emperors of Conſtantinople, we find IESVS CHRISTVS BASILEVS BASILEON, IHS XPS NICA, IESVS CHRISTVS VINCIT. For a brief hiſtorical account of the legend on coins, and the method of engraving it; ſee the article COINAGE

LEGEND is alſo applied to the inſcription of medals, which ſerve to explain the figures or devices thereof.

In ſtrictneſs, the legend differs from the inſcription; this laſt properly ſignifying words placed on the reverſe of a medal, in lieu of figures. When the letters or words of a medal occupy the field, they are called an *inſcription;* but when they run round the margin, on either ſide of the figures, or on the exergue, they are denominated a *legend.*

It ſeems as if the ancients had intended their medals ſhould ſerve both as images, and as emblems: the one for the common people, and the other for perſons of taſte and parts; the images to repreſent the faces of princes; and emblems to repreſent their virtues, and great actions: ſo that the legend is to be looked on as the ſoul of the medal, and the figures as the body.

Every medal has properly two legends; that on the front, and that on the reverſe. The firſt generally ſerves only to diſtinguiſh the perſon by his name, titles, offices, &c.; the latter is intended to expreſs his noble and virtuous ſentiments, his good deeds, and the advantages the public has reaped by him. This, however, does not hold univerſally; for ſometimes we find the titles ſhared between both ſides, and ſometimes alſo the legend.

In the medals of cities and provinces, as the head is uſually the genius of the place, or, at leaſt, ſome deity adored there, the legend is the name of the city, province, or deity, or of both together; and the reverſe is ſome ſymbol of the city, &c. frequently without a legend; ſometimes with that of one of its magiſtrates.

The ordinary ſubjects of legends are, the virtues of princes, the honours they have received, conſecrations, ſignal events, public monuments, deities, public vows, privileges, &c.

Legends and inſcriptions of medals are either in Latin or Greek. The Greek character, conſiſting of majuſcule, or capital letters, appears uniform on all the medals; no change or alteration being found in confronting the ſeveral characters; though it is certain there was in the ordinary uſe and pronunciation. All we obſerve on medals is ſometimes a mixture of Greek and Latin letters.

Upon many of the coins ſtruck in the Greek cities, we find the legend of the obverſe in Latin, while that of the reverſe is in Greek. The reaſon of this, ſuggeſted by Mr. Pinkerton, ſeems to be, that the magiſtrate of ſuch country mint, not having any portrait of the emperor, ſent to Rome for one, which was returned in a die ready cut with the legend. To this a reverſe was made by the Greek artiſts; the magiſtrate inclining to ſave the expence of cutting another obverſe. This opinion is confirmed by the fact, that few or no coins occur with Latin legends on the reverſe, and Greek in front: beſides, the dies are haſtily done, and after the manner of different mints.

The character was preſerved in all its beauty till the time of Gallienus.

From the time of Conſtantine, and for the ſpace of five hundred years, the Latin tongue was alone uſed in the legends of medals, even in thoſe ſtruck at Conſtantinople. Michael began the firſt, whoſe legend was in Greek; and from his time the language, as well as the characters, began to alter for the worſe. See MEDAL.

The Latin legends are all read from the left to the right; but the legends of ſome Greek medals are wrote the contrary way, from the right to the left. The letters of the circular legends are commonly placed with the bottoms inward; but ſometimes with the bottoms towards the edge.

It is obſerved by Mr. Pinkerton in his excellent "Eſſay on Medals," that the legends of the earlieſt Greek writers are very brief, rehearſing only the initials of the city or prince: as ΑΘΕ, money of Athens; ΣΥ, money of Sybaſis, &c.: afterwards, Α, money of Archelaus, king of Macedon; Φ, money of Philip. Afterwards the name was put at full length; as ΦΙΛΙΠΠΟΥ, coin of Philip of Macedon; and Alexander the Great has the title of ΒΑΣΙΛΕΥΣ, or king. In proceſs of time, the Syrian and Egyptian kings, the ſucceſſors of Alexander, added ſome epithet of praiſe, as ΕΥΕΡΓΕΤΗΣ, beneficent, or the like, together with the year of their era in which the coin was ſtruck. In this ſtate the Greek coinage remained, till the Roman empire ſwallowed up all the kingdoms and cities which uſed that language. "Under the dominion of the Roman emperors, the Greek mint aſſumed more of the Roman form, then more perfect, as to legend, than their own. On the face they gave the Roman emperor or empreſs, with their titles; the founder of their city, with his name; the ſenate or the people of Rome, who had protected them; or the ideal buſt of the genius of their city: while the reverſe preſents us with a legend indicative of the name of the magiſtrate under whom the money was ſtruck; of ſome treaty entered into with one or more neighbouring ſtates; of the river or deity repreſented, and the like." The Greek artiſts, as the ſame ingenious writer obſerves, to their honour, even when their mint was depreſſed by the Roman power, ſeldom or never explain by their legends the reverſes of their coins; commonly, and almoſt univerſally, putting for the legend of the reverſe the name of the city, frequently adding that of the magiſtrate. The ſymbols of their deities were familiar, and needed no explanatory legend. Perſonifications, rare on Greek coins, except of their cities and rivers, are commonly accompanied by an illuſtrative legend; and the Egyptian coins have alſo ſimilar legends. The Grecian coins of cities ſeldom expreſs more in their legends than the name of the town, generally contracted till the Roman times. When the Roman empire ſwallowed up the Grecian, the legends on Greek coins were as much diſtinguiſhed by their length as they had before been by their brevity. The titles of the emperors are tranſlated from the Latin as literally as poſſible, as ΑΥΤΟΚΡΑΤΩΡ for Imperator, ΚΑΙΣΑΡ for Cæſar, &c. In order to expreſs Latin ſounds, the Greeks were often obliged to put their own enunciation of the ſame word, in characters very different from the Latin, as ΚΟΥΙΝΤΟΣ for Quintus. On the reverſes of Greek imperial coins, the legends are very various; ſuch are ΚΟΙΝΟΝ, the community; ΟΜΟΝΟΙΑ, the alliance; ΑΥΤΟΝΟΜΟΙ, living by their own laws; ΕΛΕΥΘΕΡΟΙ, free, &c. Inſcriptions filling the whole field of the reverſe are not ſo common in Greek coins. Some few, however, occur, particularly upon thoſe of Smyrna. Our author further obſerves, that the noted S. C., ſignifying *Senatus Conſulto*, by decree of the ſenate, and expreſſing the authority of the ſenate of Rome for ſtriking any coin, never appears upon thoſe of gold or ſilver, in the ſame ſenſe as when it occurs upon thoſe of braſs. He ſuggeſts, that the Roman emperors had the ſole diſpoſal of the gold and ſilver coinage, but left that of braſs entirely to the ſenate. The Roman legends reſembled, for ſome time, in their ſimplicity thoſe of the Greeks; but gradually proceeded to more explicit length, and in time from elegant and ſimple veracity degenerated into flattery. This remark is ſtrictly applicable to the legends of the obverſe; whereas thoſe of the reverſe began to flatter as ſoon as there was a prince, "an idol upon whoſe altar to burn the cloudy perfume." Clemency and moderation are found upon the medals of Tiberius, and equivalent virtues upon thoſe of Titus. The reverſes of the firſt imperial coins are not, however, wanting in adulation; which, ſays Mr. Pinkerton, is not to be wondered at, "when we conſider that Virgil and Horace, men of the moſt enlightened minds, whatever may be decided of their claim to genius, were yet capable of even forgetting the ſound dignity of poetry, and proſtituting it at the bloody footſtool of a tyrant. What Monteſquieu ſays of the Engliſh, that if ever they were reduced to be ſlaves, they would prove the meaneſt of all ſlaves, was exemplified in the conduct of the ancient Romans." In proceſs of time, "a ſucceſſion of virtuous monarchs authorized the reverſes ſo foreign to moſt of their predeceſſors. S. P. Q. R. OPTIMO PRINCIPI, ſo common on the coins of Trajan, is not flattery, but glory. All the virtues appear without impropriety on the medals of Nerva, Trajan, Hadrian, and the Antonini. But in proportion as the empire declined, the more common are flattery and groſs impropriety in the legends of the Roman coin." The Greeks alſo even ſurpaſſed the Romans themſelves in the baſe art of adulation. "The legends of the Roman imperial coins are deſervedly celebrated for their beautiful ſimplicity, and emphatic brevity, ſo as to be accounted models of the kind." Mr. Pinkerton has ſubjoined ſeveral inſtances to this purpoſe. The compaſs of a coin is ſo ſmall, that artiſts have always been obliged to uſe abbreviations in the legends and inſcriptions. This circumſtance occaſions conſiderable difficulty in interpreting them. Mr. Pinkerton, in the appendix to his valuable work, has furniſhed an explanation of thoſe that moſt commonly occur.

Dr. Coningham, in his Tract on Modern Medals, cited by Mr. Pinkerton, enumerates five kinds of improper legends on modern medals; *viz.* poetical, impious, jingling, intricate, and abuſive. Of the firſt kind he inſtances a French medal, ſtruck on occaſion of ſome advantage over the Engliſh at ſea, MATURATE FUGAM, which, he ſays, reminds us of Virgil and not of the action. Mr. Addiſon, in his third dialogue on medals, vindicates poetical legends. But Mr. Pinkerton juſtly obſerves, that medals are certainly meant to be hiſtorical, and that poetry has in it ſomething alien to hiſtory and deſtructive of its reality; and he adds, that the ancients do not afford a ſingle example of a poetical legend on a medal. Of the jingling kind of legend is that of Francis Morozini, Jupiter with an urn, GAUDET FLUMINE NON FULMINE, and alſo that of Richard Cromwell, NON DEFICIENT OLIVÆ, confounding the olive-tree with Oliver Cromwell. To the intricate kind is referred the chronological coin of Guſtavus Adolphus, king of Sweden, CHRIſTVS DVX ERGO TRIVMPHVS, the numeral letters making the year 1632. Of the abuſive kind is the Dutch medal on their ſtadtholder, QUANTUM MUTATUS AB ILLO, and Louis XIV., VIRO IMMORTALI CUM FISTULA IN ANO. To theſe long legends might be added. The ancient legends are remarkable for ſimple brevity and energy; and the beſt of the modern claſs are formed on their model.

For further particulars we refer to Mr. Pinkerton's "Eſſay on Medals," 1789, vol. i. § 12. vol. ii. § 18. See MEDALS.

LEGER, ANTHONY, in *Biography*, a learned Piedmonteſe, was born in the year 1594. After purſuing his ſtudies at Geneva, he entered the work of the miniſtry, the duties of which he diſcharged many years with great punctuality. In 1628 he went to Conſtantinople, as chaplain to the ambaſſador of the States-general in the Ottoman Porte, and there became intimately connected with the celebrated Cyrillus. On his return to Piedmont in 1637, he was choſen paſtor of the church of St. John, a ſituation which he retained ſix years; during which he diſplayed much talent and learning in the defence of the Proteſtant faith. In 1643, he was proſcribed by the duke of Savoy, and was obliged to ſeek for ſafety in Geneva, where he not only exerciſed his profeſſion, but was elected profeſſor of the Oriental languages, and of divinity. He died in 1661, at the age of ſixty-ſeven. He publiſhed at Geneva an edition of the New Teſtament in two vols. 4to. in the Greek and French languages. He left a ſon of the ſame name, celebrated as an eloquent preacher, who died in 1719, and after his death five volumes of his ſermons were publiſhed. Moreri.

LEGER, JOHN, nephew of Anthony, was born in 1615, and educated for the profeſſion of the miniſtry, was choſen to ſucceed his uncle when he was obliged to fly for his life to Geneva. In this church he continued his labours till the year 1655, when the perſecution of the WALDENSES (which ſee) broke out with great rage. Leger made his eſcape to France, and from thence he tranſmitted an affecting account of the cruelties perpetrated on the Proteſtants to Oliver Cromwell, who ſent an extraordinary ambaſſador to the duke of Savoy, to remonſtrate with him on thoſe proceedings. Leger likewiſe applied to the king of France, and to the Proteſtant ſtates, ſoliciting their interference in behalf of his countrymen. A treaty, now agreed on, ſeemed to promiſe future ſecurity and toleration. Leger was at the ſigning of this treaty, which being very ſhortly broke, and new oppreſſions and perſecutions let looſe on the inhabitants of the vallies, he was appointed deputy general to ſeveral Proteſtant powers to ſolicit again their mediation with the duke of Savoy. This gave ſuch offence to the court of Turin, that Leger was proclaimed a traitor, and his houſe ordered to be razed to the ground. He now became paſtor of the Walloon church at Leyden, and in 1664 he viſited ſecretly the vallies, carrying with him conſiderable ſums of money collected from the Proteſtants, for the relief of his perſecuted countrymen. He was author of a valuable hiſtory of the Evangelical churches in the vallies of Piedmont. Moreri.

LEGEREMENT, *Fr.* in *Muſic*, indicates a movement more lively than gay; it is the mean between gay and quick, anſwering nearly to *vivace* in Italian.

LEGER-LINE is uſed to ſignify a line added to the ſtaff of five lines, when the aſcending and deſcending notes run very high or very low. We often meet with ſeveral of theſe lines both above and below the ſtaff.

LEGGE, GEORGE, in *Biography*, baron of Dartmouth, and an eminent naval commander, was born about the year 1647. The family derive their origin from Italy, but have for ſeveral centuries been reſident in this country. Thomas Legge, from whom George deſcended, was lord mayor of London in the years 1346 and 1353. The ſubject of this article, being intended early for the ſea-ſervice, was brought up under admiral Spragge, and at the age of twenty obtained the command of a ſhip. In 1673 he was appointed governor of Portſmouth, maſter of the horſe, and held an office under the duke of York. In 1682 he was raiſed to the peerage, and in the following year was ſent to raze the fortifications of Tangiers. By James II. he was appointed maſter of the horſe, general of the ordnance, and conſtable of the Tower. He had alſo the command of the fleet at the time of the prince of Orange's invaſion, but was prevented from acting by contrary winds. At the revolution he was committed to the Tower, where he died in 1691, at the age of 44. Engliſh Peerage.

LEGGE, ELIZABETH, the eldeſt daughter of Edward Legge, eſq. an anceſtor of the preceding, and alſo of the preſent earl of Dartmouth, was born in 1580. She ſtudied the ancient and ſeveral of the modern languages, and had a fine poetical genius, but became blind by much ſtudy. She lived chiefly in Ireland, and died unmarried at the age of 105. Her family were remarkable for longevity. One of her brothers lived to 109, one ſiſter to be more than 100, and another died in her 112th year.

LEGGIADRO, LEGGIADRAMENTE, *Ital.* in *Muſic*, implies *gaily*, *lively*, *briſkly*. See ALLEGRO.

LEGHEA, in *Geography*, a town of Nubia; 16 miles W.N.W. of Dongola. N. lat. 20° 6′. E. long. 29° 30′.

LEGHENICH, or LECKENICH. See LECKNICH.

LEGHI, a town of Arabia, in the province of Yemen; 56 miles E.N.E. of Aden.

LEGHORN, or LIVORNO, a conſiderable, regular, well-built, fortified and flouriſhing city and ſea-port of Etruria (formerly the grand duchy of Tuſcany); and, on account of its canals, called the *New Venice*. It is a biſhop's ſee, defended by a caſtle, two ſmall forts, and a broad ditch, ſituated in a marſhy and inſalubrious territory on the ſea-coaſt, oppoſite to Malora, a ſmall iſland, and diſtant about 14 miles from Piſa. The canals that interſect its environs have rendered the marſh fit for culture, and in ſome degree contributed to its greater ſalubrity. Its ſtreets are ſtraight, uniform, and ſpacious; and many of the buildings are not inelegant. The town is of a ſquare form, and 12,790 feet in circuit, and contains a ducal palace, many religious houſes, and from 40,000 to 50,000 inhabitants, of whom 15,000 are Jews, who live in a particular part of the city, are allowed a handſome ſynagogue, and though ſubject to heavy impoſts, are in a proſperous ſtate, as the greateſt part of the commerce of the city is conducted by them. The Greeks and Armenians have each their peculiar church, moſt of them acknowledging the pope's ſupremacy. The free Turks and Turkiſh ſlaves have a moſque; but the Proteſtants are not permitted the public exerciſe of their religion, the Engliſh excepted, who are allowed to have a chaplain, becauſe of all foreign nations they are the beſt cuſtomers to Leghorn. Other Proteſtants make uſe of chaplains of ſhips. Proſtitutes are reſtricted to a particular quarter, conſiſting of ſeveral ſtreets. The heavy taxes payable to the government, from various neceſſaries brought into the town from the continent, together with monopolies of brandy, tobacco, and ſalt, render proviſions and other commodities very dear. The inhabitants carry on an extenſive trade, which is much promoted by the freedom of the port; every bale of goods, great or ſmall, paying only two piaſtres or ſcudi. The harbour, which is ſecure, is divided into the outward and inward; the latter ſerving merely for four or five gallies, which are ſometimes ſent to ſea againſt the corſairs, under the command of a knight of St. Stephen. In the open place before this harbour ſtands a marble ſtatue of Ferdinand I., and at the angles of the pedeſtal are four brazen ſtatues, of a gigantic ſize, repreſenting four Turkiſh ſlaves in chains. The outward harbour is formed by a mole or dam, 600 common paces in length, well paved, with a partition in the middle, that ſerves to ſhelter the ſhipping from the wind on one ſide. The mole ſerves alſo for an occaſional promenade. The harbour has not ſufficient water for large ſhips, which therefore lie out of the mole, moored to pillars and large iron rings; and they are thus ſafer than if they were in the harbour. The road, for a mile or two, is good, but not ſecure againſt winds and corſairs. Without the harbour on a rock is a light-houſe, where 30 burning lamps are contained in one lanthorn, and on the ſhore, not far from it, is a lazaretto, where quarantine is performed by perſons and goods, that come from ſuſpected places. (See LAZARETTO.) The power of the inquiſition at Leghorn extends only to Roman Catholics, and comprehends only caſes of religion. In June 1796 the French took poſſeſſion of this town, and deſtroyed the fortifications. N. lat. 43° 32′. E. long. 10° 16′.

The principal monies of account at Leghorn are the lira and pezza; the former being chiefly uſed in domeſtic trade, and the latter in foreign commerce and exchanges. Each of theſe is divided into 20 parts called ſoldi, and the ſoldo is ſubdivided into 12 parts called denari. The pezza of Leghorn was originally the Spaniſh peſo, and hence it is called the pezza de otto reali by the Italians, the piaſtre by the French, and dollars by the Engliſh. This pezza, valued in ſilver, is worth 46¾*d.* ſterling, but valued in gold, it is worth 49*d.* ſterling; which is the intrinſic par between London and Leghorn, as bills in the latter place are paid in gold. The lira is either the lira moneta lunga, or the lira moneta buona; the former being an imaginary money of account, and the latter the real money of all Tuſcany. The lira is, as in Florence, according to the rate of coinage, worth about 8*d.*

Accounts on Leghorn are underſtood to be in moneta lunga; and 23 lira moneta buona are worth 24 lira moneta lunga. The lira has its ſubdiviſions. The pezza is worth 5¾ lira moneta buona, or ſix lira moneta lunga. Foreign bills in Leghorn, unleſs particularly excepted, muſt be paid in gold, that is, in Florence ſequins or ruſponi, by weight. No days of grace are allowed; but bills are paid three times a week at the "Stanza," a place where merchants meet on Mondays, Wedneſdays, and Fridays. In freighting ſhips at Leghorn, 20 cheſts of fruit, 26 barrels of oil, 44 barrels of wine, 5600lb. of alum, are reckoned one laſt, or two tons. See Kelly's Univerſal Cambiſt. vol. i.

LEGINAU, a town of Pruſſia, in the province of Ermeland; 22 miles S.E. Heilſberg.

LEGION, a kind of regiment, or body of forces, of a number of which the Roman armies were chiefly compoſed.

The word comes from the Latin *legere, to chooſe;* becauſe when the legions were raiſed they made choice of ſuch of their youths as were the moſt proper to bear arms.

The number of ſoldiers and officers of which the legion conſiſted, was different at different times: but it is impoſſible to determine the preciſe time and manner of their alteration. In the time of Romulus, the inſtitutor of this corps, each legion contained three thouſand foot, and three hundred equites, or horſe: theſe were divided into three bodies, which make as many orders of battle; each body conſiſting of ten companies, or manipules, ranged at ſome diſtance from each other, though in the ſame front. Each body had two general officers to command it, called *tribunes;* and each manipule, two centurions.

Under the conſuls, the legion conſiſted of four thouſand, or four thouſand two hundred foot ſoldiers, who made four bodies, commanded by a conſul, or one of his lieutenants; and each legion had its ſhare of cavalry, which was three hundred horſe.

About the year of Rome 412, it was compoſed of five thouſand foot; which was the number of a legion during Julius Cæſar's wars with the Gauls. Under Auguſtus, each legion conſiſted of ſix thouſand one hundred foot, and ſeven hundred and twenty-ſix horſe. After his death, they were reduced to five thouſand foot and ſix hundred horſe. Under Tiberius, the legion was raiſed again to ſix thouſand foot and ſix hundred horſe. In the time of Septimius Severus, the legion was compoſed of five thouſand men: under the following emperors, it was the ſame as it had been under Auguſtus.

In the time of Marius, thoſe four diviſions of the legion which had taken place under the conſuls, were united into one, and augmented; and cohorts were appointed from five to ſix hundred men, each under the command of a tribune. Each cohort conſiſted of three companies of manipules, each manipule of two centuries, and the legion was divided into ten cohorts, who made as many diſtinct battalions, diſpoſed in three lines; ſo that the legion, then, conſiſted of ſix thouſand men.

Iſidore tells us, that the legion conſiſted of ſix thouſand men, and was divided into ſixty centuries, thirty manipules, twelve cohorts, and two hundred troops. According to the French academy, the legion conſiſted of ſix thouſand foot, and ſeven hundred and twenty-five horſe. The legion conſiſted of four ſorts of ſoldiers, who differed in their age, arms, and names: they were called *Velites*, *Haſtati*, *Principes*, and *Triarii*. (See ARMS.) Till the deſtruction at Carthage, theſe were citizens of Rome, but after the Social War, the freedom of the city was granted to other towns in Italy, and legionary troops were raiſed which were called Roman, becauſe as they ſhared the privilege of Roman citizens, they were incorporated in the republic.

The legions were by far the moſt conſiderable part of the Roman army; their number, in the time of Auguſtus, was thirty-three; they were compoſed wholly of Roman citizens. The allies formed a body of auxiliary forces. See the ſequel of this article.

The ſtandard borne by the legions was various; at firſt, a wolf, in honour of that which ſuckled Romulus; afterwards an hog; by reaſon, ſays Feſtus, war is only undertaken with a view to peace, which was concluded by ſacrificing a hog. Sometimes they bore the minotaur, to remind their generals, that their deſigns were to be kept ſecret, and inacceſſible as the minotaur in the labyrinth. They alſo bore a horſe, a boar, &c. Pliny tells us, that Marius was the firſt who changed all theſe ſtandards into eagles. See EAGLE.

The different legions were diſtinguiſhed, according to the order in which they were raiſed, into firſt, ſecond, and third, &c. by the names of the emperors who formed them into legio Auguſta, Claudia, Flavia, Trajana, &c. by the provinces where they had ſerved, as legio Parthica, Macedonica, &c. and by ſome famous exploit or diſplay of valour.

We ſhall here ſubjoin ſome further particulars relating to the conſtitution and military ſervices of the imperial legion. It was compoſed of infantry and cavalry. The heavy-armed infantry, which compoſed its principal ſtrength, was divided into ten cohorts (ſee COHORT), and fifty-five companies, under the orders of a correſpondent number of tribunes and centurions. The firſt cohort, which always claimed the poſt of honour, and the cuſtody of the eagle, was formed of 1105 ſoldiers, the moſt approved for valour and fidelity. The remaining nine cohorts conſiſted each of 555, and the whole body of legionary infantry amounted to 6100 men. Their arms were uniform, and admirably adapted to the ſervice which they were required to perform; they conſiſted of an open helmet, with a lofty creſt, a breaſt-plate, and coat of mail; greaves on their legs; and an ample buckler on their left arm. The buckler was of an oblong and concave figure, four feet in length, and two and a half in breadth, formed of a light wood, covered with a bull's hide, and ſtrongly guarded with plates of braſs. Beſides a lighter ſpear, the legionary ſoldier graſped in his right hand the formidable *pilum* (which ſee); and as ſoon as he had darted this from his hand, he drew his ſword, and ruſhed forward to cloſe with the enemy. His ſword was a ſhort well-tempered Spaniſh blade, that carried a double edge, and was alike adapted to the purpoſe of puſhing or ſtriking; but the ſoldier was always inſtructed to prefer the former uſe of his weapon, as his own body remained leſs expoſed, while he inflicted a more dangerous wound on his adverſary. See Veget. de Re Mil. l. ii. c. 1. Lipſius de Militia Romana. l. iii. c. 2—7.

The legion was uſually drawn up eight deep; and the regular diſtance of three feet was left between the files as well as ranks.

The cavalry, which was neceſſary for perfecting the force of the legion, was divided into ten troops or ſquadrons: the firſt, as the companion of the firſt cohort, conſiſted of 132 men; whilſt each of the other nine amounted only to 66. The entire eſtabliſhment formed a regiment, according to the modern expreſſion, of 726 horſe, naturally connected with its reſpective legion, but occaſionally ſeparated to act in the line, and to compoſe a part of the wings of the army. The cavalry of the emperors was not compoſed, like that of the ancient republic, of the nobleſt youths of Rome and Italy, who, by performing their military ſervice on horſeback, prepared themſelves for the offices of ſenator and conſul; and ſolicited, by deeds of valour, the future ſuffrages of their countrymen. Since the alteration of manners and government, the moſt wealthy of the equeſtrian order were engaged in the adminiſtration of juſtice and of the revenue; and whenever they embraced the profeſſion of arms, they were immediately intruſted with a troop of horſe, or a cohort of foot. Trajan and Adrian formed their cavalry from the ſame provinces, and the ſame claſs of their ſubjects, which recruited the ranks of the legion. The horſes were bred, for the moſt part, in Spain or Cappadocia. The arms of the Roman troopers conſiſted in a helmet, an oblong ſhield, light boots, and a coat of mail. A javelin, and a long broadſword, were their principal weapons of offence. The uſe of lances and of iron maces they ſeem to have borrowed from the barbarians. Conſiderable levies were regularly made by the Romans among the provincials: and many dependent princes and communities, diſperſed round the frontiers, were permitted, for a while, to hold their freedom and ſecurity by the tenure of military ſervice. Even ſelect troops of hoſtile barbarians were compelled or perſuaded to conſume their valour in remote climates, and for the benefit of the ſtate. All theſe were included under the general name of *auxiliaries*; and their number was ſeldom inferior to that of the legions themſelves. By this inſtitution each legion, to which a certain proportion of auxiliaries was allotted, contained within itſelf every ſpecies of lighter troops, and of miſſile weapons; and was capable of encountering every nation, with the advantages of its reſpective arms and diſcipline. Nor was the legion deſtitute of what, in modern language, would be ſtyled a train of artillery. It conſiſted in ten military engines of the largeſt, and 55 of a ſmaller ſize; but all of which, either in an oblique or horizontal manner, diſcharged ſtones and darts with irreſiſtible violence.

The camp of a Roman legion preſented the appearance of a fortified city. See the deſcription of it under CAMP. In their march, the legionaries carried their arms, and alſo kitchen furniture, inſtruments of fortification, and proviſion for many days. Thus laden, they advanced by a regular ſtep, to which they were trained, near twenty miles in about ſix hours. On the appearance of an enemy, they threw aſide their baggage; and by eaſy and rapid evolutions converted the column of march into an order of battle. The ſlingers and archers ſkirmiſhed in the front; the auxiliaries formed the firſt line, and were ſeconded or ſuſtained by the ſtrength of the legions: the cavalry covered the flanks, and the military engines were placed in the rear.

As to the number of the legions, we may compute, that the legion, which was itſelf a body of 6831 Romans, might, with its attendant auxiliaries, amount to about 12,500 men. The peace eſtabliſhment of Adrian and his ſucceſſors was compoſed of no leſs than 30 of theſe formidable brigades; and moſt probably formed a ſtanding force of 375,000 men. As to the poſition of the legions, they were encamped on the banks of the great rivers, and along the frontiers of the barbarians. As their ſtations were, for the moſt part, fixed and permanent, the troops may be conſidered as diſtributed in the following manner. Three legions were ſufficient for Britain. The principal ſtrength lay upon the Rhine and Danube, and conſiſted of ſixteen legions, in the following proportions: two in the Lower and three in the Upper Germany; one in Rhætia, one in Noricum, four in Pannonia, three in Mœſia, and two in Dacia. The defence of the Euphrates was entruſted to eight legions, ſix of which were planted in Syria, and the other two in Cappadocia. A ſingle legion maintained the domeſtic tranquillity of each of the large provinces of Egypt, Africa, and Spain. Italy was not left deſtitute of a military force. About 20,000 choſen ſoldiers, diſtinguiſhed by the titles of "City Cohorts" and "Prætorian Guards," watched over the ſafety of the monarch and the capital.

Under Conſtantine and his ſucceſſors, the legions were very conſiderably reduced. When *ſeven* legions, with ſome auxiliaries, defended the city of Amida againſt the Perſians, the total garriſon, with the inhabitants of both ſexes and the peaſants of the deſerted country, did not exceed the number of 20,000 perſons. Hence we may infer, that the conſtitution of the legionary troops, to which they partly owed their valour and diſcipline, was diſſolved by Conſtantine; and that the bands of Roman infantry, which ſtill aſſumed the ſame names and the ſame honours, conſiſted only of 1000 or 1500 men. Nevertheleſs, the ſucceſſors of Conſtantine indulged their love of oſtentation, by iſſuing their orders to 132 legions, inſcribed on the muſter-roll of their numerous armies. Under them the complete force of the military eſtabliſhment was computed at 645,000 ſoldiers. Gibbon's Decl. &c. Rom. Emp. vol. i. and iii.

Legion, *Square, legio quadrata*, was a legion conſiſting of four thouſand men.

Legionum, *Domeſticus*. See Domesticus.

Legion, *Thundering*. See Thundering.

Legion, *Theban*, is a name given by ſome authors to a legion of Roman ſoldiers, who reſolving not to ſacrifice to idols, ſuffered martyrdom under the emperors Diocleſian and Maximilian, about the year of Chriſt 297. But the whole account of them ſeems to be fabulous.

LEGISLATOR, Làwgiver, a perſon who frames the laws of a kingdom or ſtate founded by him.

The principal ancient legiſtators are—Moſes, legiſlator of the Hebrews; Mercurius Triſmegiſtus, and Bocchyris, of the Egyptians; Italus, of the Œnotrians; Theſeus, Draco, and Solon, of the Athenians; Zoroaſter, of the Bactrians; Charondas, of the Cappadocians; and Charondas, or Phaleas, of the Carthaginians: Androdamas, of the Chalcidians; Eudoxus, of the Cnidians; Phido, of the Corinthians; Minos, of the Cretans; Pythagoras, of the Crotoniates, and moſt of the cities of the Græcia Major; Parmenides and Zeno, of Elea, in Lucania; Xamolxis, of the Getæ; Phoroneus, of the Greeks; Bacchus, of the Indians; Saturn, of Italy; Macarius, of the iſle of Leſbos; Zaleucus, of the Locrians; Nicodorus Athleta, of the city of Mutina; Hippodamia, of Miletus; Charondas, of Rheggio; Lycurgus, of the Lacedæmonians; Archytas, of Tarentum; Philolaus, of the Thebans.

At Rome the people were in a great meaſure their own legiſlators; though Solon may be ſaid, in ſome ſenſe, to have been their legiſlator, as the decemviri, who were created for the making of laws, borrowed a great number from thoſe of Solon.

With us the legiſlative power is lodged in the king, lords, and commons aſſembled in *parliament;* which ſee.

LEGITIMATE Child, a child born in lawful wedlock, or within a competent time afterwards. "Pater eſt quem nuptiæ demonſtrant" is the rule of the civil law; and this holds with the civilians, whether the nuptials happen before, or after, the birth of the child. With us in England the rule is approved; for the nuptials muſt be precedent to the birth. See Bastard.

Legitimate *Delivery*. See Delivery and Labour.

Legitimate *Tertian*. See Fever.

LEGITIMATION, an act by which natural or illegitimate children are rendered legitimate. See Bastard, &c.

By the French law, the father and mother, by marrying, render their children, begotten before marriage, legitimate; and this is called *legitimatio per ſubſequens matrimonium*.

The right of legitimation was a thing unknown to princes till the time of Conſtantine; but, ſince his time, has been exercifed by moſt of them. The Greek emperors invented ſeveral kinds of legitimation.

Anaſtaſius put it in the power of the father to legitimate his natural children by a bare adoption, provided he had no legitimate children. But Juſtin, by his conſtitution, and Juſtinian, by his Novel 74, aboliſhed this legitimation, as fearing the too eaſy acceſs to legitimation ſhould encourage concubinage.

In lieu of this, he eſtabliſhed a way of legitimation by the emperor's letters. This rendered baſtards capable of attaining to honours, and even of ſucceeding to inheritances, provided the perſons were legitimated with the conſent of their father and mother: which is agreeable to the canon law.

LEGIUNCARA, in *Geography*, a town of Naples, in the province of Bari; 21 miles N.W. of Matera.

LEGNA, Λεγνα, among the *Ancients*, a name given to the borders of the *toga* and *pallium*, that were on each hand; the extremities above and below being called *ora*.

LEGNANO, in *Geography*, a town of Italy, in the Veroneſe, on the Adige. The two diviſions of this place are connected by a drawbridge; the eaſtern part is called Porto, and the weſtern Legnano. It has ſeveral monaſteries, and a playhouſe. It is a populous town, and carries on a conſiderable trade by means of a corn-market held every Saturday, and a canal, running from Legnano to Oſtiglia, in the territory of Mantua. This was formed in 1762, between the Adige and the Po; and for the better ſecurity of its navigation, ſluices have been conſtructed at both its ends. The French took poſſeſſion of it in 1799; 22 miles E.S.E. of Verona. N. lat. 44 50′. E. long. 11 18′.

LEGNOTIS, in *Botany*, ſo named by profeſſor Swartz, from λεγνωτος, *fringed*, becauſe its petals are curiouſly laciniated and ſringed. Schreb. 357. Swartz. Prod. 84 Ind. Occ. v. 2. 969. Willd. Sp. Pl. v. 2. 1171. Mart. Mill. Dict. v. 3. (Caſſipourea; Aubl. Guian. v. 1. 528. t. 211. Juſſ. 432. Lamarck. Illuſtr. t 406.)—Claſs and order, *Polyandria Monogynia*. Nat. Ord. uncertain.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-ſhaped, four or five-cleft half way down, permanent; ſegments ovate, acute, erect. *Cor.* Petals four or five, longer than the calyx; claws ſlender, almoſt as long as the calyx, inſerted into the receptacle; borders ovate, very much fringed, villoſe. *Stam.* Filaments ſixteen or twenty, thread-ſhaped, equal, the length of the calyx, inſerted into the receptacle; anthers oblong, erect. *Piſt.* Germen ſuperior, roundiſh; ſtyle cylindrical, as long as the ſtamens; ſtigma capitate. *Peric.* Capſule large, elaſtic, triangular, with three cells and three valves. *Seeds* ſolitary, convex on one ſide, angulated on the other.

Obſ. Sometimes the number of cells and valves in the fruit is liable to variation

Eſſ. Ch. Capſule ſuperior, of three cells. Petals inſerted into the receptacle, very much fringed or torn.

1. *L. elliptica.* Swartz. Prod. 84. Willd. n. 1.—Leaves elliptical. Flowers on footſtalks.—A native of lofty mountains in Jamaica, flowering in May and June.—This is a *tree* from ten to thirty feet in height, having a ſmooth, brown *bark*. *Branches* determinately ſubdivided, erect, ſmooth; the ſmaller ones ſlightly compreſſed. *Leaves* on footſtalks, oppoſite, ovate-acuminate, or oblong-lanceolate, entire, ſcarcely nervoſe, ſmooth on both ſides, ſomewhat rigid; footſtalks ſhort, flat above, roundiſh underneath. *Stipulas* ſmall, ovate, membranaceous, downy, deciduous, between the footſtalks. *Flower-ſtalks* axillary, from three to five, ſimple; ſcarcely ſo long as the leaf-ſtalks, with a few minute ſcales at their baſe. *Capſule* ſmooth, white and downy within. *Flowers* fleſh-coloured, villoſe with white hairs.

Obſ. The downy ſtyle becomes elongated to twice the length of the calyx, after flowering.

2. *L. Caſſipourea.* Swartz. Prod. 84. Willd. n. 2. (Caſſipourea guianenſis; Aubl. Guian. t. 211.)—Leaves ovate. Flowers ſeſſile.—A native of moiſt places in Cayenne, flowering in January.

A middling-ſized *tree*, with a grey *bark*, about five feet in height, branched at the ſummit: *ſmaller branches* oppoſite, knotty. Its *wood* is white. *Leaves* iſſuing from the knobs, ovate, acute, ſmooth, entire, nearly ſeſſile, accompanied at their baſe by two very minute *ſtipulas*. *Flowers* axillary, in tufts, white, ſeſſile, ſituated between two oppoſite *bracteas*.

LEGOUZIA, Juſſ. 450, a name deſtined by M. Durande, for thoſe *Campanulæ* which have a nearly flat, or wheel-ſhaped corolla, and an oblong priſmatic capſule, which L'Heritier has likewiſe ſeparated from *Campanula*, under the appellation of *Priſmatocarpus*. See Campanula, ſection * *.

LEGRAD, in *Geography*, a town of Croatia, at the union of the Muner and Drave; 15 miles E. of Varaſdin. N. lat. 46° 30′. E. long. 16° 54′.

LE GRAND, a conſiderable river of America, in the ſtate of Ohio, which riſes within a few miles of the W. extremity of lake Erie, and purſuing a N.N.W. courſe for nearly 100 miles, and then turning to the W., diſcharges itſelf into lake Michigan. At its confluence with the lake it is about 250 yards wide.

LEGRENZI, Don Giovanni, in *Biography*, an able maſter and fertile Italian compoſer of the ſeventeenth century. He was a native of Bergamo, and produced for the different theatres of Venice fifteen operas between the years 1664 and 1684. He was likewiſe a favourite compoſer of cantatas, of which he publiſhed at Venice two books: one of ten, in 1674; and a ſecond book containing fourteen, in 1679. During his youth he was ſome time organiſt of Santa Maria Maggiore, in his native city of Bergamo; then maeſtro di cappella of the church Dello Spirito Santo, in Ferrara; and laſtly of St. Mark's at Venice, and maſter of the Conſervatorio de Mendicanti. He was the maſter likewiſe of the two great muſicians, Lotti and Franceſco Gaſparini, both of whom are ſaid to have reſided in his houſe at Venice in the year 1684, in order to receive his inſtructions. He was alſo an inſtrumental compoſer, and among the moſt early trios for two violins and a baſe, may be numbered, "Suonate per Chieſa," by Legrenzi, publiſhed at Venice, 1655; "Suonate da Chieſa e Camna," 1656; "Una muta di Suonate," 1664; and "Suonate a due Violini e Violone," 1677. Of this laſt work we are in poſſeſſion, and upon viewing it, find, that though Legrenzi has introduced into theſe pieces ſome of the beſt melody of the times, and there is conſiderable merit in the texture and contrivance of the parts, yet, for want of the knowledge of the bow, and the particular energies and expreſſions of the violin, theſe compoſitions have been long ſince juſtly ſuperſeded and effaced by ſuperior productions of the ſame kind.

LEGS, the lower extremities of the bodies of moſt animals, ſerving them for ſupport and motion. See Extremities. See alſo references under Leg.

Legs, in the *Manege*, the members that ſupport a horſe's body, and perform the motion when he goes. Of the four legs, the two before have ſeveral parts, each of which has a peculiar name: ſo that by the name of fore-legs, we commonly underſtand that part of the fore-quarters that extends from the hough to the paſtern-joint, and call it the *ſhank;* the part that correſponds to this in the hind-quarters is called the *inſtep*. But in common diſcourſe we confound the fore and the hind-quarters; and without any diſtinction ſay the *four legs* of a horſe. The French call a horſe *droit ſur les jambes, i. e.* ſtraight-membered, or ſtraight upon his legs, when the fore-part of the paſtern falls perpendicularly upon the coronet, and the ſhank and the paſtern are in a ſtraight line. See Straight and Long-*jointed*. See alſo Horse.

The horſeman's legs are likewiſe of ſingular concern in the manege, for the action of theſe given ſeaſonably, and with a little judgment, conſtitutes one of the principal aids, which conſiſts in approaching more or leſs with the calf of the leg to the horſe's flank, and in bearing it more or leſs off as there is occaſion. This aid a horſeman ought to give very nicely, in order to animate a horſe: and it is ſo much the finer, that it is hidden and private: for in ſtretching the ham he makes the horſe dread the ſpur, and this aid has as much effect as the ſpur itſelf. See Aid.

Legs, in *Rural Economy*, are the extremities that form the ſupport of animals. In horſes they ſhould have a due proportion to that of the body. The fore-legs are ſubject to many infirmities, as being the parts that ſuffer moſt, and are commonly the weakeſt. It is a mark of bad legs when they appear altogether ſtraight, or, as if they were of one piece. A horſe is ſaid to be ſtraight upon his legs, when from the knee to the fore-part of the coronet, the knees, ſhank, and coronet deſcend in a ſtraight or plumb-line, and the paſtern joint appears more, or at leaſt as much advanced as the reſt of the leg; ſuch legs are like thoſe of a goat, making a horſe apt to trip and fall; ſo that in time the paſtern is thruſt quite forward out of its place, and the horſe becomes lame and liable to ſtumble.

Horſes which are ſtraight upon their legs are quite contrary to thoſe that are long-jointed, that is, whoſe paſterns are ſo long and flexible, that in walking, they almoſt touch the ground with them. And it is a greater imperfection than the former, becauſe ſome remedy may be applied to them; but there can be none for theſe: beſides it is a ſign of little or no ſtrength, ſuch horſes not being fit for much fatigue. Some horſes, though they be long-jointed, do not bend their paſterns in walking; ſuch horſes gallop and run with greater eaſe to their riders than ſuch as are ſhort jointed.

In the language of the ſtable a horſe is ſaid to want the fifth leg when he is tired, and, bearing upon the bridle, lies heavy upon the rider's hand, ſo as to produce much fatigue.

Legs, *Arched*. See Arched.

Legs, *Compaſſes of three*. See Compasses.

Legs, *Hyperbolic*. See Hyperbolic.

Legs, *Long*, in *Natural Hiſtory*. See Tipula.

Legs *of the Martinets*, in a *Ship*, are uſed for thoſe ſmall ropes which are put through the bolt-ropes of the main and fore-ſail, in the leech of each. They are above a foot in length, and at either end are ſpliced into themſelves; they have alſo a ſmall eye, into which the martinets are faſtened by two nitches, and the end is ſeized into the ſtanding part of the martinets.

Legs *of a Triangle*.—When one ſide of a triangle is taken as a baſe, the other two are called legs. See Triangle.

LEGUEVIN, in *Geography*, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the diſtrict of Toulouſe; nine miles W. of it. The place contains 6689 and the canton 9549 inhabitants, on a territory of 117½ kiliometres, in 10 communes.

LEGUIGNO, a town of the duchy of Parma; 18 miles S.S E. of Parma.

LEGUME, in *Botany*, *legumen*, the pod proper to the pea or papilionaceous tribe of plants, thence termed, by ſome writers, leguminous. (See Leguminosæ.) The Latin word *legumen* is ſaid by the ancients themſelves to be derived from *lego*, to gather; becauſe ſuch fruits are gathered or plucked from their ſtalks, not reaped nor mown. They are termed in Engliſh *pulſe*.

This ſort of ſeed-veſſel is always ſolitary and ſimple, formed of two moſtly oblong, equal, more or leſs coriaceous, parallel valves, without any diſtinct longitudinal partition, and bearing the ſeeds along one of its margins only. The top is terminated by the remains of the ſtyle, which is ſhort, and placed obliquely, or out of the axis; the baſe is ſomewhat contracted towards the ſtalk. One of the margins, where the ſeeds are inſerted, is generally rather ſhorter than the other, and externally more furrowed, the other being often rounded or wavy, and more compreſſed. There are, however, various ſhapes of legumes, ſome of which are peculiar to certain genera, as the ſpiral ones of different ſpecies of *Medicago* and *Scorpiurus;* the cylindrical, priſmatic, or rhomboid ones of other genera. Such differ eſſentially from that kind of ſeed-veſſel termed a *ſiliqua*, or pod properly ſo called, in having the ſeeds at one margin only, whereas the *ſiliqua* has them arranged along both. The furrowed edge of the legume, which bears the ſeeds, is called the ſuture.

The capſules of *Helleborus*, and ſome other plants allied thereto, termed by Linnæus rather incorrectly *multiſiliquæ*, are juſtly indicated by Gærtner as approaching to the definition of legumes. They differ, however, in conſiſting each but of one valve, and in not being ſolitary or ſingle in each flower, except the inſtance of a few ſpecies of Larkſpur, *Delphinium*, which differ from the natural character of their genus, in having one inſtead of three germens and ſeed-veſſels; but analogy here teaches the true nature of the part in queſtion. We are, indeed, obliged to have recourſe to the ſame guide in a few papilionaceous genera, whoſe ſeed-veſſel, otherwiſe a true legume, contains but one ſeed, as in moſt ſpecies of *Trifolium*, or whoſe valves do not ſeparate, but become thickened and hard, as in *Pterocarpus*, or leathery, as in *Viminaria*.

When a legume is divided into ſeveral cells, it is either by an inflexion of its valves, as in *Aſtragalus* and *Mirbelia*, or by tranſverſe conſtrictions, as in *Vicia* and *Geniſta*, or even membranous tranſverſe partitions, as in *Securidaca* and *Caſſia*. Some, however, are ſtill more diſtinctly divided, ſeparating as they ripen into diſtinct joints, each of which contains a ſingle ſeed, and does not in general burſt till that ſeed forces its way by vegetating, as in *Hedyſarum*, *Scorpiurus*, and *Hippocrepis*. This latter kind of legume has lately been conſidered as a peculiar ſort of pericarp, and called *lomentum;* but the gradations leading to it are ſo imperceptible, that unleſs a multitude of other diſtinctions were made, we do not ſee the eligibility of this.

Several legumes are internally ſpongy, fleſhy, or pulpy, in which reſpects they vary greatly in the progreſs of their growth, as the bean (*Vicia Faba*), the Tamarind, the *Ceratonia*, the *Hymenæa*, &c.

Amid all the diverſities of ſtructure in this kind of pericarp, it is moſt difficult to admit as a legume the three-valved ſeed-veſſel of Gærtner's *Moringa;* our HYPERANTHERA.

LEGUMINOSÆ, a natural order of plants, ſo called from the nature of their fruit. (See LEGUME.) It is the 93d order of Juſſieu's ſyſtem, the 11th of his 14th claſs, and embraces the Linnæan *Papilionaceæ* and *Lomentaceæ*.

For the detailed character of Juſſieu's 14th claſs, ſee FICOIDEÆ. It has two cotyledons, many petals, and ſtamens inſerted into ſome part of the calyx.

The *Leguminoſæ* are thus defined.

Calyx of one leaf, variouſly divided. Corolla of many petals, rarely either wanting or monopetalous, inſerted into the upper part of the calyx, below its diviſions. Petals ſometimes five, rarely fewer, regular and nearly equal; but more frequently four, and irregular, all together imitating the ſhape of a butterfly, whence the term papilionaceous flower; of theſe the upper and outer one is the ſtandard, *vexillum*, half embracing the reſt, and moſtly exceeding them in dimenſions; the next two are the wings, *alæ*, which are lateral; the lower and innermoſt is the keel, *carina*, which is either ſimple or divided. Stamens ten, rarely more or fewer, inſerted into the calyx under the petals, their filaments ſometimes diſtinct, or ſlightly united at their baſe, or more frequently diadelphous, (ſee DIADELPHIA,) that is, conſiſting of nine united into a tube, which is ſlit lengthwiſe under the ſtandard, with a tenth applied cloſe to that fiſſure, or the whole are really monadelphous, the tube being undivided and decandrous; the anthers are diſtinct, often roundiſh and ſmall, ſometimes oblong and incumbent. Germen ſimple, ſuperior; ſtyle one; ſtigma undivided. Fruit in a few inſtances capſular, of one cell, with ſcarcely more than one ſeed, either of two valves, or not burſting at all; in moſt it is leguminous, as the name of the order implies, longiſh, of two valves, (of three in *Moringa*, or *Hyperanthera*, of four in one ſpecies of *Mimoſa*,) the ſeeds affixed to one of the lateral ſutures; ſometimes it is of a ſingle cell, with one ſeed or ſeveral, ſometimes of many cells ſeparated by tranſverſe partitions, each cell containing one ſeed, and all being occaſionally pulpy. In the polypetalous irregular genera the radicle of the *corculum* or embryo inclines towards the lobes, and there is no periſperm or *albumen;* in thoſe with more regular flowers the radicle is ſtraight, and there is a periſperm, or thickiſh membrane, enfolding the embryo; the lobes of the ſeed are moſtly changed into ſeminal leaves, according to the uſual mode of dicotyledonous vegetables, but ſometimes they remain diſtinct below the firſt leaves. The ſtem is either herbaceous, ſhrubby or arboreous, branched for the moſt part in an alternate manner. Leaves furniſhed with ſtipulas, alternate, in a very few inſtances imperfectly oppoſite, ſometimes ſimple, but oftener ternate, or fingered, or once or more pinnate. The flowers are variouſly diſpoſed.

The ſections are eleven.

1. Corolla regular. Legume of many cells, moſtly of two valves, with tranſverſe partitions, the ſeeds ſolitary in each cell. Stamens ſeparate. Theſe are trees or ſhrubs, with abruptly pinnate leaves. The ſection contains *Mimoſa*, *Gleditſia*, *Gymnocladus*, *Macrolobium* of Schreber, *Ceratonia*, *Tamarindus*, *Parkinſonia*, *Schotia* of Jacquin, and *Caſſia*.—To theſe may be added *Afzelia*, Smith Tranſ. of Linn. Soc. v. 4. 221.

2. Corolla regular. Legume of one cell, and two valves. Stamens ten, ſeparate.—Trees or ſhrubs, with abruptly pinnate leaves. (In *Hyperanthera* they have terminal leaflets, and the legume has three valves.)

This comprehends *Hyperanthera*, (*Moringa* of Juſſieu,) *Proſopis*, *Hæmatoxylum*, *Dimorpha* of Schreber, *Cubæa* of the ſame, *Adenanthera*, *Poinciana*, *Cæſalpinia* (the two laſt being really one genus) and *Guilandina*.

3. Corolla ſomewhat irregular. Stamens diſtinct, or only connected at their baſe. Legume of one cell and two valves.—Trees or ſhrubs, with leaves either abruptly pinnate, or merely conjugate, or quite ſimple.

Here are *Dipteryx* and *Dimorpha* of Schreber, with *Cynometra*, *Hymenæa* and *Bauhinia* of Linnæus, and *Ginannia* of the former. Juſſieu admits *Vouapa* of Aublet, which Schreber unites to *Outea* of the ſame author, his own *Macrolobium;* ſee ſect. 1.

4. Corolla irregular, papilionaceous. Stamens diſtinct, or rarely connected at their baſe. Legume moſtly of one cell, and two valves.—Trees or ſhrubs; their leaves either ſimple, or ternate, or pinnate, with an odd leaflet.

Juſſieu here enumerates only *Cercis*. *Rittera* of Schreber, *Anagyris*, *Sophora*, *Mullera*, and *Coublandia* of Aublet, the character of which laſt is very puzzling. But to this ſection belongs a numerous tribe of New Holland genera, eſtabliſhed by Dr. Smith, in the Annals of Botany, and in Tr. of Linn. Soc. v. 9. 245. Theſe are *Puttenæa*, *Aotus*, *Gompholobium*, *Chorozema*, *Davieſia*, *Viminaria* (though the legume of this laſt does not burſt), *Sphærolobium*, *Dillwynia*, *Mirbelia* (though the legume has two cells), and *Calliſ-*

tachya. To theſe, moreover, are to be added ſeveral genera from the new edition of Hort. Kew. v. 3; *Edwardſia, Ormoſia, Thermopſis, Virgilia* of Lamarck, *Cyclopia, Baptiſia, Podalyria, Podolobium, Oxylobium, Brachyſema, Burtonia, Jackſonia* (ſee the latter in its place), *Eutaxia, Sclerothamnus, Gaſtrolobium,* and *Euchilus.*

5. Corolla irregular, papilionaceous. Stamens ten, diadelphous. Legume of one cell and two valves.—Shrubs or herbs; their leaves ſimple or ternate, or rarely fingered; the ſtipulas ſometimes ſcarcely diſcernible, ſometimes conſpicuous, either attached to the bottom of the footſtalk, or diſtinct from it.

This ample ſection contains *Ulex, Aſpalathus, Borbonia, Liparia, Geniſta* (the latter including *Spartium* of Linnæus), *Cytiſus, Crotalaria, Lupinus, Ononis, Arachis, Anthyllis, Dalea, Pſoralea, Trifolium, Melilotus, Medicago, Trigonella, Lotus, Dolichos, Phaſeolus, Erythrina, Clitoria,* and *Glycine.*—Here are to be added *Platylobium, Boſſiæa* and *Poiretia* of Smith in Tr. of Linn. Soc. v. 9. 301, alſo *Butea* of Kœnig and Roxburg, and *Hallia* of Thunberg, with doubtleſs many more.

6. Corolla, Stamens, and Legume as in the laſt. Herbs or ſhrubs, or ſmall trees, whoſe leaves are pinnate with an odd leaflet. In a few the legume has two cells.

Abrus, Amorpha (remarkable for wanting both wings and keel), *Piſcidia, Robinia, Caragana, Aſtragalus, Phaca, Biſerrula, Colutea, Glycyrrhiza, Galega,* and *Indigofera.*

7. Cor. Stam. and Legume as in the two laſt.—Herbs, with pinnate, or conjugate, or ſometimes ſcarcely any, leaves, the common footſtalk ending in a tendril; ſtipulas diſtinct from the footſtalk.

Lathyrus, Piſum, Orobus, Vicia, Faba, Ervum, and *Cicer.*

8. Cor. and Stam. as in the three laſt. Legume compoſed of ſingle-ſeeded joints.—Herbs or ſhrubs, rarely trees; leaves ſimple or ternate, or more frequently pinnate with an odd one; ſtipulas diſtinct from the leaf-ſtalk.

Scorpiurus, Ornithopus, Hippocrepis, Coronilla, Hedyſarum, Æſchynomene, and *Diphyſa.* Here belongs *Smithia* of Ait. Hort. Kew. ed. 1.

9. Corolla as before. Stamens moſtly ten, diadelphous. Legume capſular, of one cell, often not burſting, with ſcarcely more than one ſeed.—Trees or ſhrubs; leaves generally pinnate with an odd one; ſtipulas diſtinct from the footſtalk, ſoon falling.

Dalbergia, Amerimnon of Browne's Jamaica, *Galedupa* of Lamarck, *Andira* of the ſame, *Geoffræa, Deguelia* of Lamarck, *Niſſolia, Dipteryx* of Schreber, *Acouroa* of Aublet, and *Pterocarpus,* are the genera claſſed here by Juſſieu, which have all a general affinity to each other.

10. Corolla irregular (ſometimes wanting). Stamens ten, diſtinct. Legume capſular, of one cell, generally not burſting, containing a ſingle ſeed.—Trees or ſhrubs; leaves either pinnate with an odd one, or ſimple; ſtipulas diſtinct from the footſtalk, ſoon falling.

Crudia of Schreber, *Detarium* of Juſſieu, *Copaifera,* and *Myroxylum.*—According to the definition of this ſection, *Viminaria* belongs to it; but is too unlike the reſt, and too cloſely allied in habit and character to the plants with which we have placed it in ſect. 4, to be ſeparated from them.

11. Juſſieu concludes here with four genera, termed by him "akin to the *leguminoſæ.*" Theſe are *Securidaca,* which ſeems to belong properly to ſect. 9, *Brownæa, Zygia* of Browne's Jamaica, and *Aruna* of Schreber.

It will eaſily be perceived that this arrangement requires much correction and reformation, in conſequence of diſcoveries ſubſequent to its publication. The whole order is ſo natural, that its ſubdiviſions are proportionably difficult to be deviſed, and the ſame may be ſaid of its generic diſtinctions. If Linnæus was obliged, by the laws of his artificial ſyſtem, to offer great violence to this order, as Juſſieu and others have not failed to obſerve, his claſs *Diadelphia* does honour to his penetration, and to the comprehenſive ſyſtematic powers of his mind.

LEGUMINOUS Flowers. See Flower.

Leguminous *Plants,* in *Gardening,* a term applied to all ſuch as are of the pulſe kind, as thoſe of the pea, bean, and other ſimilar deſcriptions.

LEHE, in *Geography,* a town of the duchy of Bremen; 32 miles N. of Bremen.

LEHEIM, a town of Heſſe-Darmſtadt; 8 miles W. of Darmſtadt.

LEHI, in *Scripture Geography,* a city of Paleſtine, in the tribe of Dan, near Eltak or Eltaka. This was a ſacerdotal city, given to the ſons of Cohath. Here Samſon ſlew a thouſand Philiſtines with the jaw-bone of an aſs.

Lehi, *Lehigh,* or *Lecha,* in *Geography,* a river of America, which riſes in Northampton county, Pennſylvania, about 21 miles E. of Wyoming Falls, in Suſquehanna river, and paſſing, by a circular courſe, through the Blue mountains, diſcharges itſelf into Delaware river, on the S. ſide of Eaſton, 11 miles N.E. of Bethlehem. Its courſe is about 75 miles, and it is navigable 30 miles.

LEHMKUHLEN, a town of Holſtein; 8 miles S.W. of Lutkenborg.

LEHRBERG, a town of Germany, in the margravate of Anſpach, on the Unter Retzat; 5 miles N.W. of Anſpach.

LEHSO, a town of Arabia Deſerta; 140 miles S. of Cathem.

LEHSTEN, or Lehesten, a town of Saxony, in the principality of Altenburg, celebrated for its quarries of ſlate; 45 miles S.S.W. of Altenburg. N. lat. 50° 25′. E. long. 11° 35′.

LEHTIMAKI, a town of Sweden, in the government of Waſa; 65 miles E.S.E. of Waſa.

LEIBEN, a town of Auſtria; 10 miles W.N.W. of Crems.—Alſo, a town of Auſtria; 14 miles S.W. of Crems.

LEIBLINGEN, or Lyptingen, a town of Germany, in the lordſhip of Natenberg; 6 miles E. of Tuttlingen.

LEIBNITZ, Godfrey William de, in *Biography,* an eminent German philoſopher and mathematician, was born at Leipſic in the year 1646. He loſt his father when he was very young, and of courſe the care of his education devolved on his mother. She placed him under able maſters, who had been colleagues to his father in the univerſity, of which he had been profeſſor of moral philoſophy, and ſecretary. The ſon made a very rapid progreſs in the different branches of ſcience and learning. He not only became a deep claſſic, but availed himſelf of the advantages of a large and well choſen library, which his father had left him, and read all the books which it contained in regular order, as the poets, orators, hiſtorians, civilians, philoſophers, mathematicians, and divines. Such was his application, that he could repeat the works of the principal poets, and ſo tenacious was his memory, that even in old age he could, without heſitation, run through the whole of the Æneid, without miſſing a line or a word. He had a talent for making verſes, and is ſaid to have compoſed three hundred in one day. When he was fifteen years of age he became a ſtudent in the univerſity of Leipſic, where he proſecuted, with great ſucceſs, the various ſtudies of the law, medicine, philoſophy, and theology. Having finiſhed his ſtudies at Jena, the principal objects of his attention were hiſtory, law, and the mathematics. He was particularly attached to the writings of Plato and Ariſtotle, and is ſaid to have ſpent whole days in meditation, in a foreſt near Leipſic. He principally devoted himſelf to the ſtudy of the law, and took his degree of bachelor in 1665, and in the following year he ſupplicated for his degree of doctor, which was refuſed, under the pretence that he was too young, being then only in his twentieth year, but it was imagined that the real cauſe was his having abandoned the tenets of Ariſtotle and the ſchoolmen. Offended at this treatment, he went to Altdorf, where he maintained a theſis, "De caſibus perplexis," and in the diſputations on this occaſion, he diſplayed ſuch uncommon abilities, that he had the degree of doctor inſtantly conferred upon him, and was even offered a profeſſorſhip extraordinary in law, which he declined. He about this period publiſhed a work, entitled "Ars Combinatoria," intended to ſhew in what manner univerſal arithmetic may be applied to other ſciences. This was accompanied with "A mathematical Demonſtration of the Exiſtence of God." From Altdorf Leibnitz went to Nuremberg, to viſit the learned men in that univerſity. He was at this place initiated in the myſteries of Alchemy. From Nuremberg he went to Mentz, and publiſhed, in 1668, "Nova Methodus Docendæ Diſcendæque Juriſprudentiæ," which gained him great applauſe. He next ſhewed himſelf as a politician, and wrote a treatiſe to induce the Poles to chooſe the elector-palatine their king, which ſo pleaſed the elector, that he invited the author to reſide at his court, which invitation he would have accepted, had he not at the ſame time obtained the office of counſellor of the chamber of review in the chancery of Mentz. In 1670 he reprinted, with a preface and notes, the treatiſe of Marius Nizolius de Berſello, "De veris Principiis, et vera ratione Philoſophandi contra Pſeudophiloſophos," to which he ſubjoined a letter, "De Ariſtotele recentioribus reconciliabili." In the year 1672, Leibnitz went to Paris, to manage ſome affairs at the French court: here he became acquainted with the greateſt mathematicians in that metropolis, and made further and conſiderable progreſs in the ſtudy of mathematics and philoſophy. Here alſo he met with Paſcal's arithmetical machine, the defects of which he ſoon diſcovered, and to obviate theſe he invented a new one, which was highly approved by the miniſter Colbert, and the Academy of Sciences. He was offered a ſeat in this body with a penſion, and had the proſpect of many other advantages if he would ſettle at Paris, but to attain this eminence he muſt embrace, or be ſuppoſed to embrace, the Catholic religion, which neither honours nor emoluments could induce him to do. In 1673 he came to England, and became acquainted with Mr. Oldenburg, the ſecretary, and Mr. Collins, a diſtinguiſhed member of the Royal Society; from whom it was ſaid he received ſome hints of the method of fluxions, which had been invented in 1664, or 1665, by Mr. Iſaac Newton. Leibnitz improved theſe hints, and under the name of "calculus differentialis" he gave the ſame method of analyſis with fluxions. (See KEIL and NEWTON.) While Mr. Leibnitz was in England he loſt his patron, the elector of Mentz, and with him a penſion which that prince had allowed him. He returned to France, whence he wrote to Frederic duke of Brunſwic Luneburg, informing him of his circumſtances. This prince immediately appointed him a member of the Aulic council, with a regular ſalary, but he permitted him to remain at Paris, till his arithmetical machine ſhould be perfected. When he entered upon his office at Hanover, one of his earlieſt cares was to furniſh the prince's library with the beſt books in the various branches of ſcience and literature. In 1677 he firſt mentioned his mathematical invention of differentials to Newton, who had previouſly to this written to Leibnitz an account of his invention of fluxions; about the ſame period, he gave an account of ſome diſcoveries in optics and mechanics, deſcribing a new method of poliſhing glaſſes. He became a conſtant contributor to the "Acta Eruditorum" of Leipſic, and among other pieces he publiſhed in this work "Thoughts on Knowledge, Truth, and Ideas." He next undertook a hiſtory of the houſe of Brunſwic, and to render himſelf more competent to the taſk, he travelled over Germany and Italy, collecting materials. In paſſing from Venice to Meſola, a terrible ſtorm aroſe, during which the pilot, imagining that he could not be underſtood by a German, whom, as a heretic, he regarded as the cauſe of the tempeſt, propoſed to ſtrip him of his clothes and money, and throw him overboard. Leibnitz, hearing the converſation, without the leaſt emotion, drew a ſet of beads from his pocket, and began turning them over with great ſeeming devotion. The artifice ſucceeded; one of the ſailors obſerving to the pilot, that ſince the man was not an heretic, he ought not to be drowned. Leibnitz returned to Hanover in 1690, where he purſued with great induſtry ſeveral objects of very different kinds. In a theological diſpute he appeared the friend of toleration, and in 1693 he publiſhed a work on the law of nations, entitled "Codex Juris Gentium Diplomaticus." He next wrote his treatiſe "De ipſa natura, ſive Vi inſita," which was intended to improve and correct the philoſophical notion of ſubſtance: and he likewiſe conceived the idea of a new ſcience of forces, in which the laws of mechanics, and the meaſure of living forces might be clearly defined. This ſcience he denominated *Dynamics* (which ſee), and inſerted a ſpecimen of it in the "Acta Eruditorum." He publiſhed "Thoughts on Locke's Eſſay on the Human Underſtanding," in which he controverted that philoſopher's opinions on innate ideas, ſubſtance, a vacuum, and other ſubjects; communicated to the world his ingenious invention of binary arithmetic; and wrote a reply to Bayle in defence of his doctrine of preeſtabliſhed harmony. Without attempting to follow our author in all his publications, which were very numerous and important, we may obſerve that he ſpent much time in the invention of an univerſal language; but did not live to complete his deſign. In 1710 he publiſhed "A Diſſertation on the Goodneſs of God, the Liberty of Man, and the Origin of Evil." The writings of Leibnitz had long rendered his name famous in every part of Europe; he had honours beſtowed upon him by ſeveral other princes, beſides the electors of Hanover and Brandenburg, and in 1711 he was made Aulic counſellor to the emperor, and at the ſame period the czar Peter the Great appointed him privy counſellor of juſtice, with a penſion of a thouſand ducats. In 1714 his patron, the elector of Hanover, was raiſed to the throne of Great Britan, and in a ſhort time Leibnitz paſſed over to England, where he received new marks of favour and friendſhip, and frequently made his appearance at court. It was during this viſit, that, at the deſire of the princeſs of Wales, afterwards queen Caroline, he engaged in a diſpute with the celebrated Dr. Samuel Clarke, upon the ſubject of free will and other important metaphyſical topics. This controverſy continued till the death of Leibnitz, which event took place in 1716. He was author of many other works beſides thoſe already mentioned. His intellectual abilities and attainments entitle him to be ranked among thoſe univerſal geniuſes which at once ſurprize and benefit the world. With great ſtrength of underſtanding, an excellent faculty of invention, and a moſt capacious and retentive memory, he united an uncommon degree of induſtry. Hence he was enabled not only to acquire much general knowledge, but to become eminent in attainments of various kinds. The improvements which he made in the higher geometry and algebra, rank him among mathematicians of the firſt claſs. He thoroughly underſtood the doctrines of philoſophy, both ancient and modern, and caſt new light upon almoſt every branch of knowledge. In theology he was well read in the writings of the Chriſtian fathers, and in the controverſies of his own times. On hiſtory and juriſprudence he wrote in ſuch a manner as might lead a reader to ſuppoſe that theſe ſubjects were his chief or only ſtudy. The philoſophy of Leibnitz is a ſyſtem formed partly on the Carteſian, and partly in oppoſition to the Newtonian theory. After the diſpute reſpecting the diſcovery of fluxions, he became the violent oppoſer of our great philoſopher. He even charged his ſyſtem with having an impious tendency, becauſe it aſſerted that the fabric of the univerſe, and the courſe of nature, would not continue for ever in its preſent ſtate, but would require, in proceſs of time, to be re-eſtabliſhed, or renewed by the hand of its former. According to his own principles, deduced, as he thought, from the wiſdom and goodneſs of the deity, and his principle of a ſufficient reaſon, he concluded the univerſe to be a perfect work, or the beſt that could poſſibly have been made; and that other things, which are evil or incommodious, were permitted as neceſſary conſequences of what was beſt; that the material ſyſtem, conſidered as a perfect machine, can never fall into diſorder, or require to be ſet right; and that to ſuppoſe that God interferes in it, is to leſſen the ſkill of the author, and the perfection of his work. Among many other of his notions (for an account of which ſee LEIBNITZIAN *Philoſophy*) we may add this, that the acts of the ſoul and body proceed by neceſſary laws: the ſoul in its perceptions and volitions, and the body in its motions, without affecting each other; but that each is to be conſidered as a ſeparate independent machine. The volitions of the mind are followed inſtantly by the deſired motions of the body, not in conſequence of thoſe volitions in the leaſt, but of the nice and well-adjuſted machinery of the body. The impreſſions produced in the ſenſory have no effect on the mind, but the correſponding idea ariſes at that preciſe time, in conſequence of a chain of cauſes of a different kind. Moreri, Maclaurin, &c. See LEIBNITZIAN *Philoſophy*.

LEIBNITZ, in *Geography*, a town of Saxony, in the margravate of Meiſſen; 4 miles S. of Dreſden.—Alſo, a town of the duchy of Stiria, on the Sulm; 16 miles S. of Gratz.

LEIBNITZIAN PHILOSOPHY, or the philoſophy of Leibnitz, is a ſyſtem of philoſophy formed and publiſhed by its author in the 17th century, partly in emendation of the Carteſian, and partly in oppoſition to the Newtonian. The baſis of Mr. Leibnitz's philoſophy was that of Des Cartes; for he retained the Carteſian ſubtile matter with the univerſal plenitude and vortices; and repreſented the univerſe as a machine that ſhould proceed for ever, by the laws of mechaniſm in the moſt perfect ſtate, by an abſolute inviolable neceſſity, though in ſome things he differs from Des Cartes. After ſir Iſaac Newton's philoſophy was publiſhed in 1687, he printed an eſſay on the celeſtial motions (Act. Erud. 1689), where he admits of the circulation of the ether with Des Cartes, and of gravity with ſir Iſaac Newton; though he has not reconciled theſe principles, nor ſhewn how gravity aroſe from the impulſe of this ether, nor how to account for the planetary revolutions and the laws of the planetary motions in their reſpective orbits. That which he calls the harmonical circulation is the angular velocity of any one planet, which decreaſes from the perihelium to the aphelium in the ſame proportion as its diſtance from the ſun increaſes; but this law does not apply to the motions of the different planets compared together; becauſe the velocities of the planets, at their mean diſtances, decreaſe in the ſame proportion as the ſquare roots of the numbers expreſſing thoſe diſtances. Beſides, his ſyſtem is defective, as it does not reconcile the circulation of the ether with the free motions of the comets in all directions, or with the obliquity of the planes of the planetary orbits; nor reſolve other objections to which the hypotheſis of the plenum and vortices is liable. Soon after the period juſt mentioned, the diſpute commenced concerning the invention of the method of *fluxions* (which ſee), which led Mr. Leibnitz to take a very decided part in oppoſition to the philoſophy of ſir Iſaac Newton. See LEIBNITZ.

The perfection of the univerſe, by reaſon of which it is capable of continuing for ever by mechanical laws in its preſent ſtate, led Mr. Leibnitz to diſtinguiſh between the quantity of motion and the force of bodies; and, whilſt he owns, in oppoſition to Des Cartes, that the former varies, to maintain that the quantity of force is for ever the ſame in the univerſe, and to meaſure the force of bodies by the ſquares of their velocities. See FORCE.

This ſyſtem alſo requires the utter excluſion of atoms, or of any perfectly hard and inflexible bodies; the advocates of it allege, that, according to the law of continuity, as they call a law of nature invented for the ſake of the theory, all changes in nature are produced by inſenſible and infinitely ſmall degrees; ſo that no body can, in any caſe, paſs from motion to reſt, or from reſt to motion, without paſſing through all poſſible intermediate degrees of motion; whence they conclude that atoms or perfectly hard bodies are impoſſible: becauſe if two of them ſhould meet with equal motions, in contrary directions, they would neceſſarily ſtop at once, in violation of the law of continuity.

Mr. Leibnitz propoſes two principles as the foundation of all our knowledge; the firſt, that it is impoſſible for a thing to be, and not to be, at the ſame time, which, he ſays, is the foundation of ſpeculative truth: the other is, that nothing is, without a *ſufficient reaſon* why it ſhould be ſo, rather than otherwiſe: and by this principle, according to him, we make a tranſition from abſtracted truths to natural philoſophy. Hence, he concludes, that the mind is naturally determined, in its volitions and elections, by the greateſt apparent good, and that it is impoſſible to make a choice between things perfectly like, which he calls *indiſcernibles;* from whence he infers, that two things perfectly like could not have been produced even by the Deity: and he rejects a vacuum, partly becauſe the parts of it muſt be ſuppoſed perfectly like to each other. For the ſame reaſon alſo he rejects atoms, and all ſimilar particles of matter: to each of which, though diviſible *in infinitum*, he aſcribes a *monad* (Act. Lipſiæ 1698, p. 435.), or active kind of principle, endued, as he ſays, with perception and appetite. The eſſence of ſubſtance he places in action or activity, or, as he expreſſes it, in ſomething that is between acting and the faculty of acting. He affirms abſolute reſt to be impoſſible, and holds motion, or a ſort of *niſus*, to be eſſential to all material ſubſtances. Each monad he deſcribes as repreſentative of the whole univerſe from its point of ſight; and after all, in one of his letters he tells us, that matter is not a ſubſtance, but a *ſubſtantiatum,* or *phenomené bien fondé.* (See MONAD.) He frequently urges the compariſon between the effects of oppoſite motives on the mind, and of weights placed in the ſcale of a balance, or of powers acting upon the ſame body with contrary directions. His learned antagoniſt Dr. Clarke denies that there is a ſimilitude between a balance moved by weights, and a mind acting upon the view of certain motives ; becauſe the one is entirely paſſive, and the other not only is acted upon, but acts alſo. The mind, he owns, is purely paſſive in receiving the impreſſion of the motive, which is only a perception, and is not to be confounded with the power of acting after, or in conſequence of, that perception. The difference between a man and a machine does not conſiſt only in ſenſation and intelligence ; but in this power of acting alſo. The balance, for want of this power, cannot move at all, when the weights are equal ; but a free agent, he ſays, when there appear two perfectly alike reaſonable ways of acting, has ſtill within itſelf a power of chooſing ; and it may have ſtrong and very good reaſons not to forbear. Collection of Papers which paſſed between Mr. Leibnitz and Dr. Clarke in 1715 and 1716, &c. 8vo. 1717, p. 121. See LIBERTY.

The tranſlator of Moſheim's Eccleſiaſtical Hiſtory obſerves, that the progreſs of Arminianiſm has declined in Germany and ſeveral parts of Switzerland, in conſequence of the influence of the Leibnitzian and Wolfian philoſophy. Leibnitz and Wolf, by attacking that liberty of indifference, which is ſuppoſed to imply the power of acting not only without, but againſt motives, ſtruck, he ſays, at the very foundation of the Arminian ſyſtem. He adds, that the greateſt poſſible perfection of the univerſe, conſidered as the ultimate end of creating goodneſs, removes from the doctrine of predeſtination thoſe arbitrary procedures and narrow views, with which the Calviniſts are ſuppoſed to have loaded it, and gives it a new, a more pleaſing, and a more philoſophical aſpect. As the Leibnitzians laid down this great end as the ſupreme object of God's univerſal dominion, and the ſcope to which all his diſpenſations are directed ; ſo they concluded, that, if this end was propoſed, it muſt be accompliſhed. Hence the doctrine of neceſſity, to fulfil the purpoſes of a predeſtination founded in wiſdom and goodneſs ; a neceſſity, phyſical and mechanical, in the motions of material and inanimate things, but a neceſſity, moral and ſpiritual, in the voluntary determinations of intelligent beings, in conſequence of prepollent motives, which produce their effects with certainty, though theſe effects be contingent, and by no means the offspring of an abſolute and eſſentially immutable fatality. Theſe principles, ſays the ſame writer, are evidently applicable to the main doctrines of Calviniſm ; by them predeſtination is confirmed, though modified with reſpect to its reaſons and its end ; by them irreſiſtible grace (irreſiſtible in a moral ſenſe) is maintained upon the hypotheſis of prepollent motives and a moral neceſſity ; the perſeverance of the ſaints is alſo explicable upon the ſame ſyſtem, by a ſeries of moral cauſes producing a ſeries of moral effects. Moſheim's Eccl. Hiſt. by Dr. Maclaine, vol. v. p. 464. 8vo. edit.

For an account of Leibnitz's famous doctrine of a *pre-eſtabliſhed* HARMONY, we refer to that article ; and for his account of monads to MONADS.

See on the ſubject of this article Maclaurin's View of Sir Iſaac Newton's Philoſophical Diſcoveries, &c. book i. chap. 4. or p. 79, &c. 4to edit. Brucker's Hiſtory of Philoſophy, by Enfield, vol. ii. p 556, &c.

LEICESTER, commonly pronounced *Leſter*, in *Geography*, the county town of Leiceſterſhire, England, was formerly written Lege-ceſtria, Legeoceſter, and in the Saxon Annals Leger-ceaſter ; and during part of the heptarchy it was a city. Without referring it to a Britiſh origin, or entering into a diſcuſſion reſpecting the derivation of its name, and of its civil privileges from king Leir, it will amply ſatisfy every rational enquirer to commence its hiſtory at that period when the Romans had ſettled themſelves in this iſland, and held the natives in military ſubordination. As thoſe conquerors marched from the ſouth-eaſt, towards the central and northern parts of the country, they could not have obtained poſſeſſion of this diſtrict, till the intermediate places between it and the ſea were ſubjugated, and competent garriſons eſtabliſhed. Having accompliſhed this, and overpowered the Coritani, they took poſſeſſion of the chief town of that people. This town, or ſtrong hold, was the ſcite of the preſent Leiceſter, and, at the time of its conqueſt, was denominated Ratæ in the Itineraries of Richard, Antoninus, and Ravennas ; but Ragæ in ſome other writings. “The real name, therefore,” ſays Mr. Whitaker, “muſt be equally Ratæ and Ragæ ; the former implying the town to be fixed upon the currents, the latter importing it to be the capital of the kingdom.” That the Romans had a permanent ſtation here is unequivocally manifeſted by the teſſellated pavements, and other remains that have been diſcovered at different periods : and, according to Antoninus, Ratæ was one of their ſtipendiary towns. The foſs-road in its way from Londinio, London, to Lindum, Lincoln, came by Vennonæ ; whence to Ratæ was twelve miles, and thence to Verometum thirteen miles ; and theſe diſtances very nearly correſpond with thoſe between Claycheſter, Leiceſter, and Willoughby. That this ſtation was formed on the northern bank of the Soar, that an artificial channel was cut for the water to flow up to, and conſtitute one boundary of the ſtation, and that the Romans were ſettled here for ſome length of time, are circumſtances eaſily proved, as ample evidences remain, and are recorded in ſupport of theſe inferences. Many teſſellated pavements, coins, urns, and other domeſtic and military relics of the Romans, have been diſcovered at different times : ſome of which are ſtill carefully preſerved as memorials of ancient art, but many of the moſt intereſting objects muſt have been deſtroyed during the ravages of war which Leiceſter experienced under the Saxons, Danes, and Normans. Of the Moſaic pavements, that which was found in a cellar nearly oppoſite the town-priſon, in the year 1675, is the moſt worthy of notice. But the moſt curious relic of antiquity, and one that has provoked the moſt copious diſſertations, is the *milliary*, or Roman mile-ſtone, which was diſcovered in 1771, on the ſide of the Foſs-road, at the diſtance of about two miles north of the town, and thence removed into the town at the expence of the corporation : by this ſtone the ſtation of Ratæ is clearly defined. In different parts of the town, and at diſtant periods of time, a great number of Roman coins have been found : among which were ſeveral with the names of Titus, Trajan, Diocleſian, Conſtantine the Great, Conſtantine Junior, Conſtantius, Hadrian, Theodoſius, Honorius, &c. Here is alſo a curious fragment of Roman architecture, commonly called the Jewry wall ; conſiſting of a maſs of brick-work, ſtones, and rubbiſh, with dilapidated arches turned entirely of tiles, bound together by a large quantity of mortar. About a quarter of a mile ſouth of the Infirmary are ſome artificial banks, known by the name of *radykes*, or *rawdykes* : theſe were formerly about four yards in height, and conſiſted of two parallel mounds of earth, extending 67 yards in length, at the diſtance of fifteen yards from each other. If theſe remains are not peculiarly worthy notice as works of art, they are curious as veſtiges of remote times, and of a particular people.

The hiſtory of Leiceſter, during the Saxon heptarchy, is very vague and uncertain, though, from the concurrent teſtimony of all writers, it was certainly a place of conſiderable note from the departure of the Romans to the time of the Norman conqueſt. According to Godwin, a biſhop's ſee was tranſferred from Sidnaceſter to Leiceſter in the year

737. At this period the Saxon kingdom of Mercia had, according to ſome authors, three epiſcopal ſees: Lichfield, Dorcheſter, and Leiceſter. From the Saxon annals, it appears that Ethelfrid, king of Northumberland, being an avowed enemy to Chriſtianity, marched an army to Leiceſter, where he made a great ſlaughter of the inhabitants. Jowallenſis relates that Ethelred, king of Mercia, and his queen Elfreda, who was daughter of Alfred the Great, repaired the town about the year 901, and rebuilt and enlarged the walls, which were now made to incloſe the caſtle; previous to that period the caſtle appears to have been on the outſide of the town. On the conqueſt of England by William the Norman, Leiceſter ſoon became part of the royal demeſne, and a caſtle was either newly erected, or enlarged and ſtrengthened to enſure the ſubmiſſion of the inhabitants, and thoſe of the ſurrounding country. On the death of the conqueror, Leiceſter citadel, being held by the adherents of duke Robert, was nearly demoliſhed by the ſucceſsful partizans of William Rufus. In the reign of Henry I. Robert, earl of Leiceſter, repaired, enlarged, and fortified the caſtle, which he made his principal reſidence. He was very liberal to the town; as was alſo his ſon Robert Boſſu; but the arrogant behaviour of the latter to the king involved this place in broils and war; it being the practice in thoſe times for ſovereigns to revenge themſelves, for the offences of the nobles, on the people and places immediately under the patronage of the offenders. This was fatally experienced in the reign of Henry II. when earl Robert Blanchmains, leaguing with the king's ſon in his unnatural rebellion, Leiceſter, the chief reſort of the diſaffected, was, after a long ſiege, almoſt deſtroyed, and the caſtle reduced to a heap of ruins. Scarcely any thing now remains of the latter building, but an artificial mound, or the earth work of the keep, near which is a part of the town with ſome ancient buildings, called "the Newark," or New-work. This name appears to have been given to diſtinguiſh it from the caſtle with its original buildings, which was conſidered as the old works. The Newark is ſaid to have been founded by Henry, third earl of Lancaſter, and his ſon Henry, the firſt duke of that name. By theſe two noblemen ſome large buildings were erected here; and John of Gaunt, who was earl of Leiceſter, added conſiderably to the pile. When completed, the whole muſt have formed a grand diſplay; but nearly all of theſe have fallen beneath the devaſtating hand of man, and the ſlowly devouring tooth of time. From the remains of the ſurrounding walls, it is preſumed that the Newark was an incloſed area, bounded on the north by the caſtle, on the ſouth by fields, to the weſt by a branch of the river Soar, and to the eaſt by a ſtreet of the ſuburbs. At this ſide is ſtill remaining a large caſtellated gateway, called the *magazine*, which name it obtained in 1682, when it was purchaſed by the county, and applied to the uſe of the train bands. Throſby ſays it "was built with the New-works, by the founder of the hoſpital and collegiate church." This gateway has a large pointed arched entrance with a ſmall poſtern door way, and communicates with an area nearly ſurrounded with buildings.

Among the ancient religious houſes and foundations of this town, the abbey was formerly of great local importance; but its buildings are nearly levelled with the earth which covers the aſhes of its inhabitants. It is ſaid to have been founded in the year 1143 by Robert Boſſu, earl of Leiceſter, who became one of the regular canons on his own foundation. The abbey ſoon acquired celebrity, and obtained numerous privileges. It was poſſeſſed of lands in thirty-ſix pariſhes in and about Leiceſter, and in moſt of the manors in this and many other counties. Several kings of England, and other diſtinguiſhed perſonages, were entertained and lodged at this houſe in a grand and ſumptuous ſtyle. The once great and magnificent cardinal Wolſey died at this abbey, November 29th, 1530.

In this town was formerly a *mintage*; and the ſeries of coins that have been collected, prove that at the Leiceſter mint, a regular ſucceſſion of coinage has been produced from the reign of the Saxon king Athelſtan down to Henry II. This ſeries has been engraved in Mr. Nichols's valuable hiſtory of this town.

The firſt charter granted to Leiceſter was by king John in the firſt year of his reign; and at the ſame time Robert Fitz-Parnel, earl of Leiceſter, inveſted the burgeſſes with the power of buying and ſelling lands, &c. A charter, granted in the following reign by earl Simon de Montfort, ſhews the peculiar intolerance of the times; it ſpecifies that "no *Jew*, or *Jeweſs*, in my time, or in the time of any of my heirs, to the end of the world, ſhall inhabit, or remain in" the town of Leiceſter. Henry VII. by charter dated 1504, confirmed all the previous privileges, and empowered the juſtices to take cognizance of treaſons, murders, felonies, &c. A charter by queen Elizabeth ſpecifies that the borough of Leiceſter is very ancient and populous, and from remote times has been a borough incorporate; and the former liberties and immunities are ſpecified and extended. The corporation are thereby empowered, among other privileges, to refuſe the building of malt-kilns within the diſtance of thirty yards from any other building. This charter alſo grants a market for wool-yarn and worſted, and for other commodities. All fines and amercements were ordered to be applied to the uſe of the poor. The corporation conſiſts of a mayor, recorder, ſteward, bailiffs, twenty-four aldermen, forty-eight common-councilmen, and a town clerk; the freemen are toll-free of all the markets and fairs in England. As a parliamentary borough, Leiceſter has returned two members to the national councils from the time of Edward I. One of the repreſentatives was formerly elected by the "mayor and his brethren," and the other by the commonalty. This mode having excited much popular diſturbance, Henry VII. ordained that "the mayor and his brethren ſhould chooſe forty-eight of the moſt diſcreet inhabitants of the town," who ſhould elect all officers for the borough, and members of parliament. Thus it continued till the reign of Charles II.; from which time the right of election has been veſted in "the freemen, not receiving alms, and in the inhabitants paying ſcot and lot." The number of voters is about 2000.

At the time of the Norman conqueſt, there appear to have been ſix churches in this town; and it would be highly intereſting to the architectural antiquary to aſcertain if either of the preſent ſtructures contains any part of the building then ſtanding. Of the religious edifices now remaining, St. Nicholas's church is eſteemed the moſt ancient. It ſtands contiguous to the Jewry-wall, and appears to have been partly conſtructed with the bricks, tiles, &c. taken from the fallen parts of that building; whence ſome antiquaries have thought that they are both parts of the ſame ſtructure, or built about the ſame period. The church of St. Mary, diſtinguiſhed by the addition of *infra* or *juxta*-caſtrum, is a large pile of irregular building, compoſed of various ſpecimens, or ſtyles of architecture, from a very early period to a late one, when all ſtyles were diſregarded. Theſe varieties tend to mark "the diſaſters of violence, accident, and time," and prove that the neighbourhood of the caſtle, within the outer ballium, or precinct of which it ſtood, was often moſt dangerous. That there was a church on this ſpot in the Saxon times ſeems almoſt certain, from ſome bricks, apparently the workmanſhip of that people, found in the chancel; and the chevron work round the windows of the chancel proves that the firſt Norman earl of Leiceſter, Robert de Bellomont, conſtructed a church on a plan nearly like the preſent, and adorned it with the architecture of his time. The interior of this church is ſpacious; and on the ſouth ſide of the nave is a ſingularly large ſemicircular arch, having a ſpan of thirty-nine feet. The ſouth aiſle is ſaid by Mr. Carte to have been built by John of Gaunt. At the eaſt end of this aiſle was a chapel, or choir, held by guild, or fraternity, called the Trinity guild. This was founded, in Henry VIIth's reign, by ſir Richard Sacheverele, and the good lady Hungerford. Reſpecting this guild, the following liſt of articles, bought in for the year 1508, will ſerve to ſhew the value of money, and prices of proviſions at that period. "A dozen of ale, 20*d.*; a fat wether, 2*s.* 4*d.*; ſeven lambs, 7*s.*; fourteen goſlings, 4*s.* 8*d.*; fifteen capons, 5*s.*; half a quarter of malt, 2*s.*; four gallons of milk, 4*d.*; a pig, 5*d.*" At the weſt end of the church is a handſome tower, ſurmounted by a lofty and elegant ſpire. The latter has twice ſuffered from ſtorms. Near the north door of this church is a paſſage leading under an old building which forms a gateway to an area called the caſtle yard. Oppoſite this gateway is a building, partly ancient, partly modern, within which is a large hall ſeventy-eight feet in length, fifty-one in width, and twenty-four feet high. This hall, during the reign of Lancaſtrian princes, was the ſcene of frequent parliaments; at preſent it is uſed only for holding the aſſizes and other county meetings. The church of All Saints is a ſmall modern ſtructure, conſiſting of a nave and two aiſles, all nearly of the ſame length. The church of St. Martin, formerly called St. Croſſe, is a large old building, conſiſting of a nave, three aiſles, and a tower, with a lofty crocketted ſpire. This church, being the largeſt in the town, and even in the whole county, is uſed at all the public meetings of the diſtrict for the biſhop, judges, &c. The churchwardens' accounts reſpecting this church and pariſh are copious and well preſerved. They begin in 1544, and contain many curious notices, deſcriptive of the peculiar manners and cuſtoms of the different times. In this church was held St. George's guild, a fraternity which was inveſted with peculiar privileges, and annually ordained a ſort of *jubilee* in the town, called "the Riding of St. George." It contained alſo another guild called Corpus Chriſti, which Mr. Throſby ſays, "was the moſt ancient and principal in Leiceſter." The regiſter of this pariſh records the calamitous effects of a plague which raged here in the years 1610 and 1611, during which period 166 perſons were buried. In the marriage regiſter is an entry of the names of Thomas Tilſey and Urſula Ruſſel, the firſt of whom being "deofe and alſo dombe, it was agreed by the biſhop, mayor, and gentlemen of the town, that certain ſigns and actions of the bridegroom ſhould be admitted inſtead of the neceſſary words." St. Margaret's church, according to Leland's account, is "the faireſt church in that place, which once was a cathedral church, and near which the biſhop of Lincolne hath a palace, whereof little yet ſtandeth." This edifice conſiſts of a nave, ſide aiſles, chancel, and a handſome tower, and was annexed as a prebend to the college of Lincoln by the biſhop of that dioceſe, at the time when the other churches were given to the abbey. Beſides theſe churches, here are chapels or meeting-houſes for different ſects of diſſenters, preſbyterians, independents, and baptiſts. The county gaol, erected in the year 1791, at the expence of ſix thouſand pounds, occupies the ſcite of an old priſon, and is built after the plan recommended by Mr. Howard, with ſolitary cells, &c. The town gaol is a commodious ſtone building, deſigned by Mr. Johnſon, a native of this town, and executed by Mr. Firmadge in 1792. The other public buildings are a free grammar ſchool of great antiquity; ſeveral charity ſchools; various hoſpitals; an aſylum for indigent lunatics; an exchange for public buſineſs; the hotel, now uſed as aſſembly rooms; and a commodious theatre. Among the curioſities of the town, is the old wooden bedſtead ſaid to have belonged to king Richard, and on which he ſlept, or rather reclined, the night preceding the battle of Boſworth.

The principal, and almoſt only article of manufacture in Leiceſter, is that of ſtockings, which has been an eſtabliſhed and ſtaple commodity here for above two centuries. It finds employment for a great number of perſons, as hoſiers, ſtocking-makers, wool-combers, dyers, frame-ſmiths, comb-makers, winders, ſizers, ſeamers, ſpinners, hobbiners, ſinker-makers, ſtocking-needle-makers, &c. &c. Mr. Throſby ſtates that in Leiceſter there were "upwards of ſeventy manufacturers, called hoſiers, who, it is computed, employ 3000 frames; including the wrought goods they individually purchaſe; about 6000 perſons being directly or indirectly employed in this great buſineſs." This town and its vicinity, with Nottingham and its neighbourhood, are the principal places in England for the manufacture of ſtockings; the latter is the moſt noted for ſilk, and the finer ſort of goods, while the former is chiefly devoted to the coarſer articles, of which a very large quantity is annually made. The trade at preſent is very flouriſhing, and in the "Walk through Leiceſter" it is ſtated "that 15,000 dozen per week" of ſtockings are made on an average. (See STOCKINGS.) Leiceſter is 97 miles diſtant from London: the market is held on Saturdays; and ſeven fairs annually; all on a very large ſcale. This town was returned to parliament in the year 1801 as containing 3290 houſes, and 16,953 inhabitants.

Among the natives of this town, of literary eminence, is Dr. Richard Farmer, who was born in 1735, and died in 1797. Nichols's Hiſtory and Antiquities of Leiceſterſhire, ſeven vols. folio. A Walk through Leiceſter, 12mo. is an intereſting and well written topographical work.

LEICESTER, a townſhip of America, in Addiſon county, Vermont, ſituated on the eaſt ſide of Otter creek, containing 522 inhabitants.

LEICESTER, called by the Indian natives *Towtuid*, a conſiderable poſt-town in Worceſter county, Maſſachuſetts, containing 1103 inhabitants; ſituated upon the poſt-road from Boſton to Hartford, New York, and Philadelphia; 6 miles W. of Worceſter, and 54 W. by S. of Boſton; ſettled in 1703, and incorporated in 1720 or 1721. It has three meeting-houſes for Congregationaliſts, Anabaptiſts, and Quakers; and an academy incorporated in 1784, and well endowed. Wool-cards are manufactured in this town.

LEICESTERSHIRE, called in the Domeſday Survey *Ledeceſtreſcire*, is an inland county, ſituated nearly in the middle of England, and environed by the counties of Rutland and Lincoln to the eaſt, Nottingham and Derby on the north, Staffordſhire and Warwickſhire to the weſt, whilſt part of the latter county and Northamptonſhire attach to the ſouthern border. A part of the great Roman road, called Watling-ſtreet, appears to have formed a regular diviſion between Leiceſterſhire and Warwickſhire. The diſtrict included within theſe boundaries was, at an early period, a part of the territory belonging to the Coritani. After the Romans had ſubjugated the Britons, and had eſtabliſhed colonies in different parts of the iſland, this county was included within the province of Flavia Cæſarienſis, and had military ſtations eſtabliſhed at Ratæ (Leiceſter); Vernometum,

metum, on the northern border of the county; Benonæ, near High-Croſs; and Mandueſſedum, at Manceter. Theſe ſtations were connected by regular artificial roads, or military ways, known by the names of Watling-Street, Foſſe-Way, and Via Devana. The firſt enters this county at Dowbridge or Dovebridge, on the Northamptonſhire border, where the ſtation called Tripontium was fixed: hence to Mandueſſedum it paſſed nearly in a ſtraight line, having the ſmall ſtation of Benonæ on its courſe. Near this place the Foſſe-Way interſects it at right angles, and paſſes on to Ratæ; whence it continues in a northerly direction to Vernometum, and thence on to Margidunum, a ſtation near Eaſt Britford, in Nottinghamſhire. After the Romans had evacuated the iſland, this diſtrict became part of the kingdom of Mercia; and when the ſubdiviſion of the Anglo-Saxon provinces into counties was eſtabliſhed, and biſhops' ſees erected, the town of Leiceſter was conſtituted the ſeat of the dioceſan. The Mercian kingdom was divided into ſouthern and northern: and the inhabitants of Leiceſterſhire were denominated Mediterranæ, or Middle Angles. They were frequently haraſſed by the invading Danes, who entering the diſtrict from the eaſtern coaſt, laid the whole country under contribution between the German ocean and Leiceſter; and having conquered this place, eſtabliſhed themſelves here for ſome length of time: indeed, Leiceſter was conſidered as one of their five chief cities in the iſland. After the Norman invaſion in 1066, Leiceſterſhire experienced a complete revolution in its civil and manorial privileges; as the conqueror divided it among his relations and adherents. Two hundred and twenty-eight lordſhips, the chief parts of the county, were allotted and parcelled out to different Norman chiefs; who again regranted various allotments to their followers and dependants, to be held of them by knight's ſervice. The king, the archbiſhop of York, and the biſhops of Lincoln and Conſtance, were alſo poſſeſſed of landed property in the county; and ſome was annexed to the abbies of Peterborough, Coventry, and Croyland. The Norman chiefs, in order to ſecure their newly-acquired poſſeſſions, ſoon built, on their reſpective eſtates, ſtrong and magnificent caſtles, which might at once ſecure themſelves, and keep the conquered Engliſh in awe. The ſeveral townſhips, in which ſuch caſtles are known to have been erected, with the names of the founders, are Leiceſter, Mount Sorel, Whitwick, and Shilton, founded by the earls of Leiceſter; Groby and Hinckley, by Hugo de Grentemaiſnell; Donington, by Euſtace baron of Halton; Melton, by Roger lord Mowbray; Ravenſton, by Goesfrid Hanſelin; Sauvey, by lord Baſſet of Weldon; and Thorpe, by Ernald de Bois. Moſt of theſe caſtles, during the unquiet reigns of Henry II., John, and Henry III., being held by the rebellious barons, and rendered receptacles of thieves and freebooters, were, by command of the latter king, utterly demoliſhed; and though ſome of them were afterwards rebuilt, yet at this day there is not one of them remaining entire, and even the ruins of moſt of them are entirely defaced. The Norman chiefs, after ſettling their poſſeſſions, and fortifying themſelves within their reſpective domains, next directed their attention to the religious habits and prejudices of the times; as to ſecure the favour and influence of the monks, in an age when they were almoſt omnipotent, or at leaſt could command and intimidate the whole community, was a neceſſary branch of military policy, which the provincial barons neither overlooked nor neglected. Accordingly, part of their eſtates were appropriated to the foundation of abbies, priories, nunneries, and other monaſtic eſtabliſhments. In this county were founded four abbies, at Croxton, Garendon, Leiceſter, and Olveſton; twelve priories, at Belvoir, Bradley, Bredon, Charley, Hinckley, Kirkby Beler, Laund; at Leiceſter were four, for Eremites, Black Friars, Grey Friars, and Auſtin Friars; and Ulveſton; two nunneries at Gracedicu and Langley; two collegiate churches in Leiceſter; and various free chapels, hoſpitals, preceptories, and chantries, in different parts of the county.

At the time of compiling that great national work, the Domeſday Survey, Leiceſterſhire was divided into four wapentakes or hundreds; Framland, Guthlaxton, Gartre, and Goſcote: and thus it continued till the 20th of Edward III., when an additional hundred, Sparkenhoe, was taken out of Guthlaxton; and aftewards Goſcote was divided into two, denominated, from their ſituations, Eaſt and Weſt Goſcote. In theſe ſix hundreds are 196 pariſhes, and 12 market-towns, *viz.* Leiceſter, Aſhby de la Zouch, Boſworth, Hallaton, Harborough, Lutterworth, Melton Mowbray, Mount Sorel, Billeſdon, Hinckley, Loughborough, and Waltham on the Wold. The whole county is within the eccleſiaſtical juriſdiction of the ſee of Lincoln, and in the province of Canterbury; under one archdeacon, and ſix deaneries. Mr. Nichols ſtates, from the Domeſday Survey, that the whole county, at the time that record was compiled, contained 34,000 inhabitants. The number returned to parliament, under the population act of the year 1800, was 130,081; of whom 23,823 are ſtated to be employed in agriculture, and 42,036 in trade and manufactures: the number of houſes being 26,734. The repreſentatives in parliament are but four: two for the county, and two for the borough of Leiceſter. The circumference and extent of the county have not been ſatisfactorily defined. Mr. Nichols ſtates the former to be "about 150 miles;" whilſt Mr. Monk ſets the ſame down at "about 96 miles." The ſuperficial contents are eſtimated at about 540,000 acres.

This county has not any rivers of importance; but thoſe which paſs through it are convenient and ornamental. The chief are the Soar, the Swift, the Welland, the Avon, the Wreke, and the Anchor. The Soar, anciently called Leire, which is the largeſt of theſe, riſes from two heads or ſources in the ſouth-weſtern part of the county, and, after receiving a ſmall tributary ſtream near Whetſtone, paſſes by the weſt and north ſides of the town of Leiceſter.

Leiceſterſhire being more an agricultural than a commercial diſtrict, and deprived of any particular mines, has not equally participated with many other Engliſh counties in canal navigation. Some plans for this purpoſe have been projected at different periods, and a few have been executed. In 1782, a bill was brought into parliament for making a navigable canal from Chilver's Coton in Warwickſhire, to paſs through a great part of Leiceſterſhire; but being oppoſed by a variety of intereſts, it failed of ſucceſs. In 1780, another bill was introduced for opening a canal communication between Loughborough and Leiceſter; but it was thrown out on the ſecond reading. In 1791, another application was made with better ſucceſs; and an act was obtained for making the ſaid communication: the proprietors are ſtyled in this act, "the company and proprietors of the Leiceſter Navigation" In the ſame year, another act was obtained for making navigable the rivers Wreke and Eye: and in 1793, a bill was paſſed for making the "Oakham Canal,". from a town of that name in Rutlandſhire, to Melton Mowbray.

The whole of Leiceſterſhire preſents nearly a flat ſurface, and is chiefly appropriated to the grazing ſyſtem. It has obtained peculiar celebrity, among agriculturiſts, for a breed of ſheep, diſtinguiſhed by the name of the ſhire: and the late Robert Bakewell of Diſhley, acquired for himſelf and the county much popularity, by the experiments and improvments he made in the breed of cattle and ſheep. Among the different breeds of ſheep in the county, the Old Leiceſter, the Foreſt, and the New Leiceſter, or Diſhley, conſtitute the principal ſorts, and of them the latter is in the higheſt repute. The extraordinary price for which many of the New-Leiceſter-ſheep have been ſold at public auctions, and the large ſums for which ſome of the rams and bulls have been let out for the ſeaſon, ſerve at once to ſhew their eſtimation in public opinion, and the laudable zeal that prevails for improving the breeds of cattle, &c. At an auction of ewes, belonging to Thomas Pagett, eſq., in the year 1793, the following ſums were given:—Five ewes, at 62 guineas each; five, at 52 guineas each; five, at 45 guineas each; ten, at 30 guineas; and ſeveral at 25, 20, and 16 guineas each. One of theſe ſheep, which was killed at Walgrave in Northamptonſhire, was of the following weight: the carcaſe 144lb., blood 5lb., fat 16½lb., head and entrails 12lb., ſkin 18lb.; making in the whole 195½lb. It is no uncommon thing to ſalt down the mutton as a ſubſtitute for bacon. In the year 1793, Mr. Pagett ſold ſeveral bulls, heifers, cows, and calves, by public auction, when ſome were bought at the following very extravagant prices: a bull, called "Shakſpeare," deſcribed in the catalogue as "(bred by the late Mr. Fowler) by Shakſpeare, off young Nell. Whoever buys this lot, the ſeller makes it a condition, that he ſhall have the privilege of having two cows bulled by him yearly"—*Four hundred guineas:* a bull calf 31 guineas; a three years old heifer 70 guineas; others at 35 and 32 guineas each; a two years old heifer at 84, and another at 60 guineas.

It will be difficult to define the ſoils of the whole county. Very little of the land can with propriety be called a mere ſand or gravelly ſoil; nor is there any great quantity that may properly be called clay. The beſt ſoil is upon the hills; and the worſt, or neareſt approaching to the clay or cold lands, in the vallies; though there are many exceptions to this rule. The ſoil, or what the farmers generally call *mould*, is generally deep, which makes it very proper for graſs; ſuch deep ſoils not being very ſoon affected by dry weather. About Lutterworth, ſome part is a light rich loam, excellent for turnips and barley; a part ſtiff, inclining to marle, or rich clay; the remainder, chiefly a ſort of medium between both, with a ſubſoil inclining to marle, bearing excellent crops of oats and wheat, and good turnips alſo, though not ſo well adapted for being eat off the land by ſheep. Moſt of the land round Hinckley is a good mixed ſoil, bearing good crops of graſs. Aſhby-de-la-Zouch, and the northern parts of the county, exhibit various ſoils, ſand, gravel, loam, and clay. In Melton Mowbray the ſoil is in general a heavy loam; and immediately underneath a very ſtiff impervious clay, mixed with ſmall pieces of lime-ſtone. Theſe lands are very wet in winter, and the turf ſo tender, as ſcarcely to be able to bear the treading of ſheep, without injury. At Market Harborough the ſoil is in general a very ſtrong clay, chiefly in graſs.

Since the commencement of the laſt century, cheeſe has become an article of ſome importance to the Leiceſterſhire farmers; and a large cheeſe-fair is annually held in the county-town. Among the different ſorts manufactured in the county, that called Stilton cheeſe is deemed the fineſt, and conſequently obtains the higheſt price. It acquired the title of Stilton from a place of that name, on the great North road in Huntingdonſhire, where it is well known to have been firſt publicly ſold by retail. This cheeſe is ſometimes called the Parmeſan of England, and is uſually formed in ſquare vats. The cheeſes ſeldom weigh more than twelve pounds each, and from that to ſix pounds is the general average weight. They are ſometimes moulded in nets, but this mode is not deemed ſo eligible as that of the vat. A conſiderable quantity of this cheeſe is made on the farms about Melton Mowbray.

Leiceſterſhire is deſcribed by Mr. Marſhall, in his "Rural Economy," as a very fertile diſtrict; and the only parts which are not abſolutely in good cultivation, are Charnwood-Foreſt, alſo a tract of land in the northern part of the county, called the Wolds or Woulds, and another ſimilar tract on the ſouthern ſide. Nichols's Hiſtory and Antiquities of Leiceſterſhire, 7 vols. folio.

LEIDENSDORF, a town of Bohemia, in the circle of Leitmeritz; 20 miles W. of Leitmeritz.

LE JEUNE, in *Biography*. See Claude.

LEIGE. See Liege.

LEIGH, *Sir* Edward, in *Biography*, was born at Shadwell, in Leiceſterſhire, in the year 1602. He received the rudiments of learning at Walſal, in Staffordſhire, and in 1616 was entered a commoner of Magdalen-hall, in the univerſity of Oxford. From the univerſity, he went to ſtudy the common law in the Middle Temple. When the plague broke out in 1625, he went into France for a ſhort time, and returning thence, he applied himſelf moſt ſedulouſly to his ſtudies, which comprized not only the law, but divinity, hiſtory, and the learned languages. During the civil wars he was choſen member of parliament for the town of Stafford, and was one of the perſons appointed to ſit in the aſſembly of divines. He was greatly diſtinguiſhed for the talents and learning which he diſplayed in the debates of that aſſembly. In the year 1648, when the Preſbyterian party was excluded from the houſe by the army, he was in the number of proſcribed members, and was for ſome time kept in confinement. From the period of his liberation till the reſtoration, he chiefly employed himſelf in proſecuting his literary ſtudies, and in publiſhing various works, which diſcover profound erudition and general knowledge. He died in 1671, at the age of 69. He was author of "Selected and choice Obſervations concerning the twelve Cæſars;" "Analecta Cæſarum Romanorum;" "A Treatiſe of divine Promiſes;" "Critica Sacra," in 2 vols. 4to; "Annotations on all the Books of the New Teſtament;" "A Philological Commentary, or an Illuſtration of the moſt obvious and uſeful Words in the Law;" "A Syſtem of Divinity;" "Annotations on the five poetical Books of the Old Teſtament, *viz.* Job, Pſalms, Proverbs, Eccleſiaſtes, and Canticles;" "Choice Obſervations on all the Kings of England, from the Saxons to the Death of King Charles I." Gen. Biog.

Leigh, Charles, a phyſician of the ſeventeenth century, was born at Grange, in Lancaſhire. He graduated at Cambridge, and afterwards practiſed in London with conſiderable reputation. He was admitted a member of the Royal Society in May 1685. He left the following works: "The Natural Hiſtory of the Counties of Lancaſhire, Cheſhire, and Derbyſhire, &c." Oxford, 1630, folio. London, 1700, with plates. "Phthiſiologia Lancaſtrienſis, cum tentamine philoſophico de Mineralibus Aquis in eodem comitatu obſervatis," London, 1694, 8vo. "Exercitationes quinque de Aquis Mineralibus, Thermis calidis, Morbis acutis, Morbis intermittentibus, Hydrope," ibid. 1697. "Hiſtory of Virginia," drawn up from obſervations made during a reſidence in that country, London, 1705, 12mo.

Leigh, *Weſt*, in *Geography*, a market town in the hundred of Weſt Derby, Lancaſhire, England, is ſituated ſix miles from Wigan, and 198 from London. The church is a handſome ſtructure, with a ſquare tower; the body being ſupported by two rows of pillars. Leigh has a conſiderable manufacture of fuſtian and other cotton ſtuffs; and by its canal navigation, which communicates with the rivers Merſey, Dee, Ribble, Ouſe, Severn, Humber, Thames, Avon, &c. it carries on an extenſive traffic. Coals are abundant; and the dairies round the town produce excellent cheeſe. The town, according to the official report in 1801, contained 277 houſes, and 1429 inhabitants. A weekly market is held on Saturdays; and a fair on the 26th of April. The pariſh is of great extent, and contains the townſhips of Aſtley, Bedford, Pennington, and Tyldeſley, the hamlet of Shackeſley, and the chapelry of Chowbent, inhabited altogether by nearly 13,000 perſons.

The chapelry of Chowbent has greatly increaſed in houſes and population within the laſt 20 years. Its chapel, though regularly conſecrated by the biſhop of Sodor and Man, is exempt from epiſcopal juriſdiction, and the patronage is veſted in the proprietor of Atherton Hall, which formerly was the ſeat of a family of that name, but is now the property of the Hon. T. Powis. The houſe, which was built by Gibbs, is large, and has a ſpacious cubical entrance hall. A plan of this manſion is given in the "Vitruvius Brittanicus."

The townſhip of Tyldeſley has grown up with the manufactures of the county. A family of that name was ſeated here ſo early as the reign of Henry III. Of this family was ſir Thomas Tyldeſley, who ſignalized himſelf during the troubles of Charles I.'s reign, and fell in the battle of Wigan lane, Auguſt 25, 1650. He was buried in Leigh church; and on a pillar near Wigan is fixed a braſs plate, with an inſcription to perpetuate his memory. Beauties of England, vol. ix.

Leigh's *Iſland*. See Cocoa-nut *Iſland*.

LEIGHLIN, a biſnopric of Ireland, in the province of Dublin, founded in 632, and united with Ferns in 1600. The united biſhopric compriſes the whole counties of Carlow and Wexford, with part of the Queen's county, Wicklow, and Kilkenny. There are 232 pariſhes in the union, forming 79 benefices, in which are 71 churches and ſix glebe houſes. The cathedrals are ſmall, and ſerve for pariſh churches. The reſidence of the biſhop is at Ferns.

Leighlin, *Old*, a village of Ireland, near the river Barrow, and in the county of Carlow, 2½ miles W. by N. from Leighlin bridge. It was incorporated in the year 1216, and continued to ſend members to parliament till the Union; and is ſtill the ſeat of the cathedral church of the dioceſe.

Leighlin *Bridge*, a poſt-town of Ireland, in the county of Carlow, on the river Barrow, over which it has a bridge, firſt built in the year 1320. It originated in a monaſtery, which, on the ſuppreſſion of religious houſes, was converted into a fort to protect the bridge; and lately, on account of the navigation of the Barrow, it has conſiderably increaſed, being now a thriving town. It is 45 miles S.S.W. from Dublin, on the Great Southern road, and ſix miles from Carlow.

LEIGHTON, Alexander, in *Biography*, a Scotch preſbyterian divine, was born at Edinburgh in 1587. He became noted for the ſufferings which he endured in the reign of Charles I., on account of a work which he publiſhed, entitled "An Appeal to the Parliament; or Zion's Plea againſt Prelacy." For this he was tried in the high-commiſſion court, and being convicted, which, in thoſe days, and in that court, was but another term for being accuſed, he was condemned to be impriſoned for life, and pay a fine of 10,000*l.*: he was to be ſet in the pillory twice, and to be whipt, have one of his ears cut off, one ſide of his noſe ſlit, and be branded in the face with a double S.S. as a ſower of ſedition. When this ſavage ſentence was paſſed on him, the cruel Laud exhibited ſigns of the moſt indecent joy, and publicly gave God thanks for it. Excepting the impriſonment for life, and the fine, the ſentence was put into execution to the full extent. He was releaſed by the Long Parliament after an impriſonment of ten years. His confinement and cruel uſage had ſo impaired his health, that when he was releaſed he had ſcarcely the power of walking, or ſeeing, or hearing. As a ſort of remuneration for his troubles the parliament appointed him keeper of Lambeth palace, at that time converted into a priſon. He died in 1644, inſane. Toulmin's Neale's Hiſt. vol. ii.

Leighton, Robert, a Scotch prelate in the ſeventeenth century, was ſon of the preceding. He was educated in Scotland, where he diſtinguiſhed himſelf above his contemporaries, in all the branches of uſeful learning, particularly in the ſtudy of the ſcriptures. Having finiſhed his courſe of academical ſtudies he went to the continent for improvement, and ſpent ſome years in France. On his return he obtained Preſbyterian ordination, and was choſen to a congregation at Newbottle, near Edinburgh. Very ſoon after his ſettlement at this place he conceived a diſlike to the Preſbyterian form and manner of church diſcipline, and choſe rather a life of retirement than to attend at the preſbytery. His main object was to inſtruct his flock in the principles and duties of religion and morality, urging them not to trouble themſelves with religious and political diſputes. In the year 1648, he declared himſelf for the engagement for the king, on account of which he would have expoſed himſelf to much trouble, had not the earl of Lothian, who lived in his pariſh, proved his friend, and prevailed with the men in power not to moleſt him. At length, finding that he could no longer ſubmit to the eccleſiaſtical impoſitions of the Preſbyterians, and being unwilling to live in ſtrife and contention, he reſigned his pariſh in ſilence, and withdrew into retirement. Shortly after, he was choſen principal of the college of Edinburgh, the duties of which office he performed with great reputation during ten years. Upon the reſtoration, when it was determined to eſtabliſh epiſcopacy in Scotland, Leighton was fixed on as a proper perſon for the mitre. He was conſecrated, with other biſhops, at Weſtminſter; he would now gladly have promoted ſome plan for uniting the Preſbyterians and Epiſcopalians, but was thwarted in all views on this ſubject. When he found that the government was determined to enforce conformity on the Preſbyterians by the moſt rigorous meaſures, he laboured with all zeal to ſhew the impolicy of ſuch proceedings: but he ſtruggled ineffectually againſt the current, and all that he could do was to practiſe, in his own dioceſe, the moderation which he had recommended generally, and to ſet an edifying example to the reſt of his dignified brethren. Theſe, however, profited but little either from his advice or from the exemplary conduct which he manifeſted. He remonſtrated with the king reſpecting the arbitrary proceedings of the eccleſiaſtical high-commiſſion court, and more lenient meaſures were promiſed to be purſued with reſpect to Scotland. He begged permiſſion to reſign his ſee; but the king, ſo far from liſtening to the prayer of his petition, urged him to accept of the dioceſe of Glaſgow, which was a more important biſhopric, and one in which he might be more uſeful. To induce him to accept of this preferment, he was promiſed the aſſiſtance of the court in bringing about his favourite ſcheme of a comprehenſion of the Preſbyterians. He accepted the ſee, but after a ſhort time found himſelf wholly unable to carry on his great deſigns of healing the diviſions, and reforming the abuſes in the church, and begged permiſſion to retire into private life, which was at length granted him. He went to live in Suſſex, where he occupied himſelf in doing all the good in his power. He died in 1684, at about the age of eighty. He was author of "Prælectiones Theologicæ:" "A Commentary on the firſt and ſecond Chapters of the firſt Epiſtle of St. Peter;" and of "Sermons," including other pieces: to the volume of ſermons, publiſhed in 1758, is prefixed a life of the author, to which the reader is referred for ample particulars of this excellent divine.

Leighton, *Sir* William, knight, one of the honourable penſioners, who ſeems to have been a dilettante of conſiderable erudition in muſic; he publiſhed, in 1614, "The Tears or Lamentations of a ſorrowful Soul," compoſed with muſical airs and ſongs, both for voices and divers inſtruments. The beſt compoſers of the time contributed to this publication. See Lamentations.

Leighton-*Buzzard*, or *Beaudeſert*, in *Geography*, a market town and pariſh in the hundred of Manſhead and county of Bedford, England, is ſituated on the banks of the river Ouſe, 41 miles from London, and contained, according to the return made in 1800 to parliament, 387 houſes and 1963 inhabitants, of whom 1014 were ſtated to be employed in trades and manufactures. The market, which is held on Tueſdays, is one of the moſt ancient in the county; the tolls were valued at 7*l. per annum* at the time of the Norman ſurvey. Here are ſix annual fairs, of which two were granted in the year 1447. The principal antiquity in the town is a beautiful pentangular croſs, built of ſtone, and ſituated in an open area near the market-houſe: it is ſuppoſed to have been erected about the beginning of the fourteenth century. It conſiſts of two ſtories; and the whole height is thirty-eight feet. (For a particular deſcription, with an engraving, ſee Britton's Architectural Antiquities of Great Britain, vol. i.) The church is a large antique building, which, from the various groteſque carvings, appears to have been built about the ſame time as the croſs; and is conſtructed with the ſame ſort of ſtone. It has a ſquare tower, ſurmounted by a ſpire, the whole being 193 feet in height. A priory of foreign monks was eſtabliſhed in the reign of Henry II at a place called Grovebury, within this pariſh: and here was alſo a houſe of Ciſtercian monks, which was a cell to Woburn abbey. About half a mile from the town are the remains of a Roman encampment; from which, and other corroborating circumſtances, Leighton-Buzzard is ſuppoſed to be the Lygeanburg of the Saxon Chronicle, which, with ſeveral more towns, was taken from the Britons by Cuthwulph, A.D. 571. Lyſons's Magna Brittannia, vol. i. 4to.

LEIGNE'-sur-Usseau, a town of France, in the department of the Vienne, and chief place of a canton, in the diſtrict of Chatellerault. The place contains 311, and the canton 5127 inhabitants, on a territory of 142½ kiliometres, in 13 communes.

LEILAM, or Leylam, a town of the Arabian Irak; 30 miles N. of Bagdad.

LEIMA, a river of Ruſſia, which runs into the Irtiſch; 24 miles N. of Tobolſk.

LEINA, or Leine, a river of Weſtphalia, which riſes in the territory of Eichfeld, paſſes by Heiligenſtadt, Gottingen, Hanover, &c. and joins the Aller about two miles below Zelle.

Leina, a town of Germany, in the principality of Gotha; 4 miles S.S.W. of Gotha.

LEINE, a river of Germany, which runs into the Neſſa; 4 miles N. of Gotha.

LEINEN Zem, a town of Pruſſia, in the palatinate of Culm; 9 miles E. of Thorn.

LEININGEN, or Linange, lately a county of Germany, bordering on the biſhoprics of Worms and Spire, and almoſt ſurrounded by the palatinate. The ſoil is fertile in corn, fruit, and wine; the foreſt abounds with game, and it has alſo mines of copper and iron, and quarries of ſtone. By the peace of Luneville it was annexed to France.

Leiningen, a town of France, in the department of Mont Tonnerre, the caſtle of which was demoliſhed by the French; 11 miles S.W. of Worms. N. lat. 49° 30′. E. long. 8° 4′.

LEINLETTER, a town of Bavaria; 10 miles S.E. of Bamberg.

LEINSTER, the eaſtern province of Ireland, compriſing twelve counties, *viz.* Louth, Dublin, Wicklow, and Wexford on the ſea-coaſt; Meath, Weſtmeath, Longford, King's county, Queen's county, Kildare, Carlow, and Kilkenny. This was originally one of the kingdoms into which Ireland was divided at the time of the Engliſh invaſion, and it was the ſovereign of it who facilitated the conqueſt by ſoliciting aid from Henry II. and giving his daughter in marriage to earl Strongbow. The Engliſh pale was entirely within this province, and it is, on the whole, that which is moſt populous and beſt cultivated.

LEIOBATUS, in *Ichthyology*, a name given by Ariſtotle and Athenæus to a ſpecies of the ray-fiſh, called by many of the old authors *bos marinus*, and by the later authors *læviraia*, or *raia oxyrynchus;* which ſee.

LEIOPODES, formed of λειος, *light,* and πȣς, *foot,* an epithet uſed by the old medical writers to expreſs ſuch perſons who had feet perfectly ſmooth and even at the bottom, without the uſual hollow between the heel and the fore part of the foot.

LEIPHEIM, in *Geography*, a town of Bavaria, in the territory of Ulm, on the S. ſide of the Danube; 11 miles N.E. of Ulm.

LEIPNIK, a town of Moravia, in the circle of Prerau; 6 miles N.E. of Prerau. N. lat. 49° 28′. E. long. 17 35′.

LEIPODERMOS, from λειπω, *to be deficient*, and δερμα, *the ſkin*, one who has loſt the prepuce.

LEIPSICK, or Leipzig, in *Geography*, a city of Saxony, and capital of a circle of the ſame name. This is one of the moſt celebrated towns in Germany, pleaſantly ſituated in a fertile plain, on the river Pleiſſe. Its circuit is eſtimated at 8954 paces; and its ſuburbs are extenſive, and conſiſt of good buildings and gardens, being ſeparated from the town by a fine walk of lime trees, which runs round the town, and in the town ditches are planted mulberry trees. Its univerſity, which is famous, was founded in 1409, and contains ſix colleges, two good Latin ſchools, and two celebrated ſocieties, *viz.* a German ſociety, and another for the encouragement of the liberal arts. Leipſick is one of the principal trading towns in Germany, and it is in a peculiar degree the mart of German literature. Beſides its foreign commerce, it has three celebrated fairs, at Eaſter, Michaelmas, and the beginning of the year, at which foreign and domeſtic wares afford an extenſive trade. It has alſo a diſtinguiſhing privilege, conſiſting in the right of having all ſtaple commodities, imported within the circuit of 60 miles, unladen here, and at leaſt for three days offered for ſale to the burghers of the place, and then carried away without being unladen any where elſe. In the citadel, called Pleiſſenburg, ſituated on the Pleiſſe, are a mint, founded in 1752;

1752; and a chapel for the Roman Catholic worſhip. The market place, which is ſpacious, and the council-houſe, ſtand in the centre of the town. The exchange is a good building, and the roof of its hall is well painted. The city contains eight pariſh churches for Lutherans, and alſo a place of worſhip for Calviniſts. The manufactures are various; conſiſting of gold, ſilver, ſilk, wool, and linen yarn, which are wrought here; and alſo of ſtuffs, velvets, ſtockings, cloths, and linen. Here are alſo houſes for the dyeing of ſilk, the printing of cotton, and the making of tapeſtry. Leather, Pruſſian blue, &c. are prepared here, and the Orphan-houſe is appropriated to the culture of ſilk. In Leipſick are ſuppoſed to be 20 bookſellers, 50 French and Italian merchants and tradeſmen, 150 wholeſale dealers, 250 retailers, and many dealers in cloth. According to Dithmar, in his Chronicle, this place ſubſiſted, as a town, as long ago as the year 1015. The circle of Leipſick contains 33 towns, and more than 1000 villages. The city is 56 miles W.N.W. of Dreſden. N. lat. 51° 13′. E. long. 12° 19′.

Leipſick, as well as Dreſden and the whole of Saxony, keep accounts in rix-dollars of 24 good groſchen; each groſche being divided into 12 pfenings current. A ſpecie rix-dollar is reckoned at $1\frac{1}{3}$ rix-dollar current, or 32 good groſchen. For the coins, ſee SAXONY. Bills of exchange are paid at Leipſick, ſince 1786, in Saxon currency, or in Auguſt d'ors, Carl d'ors, Fredericks, &c. reckoned at five rix-dollars. The time of payment of bills of exchange, preſented for acceptance during the four firſt days of the fair, is during the five firſt days after the cloſe of the fair is proclaimed; in default of which the bills muſt be proteſted before 10 o'clock at night, or the drawer is not liable.

During the fair, when Dreſden was in its glory, ſerious operas were frequently performed at Leipſick by the beſt muſicians, vocal and inſtrumental; and to the greateſt perſonages in Germany. In 1774, the comic operas of M. Hiller, in the language of the country and without recitative, were the favourite amuſements of that flouriſhing city. Every part of Europe, except Italy, ſeems unanimous in baniſhing recitative from their comic operas, indeed every nation has melodies of its own; but there is no recitative, except the Italian, which is fit for dramatic purpoſes.

LEISZNIG, a town of Saxony, in the circle of Leipſick, on the Mulda, containing two churches, and having manufactures of cloth, lace, ſtockings, &c. It has a citadel, called Mildenſtein; 24 miles E.S.E. of Leipſick. N. lat. 51° 7′. E. long. 12° 50′.

LEITA, or LEYTHA, a river that riſes in the S.W. part of Auſtria, and joins the Raab at Raab in Hungary; and afterwards, the united ſtream runs into a branch of the Danube; nine miles W. of Comorn.

LEITH, a ſea-port town and burgh of barony, ſituated on the Frith of Forth, in the county of Midlothian, Scotland. It is about two miles diſtant from Edinburgh, and may not improperly be called the harbour of that northern metropolis. This town was originally denominated Inverleith; the word *inver,* prefixed to the name of a river, being a frequent appellation in Scotland, and implies a town near the mouth of that river, or its confluence with another. The etymology of this term is very uncertain, ſome alleging it to be of French, and others of Gaelic derivation.

The period at which Leith was firſt founded is unknown, but it is undoubtedly a place of great antiquity. It is mentioned by the name of Inverleith in the charter for erecting the abbey of Holyrood, which was built by David I. in the year 1128. About a century afterwards the harbour of Leith and its mills were granted to the magiſtrates of Edinburgh by Robert I., and in 1398 they acquired all the other rights and privileges of it, with the exception of the ſuperiority from Logan of Reſtalrig. Mary of Guiſe, queen regent of Scotland, conſtituted this town a burgh of barony in the year 1549. At this time the inhabitants of Leith were divided into four claſſes, or corporations; the mariners, maltmen, tradeſmen, and traffickers, each of which ſtill retains its original charters. In the ſame reign, the citizens purchaſed the ſuperiority of their town from the deſcendants of Logan, but after the death of the queen, Francis and Mary, in violation of the private rights of the people, ſold the ſuperiority of the burgh to the magiſtrates of Edinburgh, to whom it has ſince been confirmed by ſeveral ſucceſſive charters. Leith ſuffered conſiderably when the earl of Hartford invaded Scotland in the year 1541, being on that occaſion pillaged and burnt by the Engliſh ſoldiers. After this, however, Leith was rebuilt and fortified anew, but ſoon after the expulſion of the French in 1560, the council of the kingdom, to prevent the danger ariſing to the liberties of the country, from the introduction of foreign troops, ordered the fortifications to be demoliſhed. Oliver Cromwell once more raiſed fortifications for its defence. The citadel, which ſtill remains, was built by that uſurper. It then conſiſted of five baſtions, but two of them were entirely demoliſhed at the reſtoration of the Engliſh monarchy, and the ſcite of the whole given to the duke of Lauderdale, then prime miniſter for Scotland, from whom the magiſtrates of Edinburgh were compelled to purchaſe it, at the enormous ſum of 6000*l.* ſterling. Since the alarm, excited by the appearance of Paul Jones in the Frith of Forth, a battery of nine guns has been erected a little to the weſtward of the citadel, for the defence of the port and ſhipping. A party of artillery conſtantly reſide at this battery, which is kept in excellent order; and of late a conſiderable park of artillery has likewiſe been ſtationed here.

Leith is divided into two pariſhes by the river from which it derives its name. Theſe are diſtinguiſhed by the appellations of North and South Leith, and communicate with each other by means of two drawbridges, one of which has been very lately erected. The greater part of the town is ſituated in the pariſh of South Leith, which alſo extends over a conſiderable country diſtrict, and includes the ancient pariſh of Reſtalrig. North Leith is a much ſmaller pariſh, and conſiſts of only about 170 acres. Both on the ſouth and north ſide of the river, the ſtreets of this town are extremely irregular, and of mean appearance. In the ſuburbs of South Leith, however, a number of reſpectable houſes have been erected by the more opulent merchants, and may be ſaid to vie, in internal accommodation and exterior appearance, with thoſe of Edinburgh.

Prior to the year 1771, Leith was ill ſupplied with water, and the ſtreets were neither properly cleaned nor lighted; in that year, however, an act of parliament was obtained to remedy theſe defects; and the great change which has taken place ſince that period ſhews the good effect of the act, and that it had been judiciouſly prepared and was carefully executed. At Reſtalrig are ſtill extant ſome ruins of the old or mother church. This place is about a mile eaſtward of Edinburgh. The church was founded by king James III., and endowed by the three ſucceeding monarchs. It was highly ornamented with ſtatuary and ſculpture, repreſenting many objects of religious worſhip. In 1650, the general aſſembly, in their zeal againſt Popery, ordered this church, as a monument of idolatry, to be pulled down and entirely demoliſhed. In conſequence of this mandate, the inhabitants of South

Leith reſorted for divine worſhip to the chapel of St. Mary, which was afterwards declared by authority of parliament to be the pariſh church of the diſtrict. It is a handſome ſpacious building; but being found inſufficient to contain the inhabitants, a chapel of eaſe was erected in 1772. Here is alſo an epiſcopal chapel; and, as in all towns of any conſequence in Scotland, ſome meetings of Preſbyterian diſſenters.

The civil government of Leith is veſted in a magiſtrate ſent from Edinburgh, having the power and title of admiral of Leith, and in two reſiding bailiffs, who are elected from the inhabitants of Leith by the town-council of Edinburgh.

The harbour of Leith, which is the chief ſource of wealth to the place, is formed by the conflux of the water of Leith with the ſea. The depth of the water at the mouth of the harbour is at neap tides about nine feet, but in high ſpring tides about ſixteen. It is entirely a tide harbour; the water in the river being too trifling to give any important aid towards the navigation. About the beginning of the laſt century, the magiſtrates of Edinburgh improved the harbour at a great expence, by extending a ſtone pier to a conſiderable diſtance into the ſea. In the year 1777, they further improved it by erecting an additional ſtone quay towards its weſt ſide. It is accommodated with wet and dry docks, and other conveniences for ſhip-building, which is carried on to a conſiderable extent; and veſſels come hither to be repaired from various parts of the eaſtern coaſt of Scotland. It has been thought advantageous to extend the harbour further into North Leith; and very conſiderable works are now carrying on for that purpoſe; which, when completed, will render it a very capacious, as well as a ſafe and convenient ſtation for trading veſſels of almoſt any burthen. Ships, indeed, can only enter at full tide; but the roads of Leith, which are about a mile from the mouth of the harbour, afford moſt excellent anchorage at all times.

Leith carries on a very conſiderable trade; the imports from the ſouthern parts of Europe are wines, brandy, and fruits; from the Weſt Indies and America, rice, ſugar, rum, and dye-ſtuffs; but the principal traffic is with the Baltic, for which it is peculiarly well ſituated. The ſhipping of Leith cauſes a great demand for ropes and ſail-cloth; of which articles here are ſeveral manufacturing companies. Two glaſs manufactories are eſtabliſhed here, which, in the year 1790, wrought above nine million pounds weight of that article. The manufactures of ſoap and candles are alſo carried on to a very great extent; here are alſo a conſiderable carpet manufactory, and ſeveral iron forges. In 1784, the trade of Leith was eſtimated at half a million ſterling, excluſive of glaſs-works and ſhip-building; and there is every reaſon to believe that, ſince that period, the amount has been doubled. In the year 1791 the population of North Leith was 2409, and of South Leith 11,432; total 13,841, which was an increaſe of 4436 ſince the year 1755. Beauties of Scotland, vol. i. Picture of Edinburgh.

LEITH *Water*, a river of Scotland, which runs into the Forth at Leith.

LEITHEN, a river of Scotland, which runs into the Tweed at Inverleithen.

LEITMERITZ, a city of Bohemia, in a circle of the ſame name, ſeated on the Elbe, well built, and populous; the ſee of a biſhop, ſuffragan of Prague.

The circle, diſtinguiſhed by its beauty and fertility, is called the "Bohemian Paradiſe;" and, independently of its own reſources, it has ample ſupplies, by means of the Elbe, from other countries. It is famous for the wines, produced near Auſti, and called "Podſkalſky," and for the ſalubrious mineral waters of Topolitz. In this circle, which comprehends 89 ſeignories, eſtates, and ſeats, are tin and precious ſtones; 28 miles N.N.W. of Prague. N. lat. 50° 31′. E. long. 14° 15′.

LEITRIM, a county of Ireland, in the province of Connaught, which is bounded on the north by Donegal and Fermanagh; on the eaſt by Cavan; on the ſouth by Cavan, Longford, and Roſcommon, and on the weſt by Sligo. In form ſomewhat like an hour-glaſs, it varies greatly in breadth, being in the wideſt parts 16, and in the narroweſt only ſix miles acroſs. Its length is 41 Iriſh, or 52 Engliſh miles. It contains 255,950 acres, or about 400 ſquare miles (407,260 acres, or 652 ſquare miles in Engliſh meaſure.) The pariſhes are 17 in number, partly in the dioceſe of Kilmore, and partly in that of Ardagh. There are very few unions, and a church in almoſt every pariſh. When Dr. Beaufort wrote, the number of houſes was rated at 10,026, from which he eſtimated the population at upwards of 50,000; but Mr. Robertſon in 1806, on what authority he has not ſtated, rates it at 76,630. Of the five baronies into which Leitrim is divided, the two northern are not as populous as the other three. Towards the ſea there is an aſſemblage of wild and lofty mountains, which are divided from one another by deep vallies. Theſe are the mountains of Sliebh-anewr and Dartry, the latter of which towers to an immenſe height above the level of the ſea. Near the interior, the immenſe Sliebh-an-Erin divides the mountainous from the level parts of the country. Theſe great hills are far from unprofitable, for producing abundance of coarſe graſs, they annually pour forth immenſe droves of young cattle. The ſouthern baronies are level. Few counties are ſo plentifully watered as this. The Shannon riſes in a plain at the baſe of Quilca mountain, forming Lough Clean, a ſmall lake, which is conſidered as the fountain of that noble river; from this it flows to Lough Allen, nearly in the centre of the county, which is 7 miles long and about 30 in circumference; and then, curling in a variety of forms, it glides by Carrick on Shannon, where it leaves the county, taking a ſouthern direction. There are ſeveral other lakes and ſmall ſtreams, which are ſtored with trout, pike, eel, perch, and bream. The natural wants of this county ſeem abundantly outweighed by its numerous minerals. Iron ore is contained in great quantities in the high grounds. Deep and rich beds of it are alſo found on the lower grounds; and a vigorous ſearch would undoubtedly diſcover it in almoſt every ſituation. Copper and lead are alſo met with, but not in ſuch quantities. Coal in deep and rich ſtrata is viſible in many places. A variety of clays and plenty of limeſtone gravel are likewiſe found. The ſoil is exceedingly diverſified. A rich dark ſoil on a limeſtone bottom, a ferruginous loam on the mountains, and an argillaceous ſtratum, are its chief characteriſtics. Great quantities of bog and moor tend to interrupt the general fertility of the county. The mode of agriculture adopted by the farmers is injudicious in many particulars. Potatoes, barley, rye, and wheat, are reared in ſmall quantities; oats in abundance for home conſumption. A conſiderable portion of the land is paſturage. The farms are ſmall, and generally occupied in common by a number of tenantry. Draining is greatly neglected. Manufactures are rapidly improving, particularly that of linen. There are ſeveral bleach-greens. Potteries are numerous about Leitrim and Dromahare. The traveller who is anxious for variety, will no where find it in greater perfection than in Leitrim. Extenſive tracts of waſte may be contraſted with rich lands. The uniform and regular improvements of art are loſt in the wild grandeur of pictureſque natural diſorder. The dale is frequently terminated by the ſtupendous mountain,

tain, and the beauties of the rich luxuriant woods on the demeſnes, are enriched by the vicinity of beautiful ſheets of water. Near a century ago, the county was a continued foreſt. Immenſe heaps of charred timber are ſeen at Dromſhambo. A conſiderable time ago, great exertions were made to plant woods, and it now abounds with almoſt every variety which the nurſery can afford. No town of any ſize ornaments the county. Carrick on Shannon is the ſhire town, but does not contain above 100 houſes.

"The obſtacles," ſays Mr. Robertſon, "which have ſo long retarded the improvement of Leitrim, have been occaſioned by the inhabitants, not by nature; ſhe has made ample ſtore for the exertions of their induſtry, by beſtowing on them valuable minerals. Theſe, however, have not been wrought with ſufficient activity, and the public have as yet received little benefit from them. The want of water-carriage has likewiſe had a great effect; but this promiſes to be ſpeedily obviated. Paſturage being purſued to a conſiderable extent, has in a great degree impeded the general improvement. The conſequent want of population has retarded the cultivation of the bog and other waſte land. But when the true intereſt of the people ſhall be ſufficiently underſtood, the minerals will be wrought, paſturage will be ſupplanted by tillage, the bogs and moors will be covered with luxuriant crops, and in the end Leitrim will become one of the moſt wealthy counties in Ireland." Beaufort's Memoir; Robertſon's Traveller's Guide.

Leitrim, a ſmall town of Ireland, which gives name to the county, but is not conſiderable enough to be a poſt-town. It is three miles N. by E. from Carrick on Shannon, and ſituated on the river Shannon.

LEITSHACH, a town of the duchy of Stiria; 13 miles N.W. of Marburg.

LEITURGI, Λειτουργοι, among the *Athenians*, perſons of conſiderable eſtates; who, by their own tribe, or the whole people, were ordered to perform ſome public duty, or ſupply the commonwealth with neceſſaries at their own expences.

LEITZKO, in *Geography*, a town of the Middle Mark of Brandenburg, inſulated in the duchy of Magdeburg; 14 miles E.S.E. of Magdeburg.

LEIXLIP, a poſt-town of the county of Kildare, Ireland. It is beautifully ſituated on the banks of the river Liffey, and near it is a fine waterfall, called the Salmon Leap. It is eight miles W. from Dublin.

LEKEO, one of the Japan iſlands, about 120 miles in circumference; 20 miles S. of Ximo. N. lat. 31° 20′. E. long. 152° 40′.

LEKINPOUR, a town of Hindooſtan, in the circar of Cattack; 12 miles N.E. of Cattack.

LEKNO, a town of the duchy of Warſaw; 28 miles N.N.W. of Gneſna.

LEKSAND, a town of Sweden, in Dalecarlia; 20 miles N.W. of Falun.

LELAND, John, in *Biography*, was born in London about the end of Henry VIIth's reign, and was educated at St. Paul's ſchool, under William Lily, from whence he was ſent to Chriſt's college, Cambridge. He removed from this univerſity to All-ſouls, Oxford; and for farther improvement, eſpecially in the Greek language, he went to Paris, cultivated an acquaintance with the principal ſcholars of the age, and acquired a knowledge of ſeveral modern languages. Upon his return he took orders, and was appointed one of Henry VIIIth's chaplains. The king conferred upon him the office of keeper of his library, and gave him the title of royal antiquary, which no other perſon in this kingdom before or after poſſeſſed. To the title was annexed a commiſſion, empowering him to ſearch after all objects of antiquity in the libraries of all cathedrals, abbies, priories, colleges, &c. He ſpent much time in travelling through England, and in viſiting all the remains of ancient buildings and monuments of every kind, with the view of collecting every thing that could illuſtrate the hiſtory and antiquities of this nation. At the diſſolution of the monaſteries he made application to ſecretary Cromwell to get the MSS. which they contained conveyed to the king's library. He obtained conſiderable preferment in the church, the duties of which did not require much active ſervice; he accordingly retired with his collections to his houſe in London, for the purpoſe of digeſting them and preparing the publications he had promiſed the world; but either intenſe application, or ſome other cauſe, brought upon him a derangement of mind in the year 1550, from which he never recovered. He died in 1552. During his life, he publiſhed ſeveral Latin poems, and ſome tracts on antiquarian ſubjects. His MS. collections, after paſſing through many hands, came into the Bodleian library, furniſhing very valuable materials to Camden, Dugdale, Burton, and others. After his deceaſe in 1589, a volume of his ſmall Latin poems was publiſhed by Mr. Thomas Newton of Cheſhire, under the title of "Principum et illuſtrium aliquot et eruditorum in Anglia virorum Encomiæ." From his collections, Anthony Hall publiſhed, in 1709, "Commentarii de Scriptoribus Britannicis." "The Itinerary of John Leland, the Antiquary," was publiſhed by Hearne at Oxford, in nine vols. 8vo. The ſame editor publiſhed "Joannis Lelandi Antiquarii de rebus Britannicis Collectanea;" ſix vols. Biog. Brit.

Leland, John, a diſſenting miniſter, was born at Wigan, in Lancaſhire, in the year 1691. While he was very young his father removed with his family to Dublin, where the ſon was ſeized with the ſmall-pox of ſo malignant a nature, that it entirely deprived him of his underſtanding and memory. In this melancholy condition he remained twelve months, but after his recovery, he recommended himſelf to much notice by the quickneſs of his parts, and by the proficiency which he made in his learning. He was therefore educated for the Chriſtian miniſtry among the Diſſenters; and was, in due time, invited to become joint-paſtor with the Rev. Mr. Weld, to which office he was ordained in 1716. He firſt appeared as an author in 1733, by publiſhing "An Anſwer to a late Book, entitled 'Chriſtianity as old as the Creation &c.' in two volumes." In 1737, he embarked in a controverſy with Dr. Morgan, by publiſhing "The divine Authority of the Old and New Teſtament aſſerted againſt the unjuſt Aſperſions and falſe Reaſonings of a Book, entitled The Moral Philoſopher." The learning and abilities diſplayed by Mr. Leland in theſe publications, and the ſervice which he rendered by them to the Chriſtian cauſe, procured him many marks of reſpect and eſteem from perſons of the higheſt rank in the eſtabliſhed church, as well as from the moſt eminent of his diſſenting brethren; and from the univerſity of Aberdeen he received, in the moſt honourable manner, the degree of doctor of divinity. In the year 1742, Dr. Leland publiſhed an anſwer to a pamphlet, entitled "Chriſtianity not founded on Argument;" and in 1753, he diſtinguiſhed himſelf ſtill further as an advocate in behalf of Chriſtianity, by publiſhing "Reflections on the late Lord Bolingbroke's Letters on the Study and Uſe of Hiſtory; eſpecially ſo far as they relate to Chriſtianity and the Holy Scriptures." Dr. Leland was now juſtly conſidered a maſter in this branch of controverſy, and at the deſire of ſome valuable friends he ſent to the preſs, in 1754, "A View of the principal deiſtical Writers that have appeared in England, in the laſt and preſent Century, with Obſervations,

ſervations, &c." The deſign of this work was to give ſome idea of the productions of the deiſtical writers, and of the ſeveral ſchemes which they have advanced, as far as the cauſe of revealed religion is concerned. In this work, the author ably maintained the reputation which he had acquired by his former productions, and it met with a very favourable reception. He afterwards publiſhed a ſupplement relating to the works of Mr. Hume and lord Bolingbroke, and this was followed by a third volume, comprehending the author's additions and illuſtrations, with a new edition of his "Reflections upon Lord Bolingbroke's Letters, &c." The whole of this work is now compriſed in three volumes; it ſecured the author general public approbation, and encouraged him to continue his exertions to a very advanced age. Accordingly, when he was upwards of ſeventy years old he publiſhed, in two volumes 4to. "The Advantage and Neceſſity of the Chriſtian Revelation, ſhewn from the State of Religion in the ancient heathen World, eſpecially with reſpect to the Knowledge and Worſhip of the one true God; a Rule of moral Duty, and a State of future Rewards and Puniſhments, &c." This work was afterwards reprinted in two volumes, 8vo. Dr. Leland died in his ſeventy-fifth year, on the 16th of January 1766; he was diſtinguiſhed by conſiderable abilities, and very extenſive learning; he had a memory ſo tenacious, that he was often called the "walking library." After his death a collection of his ſermons was publiſhed in four volumes octavo, with a preface containing ſome account of the life, character, and writings of the author, to which our readers are referred for farther information reſpecting him.

LELAND, *Dr.* THOMAS, a divine of the church of England, was born at Dublin about the year 1702. Having received the elements of a good education, he was admitted a ſtudent, and afterwards became fellow of Trinity College, Dublin. He was author of "A Hiſtory of Ireland," 4to.; "The Life of Philip of Macedon;" and "The Principles of human Eloquence." He alſo tranſlated the orations of Demoſthenes, in two volumes, 8vo., which came out ſeparately, and were well received by the public. Dr. Leland died in 1785, at the age of eighty-three.

LELCZA, in *Geography*, a town of Ruſſian Poland, in the palatinate of Volhynia; 60 miles N. of Zytomiers.

LELEGES, in *Ancient Geography*, a collection of people from different nations, as the ſuppoſed etymology of their name, derived from λεγω, *I aſſemble*, imports. They anciently occupied the territory adjoining to that of the people called by Homer Cilices or Cilicians; and when Achilles ravaged their country, which lay north-weſt of the gulf of Adramyttium, they paſſed over into Caria, and took poſſeſſion of the environs of Halicarnaſſus. Their town was the metropolis of Caria, near Myſia. They were a kind of robbers and vagabonds, who reſembled the Cilicians in their diſpoſition and manners. The firſt king of Laconia, according to Pauſanias, was Lelex; and the country took the name of Lelegia from theſe people.

LELIAN, in *Geography*, a town on the north coaſt of the iſland of Bouro.

LELIT PATTAN. See PATTAN.

LELOW, a town of Auſtrian Poland, in the palatinate of Cracow; 32 miles N.W. of Cracow.

LELUNDA, a river of Africa, which joins the Zaire, about 60 miles from its mouth.—Alſo, a town of Africa, in the kingdom of Congo, on the fore-mentioned river; 35 miles E. of St. Salvador.

LELY, *Sir* PETER, in *Biography*, the moſt excellent portrait-painter this country poſſeſſed, after the death of Vandyke. Many of his works continue to be held in moſt deſerved eſtimation, and to be ranked amongſt the claſſics of the art. He was born at Soeſt, in Weſtphalia, in 1617. His family name was Vander Vaas; but from the circumſtance of his father, who was a captain of foot, being born in a perfumer's ſhop, whoſe ſign was a lily, and receiving the appellation of captain Du Lys, or Lely, our artiſt obtained it as a proper name.

He was firſt inſtructed in the art by Peter Grebber at Haerlem; and having acquired a knowledge of its principles, and a very conſiderable degree of ſkill in execution, he came to England in 1641, and commenced portrait-painter. After the kingdom had ſuſtained the irreparable loſs of Vandyke, and the reſtoration was completed, he was appointed ſtate-painter to Charles II., and continued to hold that office with great reputation till his death, which happened in 1680. He was ſeized by an apoplexy, while painting a portrait of the ducheſs of Somerſet, and died inſtantly, at the age of ſixty-three.

Though Lely's talents, as an artiſt, do not entitle him to hold a rank equal to that filled by his great predeceſſor; yet they juſtly claim very great reſpect and admiration. He fell ſhort of Vandyke in two very eſſential parts of portraiture, *viz* taſte and expreſſion. Of the former it muſt be acknowledged that he ſometimes caught a glimpſe; and, in the diſpoſal of a piece of looſe drapery, exhibited it with an enchanting ſtyle: but that high claſs of taſte, which evidently ſways the artiſt's mind who arranges, without apparent ſtudy, all the parts of a compoſition in an agreeable and effective manner, he does not appear ever to have felt or underſtood. It is in parts only that he wrought with taſte: in the ringlets of the hair, for inſtance; ſeldom in the actions of his figures, and ſcarcely ever in the tout-enſemble of his pictures. As to the expreſſion of his portraits, it is almoſt entirely deſcribed, at leaſt in thoſe of his females, by what the poet has ſaid, that he

> " ——— on animated canvas ſtole
> The ſleepy eye that ſpoke the melting ſoul."

The conſequence is, that individual expreſſion, the very eſſence of portrait-painting, is loſt ſight of; and a certain air of general reſemblance is ſeen in them all.

Yet in ſpite of theſe great deficiencies, Lely's pictures, by the maſtery of his execution, and his ſkill of imitation, where he pleaſed to employ it, will ever command admiration. He poſſeſſed the art of flattery more than moſt artiſts; and no doubt by that ſecured the approbation of his contemporaries, and conſequently great practice. He painted drapery in a ſtyle peculiarly his own, with great richneſs and fulneſs of effect; and he underſtood fully the union of folds, though he did not always diſpoſe them in juſt or agreeable ſhapes. His pencil is broad and full, and the markings of forms and features are free and decided in his pictures, which are to be found in almoſt every noble manſion in the kingdom; ſo great were the encouragement and employment he enjoyed.

By it he acquired a very conſiderable fortune, of which he employed a large portion to furniſh himſelf with a collection of pictures and drawings. Theſe, at his death, were ſold by auction, and were ſo numerous, that forty days were conſumed in the ſale; and the product amounted to 26,000*l.*; beſides which, he left an eſtate he had purchaſed, of 900*l.* *per annum*.

LEMA, in *Geography*, a ſmall iſland in the Chineſe ſea. N. lat. 22°. E. long. 114° 17'.

LEMA *Iſlands*, a cluſter of ſmall iſlands in the Eaſt Indian ſea, ſca, near the weſt coaſt of the iſland of Borneo. S. lat. 1° 10′. E. long. 108° 48′.

LEMAIRE, in *Biography*, is now generally ſuppoſed to have added, about the middle of the ſeventeenth century, the ſyllable *ſi* to the hexachord, in order to furniſh a name, in ſolmiſation, to the ſharp 7th of the key, and eaſe the ſtudents in ſinging of the embarraſſments of the mutations. Many volumes have been written for and againſt the mutations. We believe that in the conſervatorios at Naples and Venice they are ſtill preſerved, and by the organiſts of our cathedrals who teach the choriſters; but in many other parts of Europe, beſides France, the *ſi* has been adopted. Though much has already been ſaid on both ſides the queſtion, much ſtill remains to be ſaid by the champions of both methods. See MUTATION, SOLMISATION, HEXACHORD, and the ſyllable SI, in their ſeveral places.

LEMAN LAKE, in *Geography*. See GENEVA and LAKE.

LEMAN, *Department of*, one of the eleven departments of the eaſtern region of France, compoſed of Gex and Geneva, and the north part of Savoy, in N. lat. 46° 10′, on the frontier of Switzerland, and ſo called from lake Leman. It is bounded on the north by the lake, Switzerland, and the department of Jura; on the eaſt by the Valais, and the departments of the Doria and Mont Blanc; on the ſouth by the department of Mont Blanc; and on the weſt by the departments of the Ain and Mont Blanc. Its chief towns are Geneva, Thonon, and Bonneville. It contains 197 ſquare leagues, and 215,884 inhabitants; and is divided into three circles or diſtricts, including 23 cantons, and 276 communes; *viz.* Geneva, comprehending 103,550 inhabitants; Thonon, the inhabitants of which are 39,465; and Bonneville, including 72,869 inhabitants. Its contributions amount to 906,632 francs, and its expences to 200,427 francs, 66 cents. This department conſiſts of hills, vallies, and plains; producing grain, wine, fruits, and paſtures. It has foreſts and iron-mines.

LEMAVI, in *Ancient Geography*, a people of Spain, in the Tarragonenſis. Their capital was Dactonium, according to Ptolemy.

LEMBA, a town of Aſia, which Joſephus claſſes in the number of thoſe which the Jews poſſeſſed in the country of the Moabites.

LEMBA, in *Geography*, a town of Africa, in the kingdom of Congo.—Alſo, a town on the weſt coaſt of the iſland of Celebes. S. lat. 3° 15′. E. long. 119° 52′.

LEMBACH, a town of Auſtria; 9 miles S. of Aigen.

LEMBEECK, a town of France, in the department of the Scheldt; 8 miles S. of Ghent.

LEMBIGE, or LEMBAYE, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Pau; 15 miles N.E. of Pau. The place contains 960, and the canton 11,626 inhabitants, on a territory of 217½ kiliometres, in 47 communes.

LEMBERG, or LEOPOLD, a city of Auſtrian Poland, and capital of Galicia, large and opulent, and well fortified with timber. It lies low on the banks of the river Peltew, which ſoon after joins the Berg; being ſurrounded with hills and mountains which command the town. It is the ſee of a Popiſh archbiſhop, and alſo of a Ruſſian and Armenian biſhop. It has two caſtles, one within and another without its walls; the latter ſtanding on a high hill, and having the Carmelite monaſtery, which is fortified, for a citadel: and it carries on a conſiderable trade. Lemberg has a magnificent cathedral, ſeveral other churches, a gymnaſium or ſeminary, an arſenal, a public granary, two Jewiſh ſchools, &c. A provincial diet and court of judicature are held in this town. It is inhabited by a mixed people of different nations; but no Proteſtants are tolerated; 72 miles S.S.E. of Chelm. N. lat. 49° 51′. E. long. 23° 59′.

LEMBO, a town of Africa, in Congo, on the Zaire; 40 miles S.W. of Etrona.

LEMERY, NICHOLAS, in *Biography*, an eminent French chemiſt, was born at Rouen, in November 1645. His father, Julian Lemery, was a *procureur* in the parliament of Normandy, and of the Calviniſt perſuaſion. Nicholas was brought up to the buſineſs of pharmacy, under an apothecary of Rouen; and he went to Paris in 1666, with the view of obtaining farther improvement, eſpecially in the art of chemiſtry, which he perceived to be the baſis of correctneſs in the proceſſes of pharmacy. Here he ſtudied under Glaſer, demonſtrator of chemiſtry in the royal garden; and afterwards ſpent ſix years in travelling, for the purpoſe of adding to his knowledge. He reſided a conſiderable time at Montpellier, then famous for its apothecaries; and brought with him to Paris, where he ſettled in that capacity in 1672, all the knowledge in his department of the art which the kingdom at that time afforded. In order to give public proofs of his information and ſkill, he announced a courſe of lectures on chemiſtry, which his friend, M. Martin, apothecary to the prince of Condé, allowed him to deliver in his laboratory, at the hotel of that prince. He afterwards procured a laboratory of his own, which, though little better than a dark cellar, ſoon became the centre of attraction, not only to the firſt ſcientific characters in Paris, but to ladies, who reſorted thither partly from a love of knowledge, and partly from faſhion. Chemiſtry was then indeed coming into great vogue in that metropolis; and Lemery contributed greatly to its advancement, by treating it in a ſimple and perſpicuous manner, diveſting it of the jargon of myſticiſm in which it had been hitherto obſcured, and, by the dexterity of his experiments, exhibiting the facts which it diſcloſes to the comprehenſion of every underſtanding. By theſe means, Lemery eſtabliſhed ſuch a character for ſuperior chemical ſkill, as enabled him to make a fortune by the ſale of his preparations, which were in great requeſt both in Paris and the provinces. One article in particular was the ſource of great profit, namely, the oxyd, or, as it was then called, the magiſtery of biſmuth, and known as a coſmetic by the name of *Spaniſh white*, which no other perſon in Paris knew how to prepare. In 1675 he publiſhed his "Cours de Chymie," which was received with general approbation and applauſe, and paſſed through numerous editions: indeed ſeldom has a work on a ſubject of ſcience been ſo popular. It ſold, ſays Fontenelle, like a novel or a ſatire: new editions followed year after year; and it was tranſlated into Latin, and into various modern languages. Its chief value conſiſted in the clearneſs and accuracy with which the proceſſes and operations were detailed: the ſcience was not yet ſufficiently advanced for a rational theory of them. Indeed he ſeems to have worked rather with the view of directing apothecaries how to multiply their preparations, than as a philoſophical chemiſt; and his materials are not arranged in the moſt favourable manner for the inſtruction of beginners in the ſcience. Nor did he divulge the whole of his pharmaceutical knowledge in this treatiſe: he kept the preparation of ſeveral of his chemical remedies ſecret, in order to obtain the greater profit by their ſale.

Hitherto our chemiſt, though openly profeſſing Calviniſtic principles, had not been interrupted by the ſpirit of perſecution, which diſgraced the latter part of the reign of Louis XV.; but in 1681, he received an order to diſcontinue

tinue his public lectures within a limited time. While under this interdiction, he was invited to Berlin by the elector of Brandenburg; but he preferred removing to England, where he was favourably received by Charles II., who had an attachment to chemical purſuits. Circumſtances, however, did not accord with his expectations; and he returned to his own country, and took the degree of doctor of phyſic at Caen, with the hope of thus protecting himſelf from farther perſecution. He actually acquired conſiderable employment in his new character at Paris; but the revocation of the edict of Nantes, in 1685, by which the practice of phyſic was interdicted to Proteſtants, deprived him of his means of ſubſiſtence, and reduced him to ſuch difficulties, that his conſtancy at length gave way, and, in the following year, he with his family was reconciled to the Catholic church. He then readily obtained letters patent, allowing him to reſume his practice, and his office of public teacher; and he again derived conſiderable emolument from the ſale of his medicines. In 1697 and 1698 he publiſhed two works of conſiderable value, but not without many imperfections. Theſe were, 1. "Pharmacopée univerſelle," containing a collection of the formulæ given in all the reputable diſpenſatories in Europe, with corrections and improvements. Like the pharmaceutic works of that time, it was overloaded with articles, but was ſuperior to its contemporaries. 2. His "Dictionnaire univerſel des Drogues Simples;" which was a ſtill more uſeful work than the former.

On the re-eſtabliſhment of the Academy of Sciences in 1699, Lemery was appointed aſſociate-chemiſt, and ſucceeded to the office of penſionary, on the death of Bourdin. He then read before that body the papers on the ſubject of antimony, which were printed in 1707, under the title of "Traité de l'Antimoine." Upon this ſubject he had a controverſy with an anonymous critic, in which he was conſidered as not very ſucceſsful. He was now advancing in years, and found the infirmities of age increaſing upon him, when his life was ſuddenly terminated by a fit of apoplexy, on the 19th of June 1715. Lemery was one of the ableſt chemiſts of his time, and indefatigable in his reſearches; having ſpent his life in his laboratory, or ſtudy, at the bed-ſide of the ſick, or in the Academy. He was a man of great ſimplicity of manners, ſincere in his friendſhips, and of the ſtricteſt integrity in the commerce of life. Eloy Dict. Hiſt de la Med. Gen. Biog.

Lemery, Louis, ſon of the preceding, was born at Paris in January 1677, and obtained a reputation for knowledge in chemiſtry and medicine worthy of his name. He was intended for the profeſſion of the law; but he had imbibed from the purſuits of his father ſo great a taſte for thoſe ſciences, that he entered the faculty of medicine of his native city, and received the degree of doctor in 1698. Two years afterwards he was admitted into the Academy of Sciences, and in 1708 he delivered lectures on chemiſtry in the royal garden. In 1710 he was appointed phyſician to the Hotel-Dieu, a poſt which he occupied during the remainder of his life. In 1712 he obtained the rank of aſſociate in the Academy, and ſucceeded his father in that of penſionary in 1715. He purchaſed the office of king's phyſician in 1722; and in that capacity he accompanied the infanta of Spain on her return from France, whither ſhe had gone with the view of being married to Louis XV. Soon after his return to Paris, he was honoured by the queen of Spain with the title of her conſulting phyſician. In 1731 he was appointed profeſſor of chemiſtry in the royal garden, in the place of Geoffroy. At a ſubſequent period, he became particularly attached to the eſtabliſhment of the ducheſs of Brunſwick, whom he frequently viſited in the palace of Luxembourg; and he likewiſe obtained the patronage of the princeſs of Conti, in whoſe hotel he regularly paſſed a part of every day, and there compoſed ſeveral of the chemical papers which he read before the Academy of Sciences. Theſe papers treat of the ſubjects of iron, of nitre, and ſome other ſalts, of vegetable and animal analyſes, of the origin and formation of monſters, &c. Louis Lemery died on the 9th of June 1743, and the loſs of him was much regretted; for to the mild and poliſhed manners of the gentleman, he united great ſincerity and conſtancy in his attachments, and ſentiments of liberality and generoſity in all his proceedings.

In addition to the papers publiſhed in the Memoirs of the Academy, he left the following works: 1. "Traité des Alimens," Paris, 1702, which was frequently reprinted, and greatly augmented by Bruhier in the edition of 1755, 2 vols. 12mo. 2. "Diſſertation ſur le Nourriture des Os," Paris, 1704, 12mo. In this work he maintains that the bones are nouriſhed by a peculiar gelatinous fluid, depoſited in their ſubſtance by the ſmall arteries, and not by the marrow, as had been ſuppoſed by ſome. He likewiſe publiſhed three letters, on the generation of worms in the human body, in oppoſition to the treatiſe of Andry, with whom a ſharp controverſy was carried on upon this topic. Eloy Dict. Hiſt. Gen. Biog.

LEMEYBAMBA, in *Geography*, a town of Peru, in the dioceſe of Truxillo; 22 miles S.W. of Chacapoya.

LEMGO, or Lemgow, a town of Weſtphalia, in the county of Lippe, on a ſmall river, near the Werra, divided into the Old and New Town, each of which has its own magiſtrates; formerly one of the Hanſe towns; 17 miles S.S.W. of Minden. N. lat. 52° 2'. E. long. 8° 44'.

LEMIA, a ſmall iſland in the Pacific ocean, near the coaſt of Chili. S. lat. 44° 6'.

LEMINGTON, a poſt-town of America, in York county, Maine; 610 miles N.E. from Waſhington.—Alſo, a townſhip in Eſſex county, Vermont, on the W. bank of Connecticut river, and near the N.E. corner of the ſtate. It contains 52 inhabitants.

LEMLANT, a ſmall iſland in the Baltic, near the S.E. of Aland; about 20 miles in circumference. N. lat. 60° 4'. E. long. 19° 58'.

LEMLEM, a country of Africa, in the interior part of Negroland; 500 miles E.S.E. from Tombuctoo.

LEMLUM, a town of the Arabian Irak; 33 miles S.E. of Hellah. N. lat. 31° 43'.

LEMMA, in *Botany*, a name borrowed from the ancient Greek writers, whoſe λεμμα is ſuppoſed to have been ſo called from λεπις, *a ſcale*, *bark*, or *membrane*, and to have been either our Duckweeds, ſee Lemna; or ſome other aquatic production, whether of the vegetable or the coralline kind, that adhered to ſhells. Juſſ. 16.—This name was given by Bernard de Juſſieu to the proper *Marſilea* of Linnæus, for which it ſeems difficult to give a good reaſon. We may indeed aſſent to the ſeparation of Micheli's *Salvinia* from that genus (ſee Juſſieu); but this does not oblige us to abrogate a name long deſtined to commemorate a meritorious naturaliſt. See Marsilea.

Lemma, Λημμα, of λαμϐανω, *I aſſume*, in *Mathematics*, denotes a previous propoſition, laid down in order to clear the way for ſome following demonſtration; and prefixed either to theorems, in order to render the demonſtration of them leſs perplexed and intricate; or to problems, to make the reſolutions of them more eaſy and ſhort. Thus, to prove a pyramid one-third of a priſm, or parallelopiped, of the ſame baſe and height with it, the demonſtration of which, in the ordinary way, is difficult and troubleſome, this lemma may be premiſed, which is proved by the rules of progreſſion, that the ſum of the ſeries of the ſquares, in numbers in arithmetical progreſſion, beginning from 0, and going on, 1, 4, 9, 16, 25, 36, &c. is always ſubtriple of the ſum of as many terms, each equal to the greateſt; or is always one-third of the greateſt term multiplied by the number of terms. Thus, to find the inflection of a curve line, this lemma is firſt premiſed, that a tangent may be drawn to the given curve, in a given point.

So, in phyſics, to the demonſtration of moſt propoſitions, ſuch lemmata as theſe are neceſſary firſt to be allowed: that there is no penetration of dimenſions; that all matter is diviſible; and the like. As alſo in the theory of medicine, that where the blood circulates, there is life, &c.

Lemma, in the *Ancient Muſic*, a reſt or pauſe of a *ſhort* ſyllable in the catalectic rhythm. See Rhythm.

Lemma, λεμμα, in *Pharmacy*, a term uſed to expreſs the huſk or ſhell of certain fruits, as the almond and the like; and, in general, whatever is taken off in decortication: thus, the huſks of oats, barley, &c. are the lemmata of thoſe ſeeds.

LEMMER, The, in *Geography*, a ſea-port of Frieſland, near the Zuyder ſea; 20 miles S. of Lewarden. N. lat. 52° 52′. E. long. 5° 30′.

Lemmer, or *Lemming*, in *Zoology*. See *Sable* Mouse.

LEMNA, in *Botany*, λεμνα or λεμμα of the Greeks; ſee Lemma. Duckweed or Duck's meat. Linn. Gen. 478. Schreb. 620. Willd. Sp. Pl. v. 4. 193. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 956. Wiggerſ. 66. Ehrh. Beitr. faſc. 1. 43. Brown Prodr. Nov. Holl. v. 1. 345. Lamarck Illuſtr. t. 747. (Lenticula; Juſſ. 19. Mich. Gen. 15. t. 11. Dill. Gen. 118. t. 6.)—Claſs and order, *Diandria Monogynia*. Nat. Ord. *Miſcellaneæ*, Linn. *Naïades*, Juſſ. *Hydrocharideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, roundiſh, obtuſe, obſcurely two-lobed, ſoon diſappearing. *Cor.* none. *Stam.* Filaments two, awl-ſhaped, ſpreading, more or leſs unequal, longer than the calyx; anthers terminal, of two round lobes. *Piſt.* Germen ſuperior, ovate; ſtyle columnar, ſhorter than the ſtamens; ſtigma ſimple, or ſlightly notched. *Peric.* Capſule roundiſh, of one cell, not burſting. *Seeds* few, oblong, ſtriated, pointed at each end, vertical, ranged in a ſimple circular row.

Eſſ. Ch. Calyx of one leaf, inferior. Corolla none. Capſule of one cell, without valves. Seeds few, oblong.

Obſ. The firſt perſon who ever obſerved the fructification of a *Lemna* appears to have been Valiſneri, whoſe eſſay on the ſubject, deſcribing the flowers of L. *minor*, is publiſhed in the *Ephemerides Naturæ Curioſorum*, and in the Italian folio edition of his works, v. 2. 81. t. 14, 15. His figure of the flower is borrowed by Dillenius, in the appendix to his *Plantæ Giſſenſes*, cited above. Micheli, ſeveral years after, publiſhed excellent repreſentations of the flowers and fruit, obſerved in two or three ſpecies, to which he applied the generic name *Lenticula*; calling by that of *Lenticularia* ſuch as he could not meet with in a flowering ſtate. This is a diſtinction without a difference, and of the latter L. *triſulca* has ſince been found in perfection by Mr. Dawſon Turner of Yarmouth, in June, 1801. Willdenow ſays it has been found by Wolf. Ehrhart, in his German *Beitrage*, faſc. 1. 43, has given an entertaining account of his examination of L. *gibba* in flower at Hanover, July 13, 1779. This was found near Lewes in Suſſex, by Mr. W. Borrer in June 1803, as was *minor* by the ſame gentleman in 1802, ſo that three ſpecies being now diſtinctly figured in fructification, in Engl. Bot. t. 926, 1095 and 1233, we are no longer in the dark on the ſubject, and we venture to remove the genus from *Monoecia* to *Diandria*, as ſuggeſted in Fl. Brit. 958. and Prodr. Fl. Græc. v. 1. 11. One Britiſh ſpecies ſtill remains, the *polyrrhiza*, whoſe flowers appear to have been ſeen by one perſon only, Grauer, a young friend of Wiggers, at Kiel, about 1780.

The calyx ſeems to be variable in this genus, and is probably ſoon evaneſcent. Some flowers alſo occaſionally want the complete germen, but this is accidental, and they appear to be, in no ſpecies, truly monoecious, nor regularly polygamous,

1. L. *triſulca*. Ivy-leaved Duck-weed. Linn. Sp. Pl. 1376. Engl. Bot. t. 926. (Hederula aquatica; Lob. Ic. v. 2. 36. Ger. em. 830.)—Leaves ſtalked, lanceolate, proliferous.—Found throughout Europe, floating in clear ſtill pools and ditches. Mr. R. Brown has obſerved it in New Holland. It is a pale-green, ſmooth, pellucid, annual herb, floating in freſh water, near or upon the ſurface, and conſiſts of ſeveral lanceolate, ribbed, entire, ſometimes waved or toothed, *leaves*, each, with its *ſtalk*, about an inch long. Each leaf throws out from its centre underneath a ſolitary ſimple *root*, deſcending, to more than the length of an inch, into the water, and tipped with a membranous ſheath. From the ſame point whence the root originates, ſpring a pair of young divaricated flat leaves, looking like lobes of the old one. The *flowers* proceed ſolitarily from a marginal chink, at one or both ſides of a leaf, and are ſcarcely perceptible but by their prominent yellowiſh anthers. Wolf, the author of a diſſertation on *Lemna*, publiſhed at Altorf in 1801, and quoted by Willdenow, appears to have been the firſt who ever found the flowers of this ſpecies.

2. L. *minor* Leſſer Duck-weed. Linn. Sp. Pl. 1376. Engl. Bot. t. 1095. Michaux Boreali-Amer. v. 2. 165. (Lens paluſtris; Camer. Epit. 852. Ger em. 829.)—Leaves ſeſſile, nearly flat on both ſides. Roots ſolitary.—Common and abundant in ſummer time, on the ſurface of ſtagnant pools throughout Europe. Michaux has alſo obſerved it in Carolina, and Brown in New Holland. This being the common ſpecies in Greece, Dr. Sibthorp juſtly preſumed it to be the φακος, or επι των τελματων of Dioſcorides; not that we would ſuppoſe this ancient ſage accurate or attentive enough to have diſtinguiſhed it from the two or three following, which may poſſibly grow likewiſe in the country he inveſtigated. The *leaves* are obovate or elliptical, entire, ſlightly convex beneath, in conſequence of the formation of air within, by which they become buoyant, and float in denſe maſſes over the whole ſurface of the water, being much ſmaller and more crowded than in the former. They are, like that, in ſome meaſure proliferous. The *roots* are ſolitary from the centre of each beneath, and are temporary, not perennial, nor forming offſets. *Flowers* from marginal chinks, always, as far as we have ſeen, furniſhed with both ſtamens and piſtil, and their calyx is more ample, as well as more evidently two-lobed, than in the above. The *ſeeds* when ripe doubtleſs deſcend, and take root in the mud, as Valiſneri obſerved the young plants aſcend in the form of a green ſoft pulp, full of air-bubbles, from the bottom to the ſurface, early in the ſpring, and ſoon after the waters were mantled with an entirely green covering of the perfect leaves, lying over each other.

Micheli's *Lenticularia media*, t. 11. f. 2, and *minor*, f. 3, both perhaps belong to this ſpecies.

3. L. *gibba*. Gibbous Duck-weed. Linn. Sp. Pl. 1377. Engl. Bot. t. 1233. (Lenticula paluſtris major, &c.; Mich. Gen. 15. t. 11. f. 1, not 2.)—Leaves ſeſſile; ſlightly convex above; hemiſpherical beneath. Roots ſolitary.—Leſs frequent by far than the laſt, in ſtill pools of various parts of Europe. Hudſon conſidered this as a variety only, but it

differs in being larger than *minor*, remarkably tumid, ſucculent, and vaſcular. Its upper ſurface is convex, uſually of a fine green, but often purpliſh; the lower almoſt hemiſpherical, and paler. *Roots* generally ſolitary, ſometimes in pairs. Micheli ſays the *calyx* ſoon diſappears; and Mr. Borrer's ſpecimens were too far advanced to ſhew it, though the *ſtamens* and *ſtyle* were in perfection.

4. L. *polyrrhiza*. Greater Duck-weed. Linn. Sp. Pl. 1377. (Lenticularia major polyrrhiza, infernè atro-purpurea; Mich. Gen. 16. t. 11. f. 1.)—Leaves ſeſſile, obovate, convex beneath. Roots cluſtered.—Native of ditches and pools in Europe; and Willdenow ſays of North America alſo. It is annual, flowering in July and Auguſt, but though the *leaves* are twice or thrice the ſize of the two laſt, the *flowers* have not been detected, except by the Daniſh naturaliſt Grauer above-mentioned, who accounts for this by his deſcription of their ſituation. He ſays they are to be found at each ſide where one leaf is joined with the other, under the folding of its edge, and that the fruit agrees with that of *gibba*, except in being larger, and more flattened. The *leaves* are rounder and blunter; convex, and uſually dark purple, underneath. The *roots* ſpring numerouſly in cluſters from the centre of each.

5. L. *obcordata*. Heart-ſhaped Duck-weed. Vahl. Symb. v. 2. 95. Willd. n. 5.—"Leaves ſeſſile, inverſely heart-ſhaped. Roots cluſtered."—Native of waters in the Eaſt Indies. Vahl, from whom alone we have any knowledge of this, ſays "the *leaves* are ſcarcely ſo long as the nail, of a bright green at the fore part of their upper ſide; purpliſh in the hinder part and underneath, as well as the *roots*. A longitudinal furrow runs along the leaf, ſending off a branch to each lobe, which divides each nearly in two, to the extremity." It does not appear why Willdenow defines the leaves as "proliferous at the apex."

6. L. *arrhiza*. Rootleſs Duck-weed. Linn. Mant. 294. (Lenticularia omnium minima, arrhiza; Mich. Gen. 16. t. 11. f. 4.)—Leaves in pairs, without roots.—Obſerved by Micheli in fiſh-ponds near Florence. Ducheſne found it in France; and we have ſpecimens, both dried and in ſpirits, collected at Fontainbleau by the late Mr. Stephen de Leſſert. This minute ſpecies is not bigger than an ordinary pin's head, and each plant conſiſts of one larger *leaf* and one ſmaller, joined by their extremities; the former being elliptical, flattiſh on the upper ſide, very turgid below; the other nearly globoſe. No roots are diſcoverable, nor is any thing known of the fructification.

Micheli's *Lenticula media*, t. 11. f. 2, and *minima*, f. 3, remain undetermined by following writers. We venture to characterize them as follows.

7. L. *diſperma*. Two-ſeeded Duck-weed. (Lenticula paluſtris media, pallidè virens, infernè minùs convexa, radicibus longiſſimis fructu diſpermo; Mich. Gen. 15. t. 11. f. 2.)—Leaves ſeſſile, obovate, convex beneath. Roots ſolitary, very long. Capſule with two ſeeds.—Found by Micheli in a place called the *Beccacivette* near Florence. He delineates the *leaves* about half the ſize of L. *gibba*, as well as much leſs convex beneath, and the *ſeeds* as but two in each capſule, whereas in *gibba* they are four, five, or ſix.

8 L. *atro-virens*. Dark-green Duck-weed. (Lenticula paluſtris minima atro-virens, utrinque penè convexa; Mich. Gen. 15. t. 11. f. 3.)—Leaves ſeſſile, elliptic-oblong, convex on both ſides. Roots ſolitary.—Found by the ſame author near Florence. This appears to be ſmaller than L. *minor*, with more oblong and darker *leaves*, whoſe upper ſide is as convex as the under one.

LEMNIAN Earth, *Lemnia terra*, comprehends ſeveral varieties of clay, moſtly red and ferruginous, formerly preſerved under this name, and employed in medicine. Theſe were diſtinguiſhed into the white, the yellow, and the red. They were brought from the Levant, moſtly in the ſhape of ſmall cakes, bearing the impreſſion of a ſeal, whence the name of *Terra Sigillata*. Several of them are to be referred to *Bole*; which ſee. The whitiſh kind, which appears to be the true Lemnian earth, and ſo highly valued by the ancients, on account of the alexipharmic virtues which they aſcribed to it, is deſcribed under the article Fuller's *Earth*.

The red earth is dug in a hill in the iſland of Lemnos, and in no other place, ſo far as is yet known; and the fine and true earth only in one pit, which uſed to be opened once every year, and no oftener, with great ſolemnity; and the earth, ſuppoſed ſufficient for the year's demand, was taken out and ſold to the merchants; ſome ſealed with various figures, other quantities unſealed; but what was there bought unſealed, was generally formed into ſmall maſſes, and ſealed before it was offered to ſale in Europe, the druggiſts always expecting to find Lemnian earth ſealed.

This earth, to which imaginary virtues were attributed, was too often adulterated, frequently by the Turks upon the ſpot, either by mixing it with other earths, or another earth alone being ſold in its place; but more frequently in Europe, where every wholeſale dealer knew how to make a compoſition of our own clays, and properly tinge them with ochre, and afterwards give an impreſſion reſembling that of the genuine.

This earth was celebrated by the ancients as a ſovereign remedy againſt poiſons and the bites of reptiles: the Turks and Greeks ſtill retain that notion, for the cups out of which the grand ſeignior drinks are made of this red earth, ſo that it is reſerved chiefly for the ſultan's uſe. But the alexipharmic and aſtringent property of this and the other boles is now in little or no eſteem. (See Bole.) It is alſo dug in the iſland of Lemnos, and was uſed in the German ſhops as an aſtringent and ſudorific, and ſaid to be of great efficacy in dyſenteries, hemorrhages, and malignant fevers. The ancients knew this kind, but never uſed it in medicine, eſteeming the other ſuperior, but they employed it as the cimolia in cleaning linen and woollen cloths.

The yellow Lemnian earth is counterfeited two ways; the one by a yellow ochre, which may be diſcovered by its ſtaining the hands, and the other by a yellow clay; but this is eaſily known by its want of the true florid colour, and having all the characters of a clay, not a bole. The genuine is found only in the iſland of Lemnos, and is the ſtratum next above the red. It was formerly eſteemed a ſudorific, aſtringent, and vulnerary. Da Coſta's Hiſt. of Foſſils, p. 1. 14. and 22.

LEMNIS, in *Ancient Geography*, an iſland of Africa, in Mauritania Cæſarienſis, E.N.E. of the mouth of the river Malva.

LEMNISCATE, in the *Higher Geometry*, is the name of curve which has the form of the figure of 8. If we cal A P, x, (*Plate* XI. *Analyſis*, *fig*. 1.), and P M, y, and the conſtant line B C, a, the equation of the curve will be $ay = x\sqrt{aa - xx}$, or $a^2yy = a^2x^2 - x^2$, which is an equation of the fourth degree: it is alſo evident that a right line which paſſes through the double point A will cut this curve in four points, the double point being reckoned equal to two. See Curve.

LEMNISCIA, in *Botany*, ſo called by Schreber, from λημνισκος, *a bandage*, or *fillet*, in alluſion to the ſhape of its petals. Schreb. 358. Willd. Sp. Pl. v. 2. 1172. Mart.

Mill. Dict. v. 3. (Vantanea; Aubl. Guian. v. 1. 572. t. 229 Juſſ. 434. Lamarck. Illuſtr. t. 471.)—Claſs and order, *Polyandria Monogynia*. Nat. Ord. uncertain.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, five-toothed, acute, ſhort. *Cor.* Petals five, linear, long, acute, recurved, adhering to the cup-ſhaped, fleſhy, ſhort nectary which encompaſſes the germen. *Stam.* Filaments numerous, from ſeventy to eighty, capillary, longer than the corolla, inſerted into the nectary; anthers roundiſh, ſmall. *Piſt.* Germen ſuperior, roundiſh, immerſed in the nectary; ſtyle thread-ſhaped, the length of the ſtamens; ſtigma obtuſe. *Peric.* Capſule of five cells. *Seeds* ſolitary.

Eſſ. Ch. Calyx five-toothed. Corolla of five petals. Nectary cup-ſhaped, bearing the ſtamens. Capſule five-celled, with a ſeed in each cell.

1. L. *floribunda*. Willd. (Vantanea guianenſis; Aubl. Guian. t. 229.)—Found at Guiana, where it is called *Jouantan*, whence Aublet derived his barbarous appellation *Vantanea*. It flowers in Auguſt. The *trunk* of this *tree* riſes to the height of about fifteen or twenty feet, and is much branched. *Bark* brown and ſmooth. *Wood* whitiſh and compact. *Leaves* alternate, on ſhort footſtalks, ſmooth, oval, pointed, the larger ones about five inches long. *Flowers* forming large, handſome bunches at the extremity of the branches, of a red, coral colour. *Stamens* ſituated upon a yellow, fleſhy diſk, in the form of a cup, which almoſt covers the germen.

Obſ. The long narrow petals of this plant greatly remind us of thoſe in the neighbouring genus *Alangium*.

LEMNIUS, or Lemmens, Liévin, in *Biography*, was born at Zirickſee, in Zealand, in May, 1505. He ſtudied at Louvain, and by the advice of his friends applied both to medicine and theology. He principally diſtinguiſhed himſelf, however, in the former of theſe ſciences, and practiſed the profeſſion for upwards of forty years, chiefly in his native place, where he ſettled in 1527. He obtained the full confidence of his patients by his knowledge and eloquence, and eſpecially by a mild and humane expreſſion of countenance and manner, which never failed to intereſt the ſick. After the death of his wife, Lemnius became a prieſt, and was made a canon of the church of St. Lieven, at Zirickſee, where he died in July 1568. He was the author of ſeveral works, the ſtyle of which has ſome force and even elegance. Theſe are; "De Aſtrologia Liber unus, &c.; De termino vitæ Liber. De honeſto animi et corporis oblectamento, &c. &c." Antwerp, 1554.—"De occultis naturæ miraculis Libri duo," ibid. 1559. "De occultis naturæ miraculis Libri quatuor," ibid. 1564. Theſe works contain many obſervations relative to natural philoſophy, botany, phyſiology, and medicine, and eſpecially concerning generation and monſters; but they alſo contain many fables. "De Habitu et Conſtitutione corporis, quam triviales complexionem vocant, Libri duo," ibid. 156 , and ſeveral ſubſequent editions. "Similitudinum et parabolarum, quæ in Bibliis ex herbis atque arboribus deſumuntur dilucida explicatio," ibid. 1569; many times reprinted and tranſlated. "De Zelandis ſuis Commentariolus," Leyden 1611. Eloy Dict. Hiſt.

LEMNOS, in *Ancient Geography*, an iſland ſituated in the Ægean ſea. This iſland was conſecrated to Vulcan in the time of Homer, probably on account of two volcanoes, which were here continually caſting forth flames, and which were conſidered as the forges of the huſband of Venus. No veſtiges of theſe volcanoes now remain: but Sonnini thinks it probable that interior fires are ſtill burning here; for he met with a ſpring of hot water, which has been brought to ſupply baths, and another of aluminous water. Lemnos was celebrated amongſt the ancients, on account of the ſuccour which it afforded to the Argonauts; of which Apollonius Rhodius has given a particular account. As it was near Aſia, it was almoſt always dependent on that province. The prieſts of Lemnos were reckoned famous for the cure of wounds. For this reaſon the Greeks, who went to the ſiege of Troy, left here Philoctetus, after he had been wounded in the foot by one of the arrows of Hercules. The efficacy of their ſkill depended, as it has been ſaid, upon the quality of that bole under the denomination of Lemnian *earth*; which ſee. It is alſo ſaid, that Galen made a voyage to Lemnos on purpoſe for aſcertaining the virtues of this earth; and that he found a perſon who had availed himſelf of it as an antidote to the bites of reptiles, and to poiſon. The firſt inhabitants of this iſland were the Pelaſgi, who expelled the deſcendants of the Argonauts, by whom it was previouſly occupied, and took poſſeſſion of it about 1160 years before the vulgar era. This iſland retained the name of Lemnos, by which it is even now known; but navigators have given it the name of *Stalimene*. The iſland is hilly, but extremely fertile: it yields corn, cotton, oil, and ſilk, with which a few light ſtuffs are manufactured. To be flouriſhing, ſays Sonnini, Lemnos wants only to be delivered from its oppreſſors. Nature has done every thing for it, and we lament the ſtate of languor and wretchedneſs to which its deſtiny has reduced it. Its inhabitants were formerly much given to navigation, or at leaſt to the carrying-trade; they are ſtill trading mariners, becauſe this kind of induſtry eſcapes more eaſily the cupidity of tyrants than affluence produced only by agriculture, or by a ſedentary traffic. Some of its women are extremely beautiful. The whole eaſt coaſt is inacceſſible, on account of a ſhoal, which extends four leagues into the offing: the weſt coaſt affords to ſhips a few places of ſhelter againſt northerly winds. To the north is a large road: but there are no real harbours except on the ſouth part, where are to be found two, at no great diſtance from each other, *viz.* Port *Cadia* and Port *Sant Antonio*. Sonnini's Travels in Greece and Turkey.

LEMO, in *Geography*, a town of Sweden, in the government of Abo; 12 miles N.W. of Abo.

LEMON, or Limon, in *Botany*, *Gardening*, &c. See Citrus and Citric *Acid*.

Lemon-*tree*. See Citrus *Medica*. The name is ſometimes given by the Welſh to *Pyrus Aria* of Fl. Brit., the White Beam-tree, whence certain travellers have reported the lemon to be a native of the bleak cliffs of Penmaenmawr!

Lemon, in the *Materia Medica*.

Lemons are cooling and grateful to the ſtomach, quenching thirſt and increaſing appetite; uſeful in fevers, as well common as malignant and peſtilential; they alſo provoke urine. The juice, which is more acid than that of the orange, poſſeſſes ſimilar medical virtues. (See Orange.) This juice, however, is always preferred, where a ſtrong vegetable acid is required. Saturated with the fixed vegetable alkali, it is in frequent extemporaneous uſe in febrile diſeaſes; and by promoting the ſecretions, eſpecially that of the ſurface, proves of conſiderable ſervice in abating the violence of pyrexia. Mixed with ſalt of wormwood, it is an excellent medicine to ſtop vomiting, and to ſtrengthen the ſtomach. As an antiſcorbutic, lemon juice is very generally taken on board ſhips, deſtined for long voyages. See Citrus, and Citric *Acid*.

Whytt found the juice of lemons to allay hyſterical palpitations of the heart, when various other medicines had proved ineffectual; and this juice, or that of orange, taken to the quantity of four or ſix ounces a day, has ſometimes been found a remedy in the jaundice. (See Saunders's Elem. of the Practice of Phyſic, p. 170.) The yellow rind is a grateful aromatic, and commonly uſed in ſtomachic tinctures and infuſions, and for rendering other medicines acceptable to the palate and ſtomach. The lemon peel, though leſs warm than that of the orange, poſſeſſes ſimilar qualities, and is uſed with the ſame intentions. It is ſometimes ordered to be candied. In diſtillation it yields an eſſential oil, extremely light, almoſt colourleſs, frequently employed as a perfume, and brought to us from the ſouthern parts of Europe, under the name of "eſſence of lemons." This oil is an ingredient in the ſpiritus ammoniæ compoſitæ, or aromatic ſpirit of ammonia, and in other formulæ. A mixture made by ſaturating ſix drams of the juice of lemons with about half a dram of fixed alkaline ſalt, with the addition of a ſmall quantity of ſome grateful aromatic water or tincture, as ſimple cinnamon water, is given in caſes of nauſea and reachings, and generally abates, in a little time, the ſevere vomitings that happen in fevers, when moſt other liquors and medicines are thrown up as ſoon as taken. It is alſo uſed as a ſaline aperient in icterical, hydropical, inflammatory, and other diſorders. A ſyrup made by diſſolving fifty ounces of fine ſugar in a quart or two pounds and a half of the depurated juice, is mixed occaſionally with draughts and juleps, as a mild antiphlogiſtic, and ſometimes uſed in gargariſms for inflammations of the mouth and tonſils. Lewis Mat. Med. Woodv. Med. Bot.

LEMONADE, a drink prepared of water, ſugar, and citron, or lemon-juice.

This factitious liquor has been ſo popular in Paris, that it has given its name to a new eſtabliſhed company called *lemonadiers*.

LE MONNIER, Peter Charles, in *Biography*, a French aſtronomer, member of the Academy of Sciences, and of the National Inſtitute, was born at Paris in 1715, and accompanied Maupertuis in his tour to the north pole, for meaſuring a degree of the meridian. His principal works are: "Aſtronomical Inſtitutions;" "Lunar Nautical Aſtronomy;" "Tables of the Sun, and Corrections of thoſe of the Moon." He died in 1790. He had a brother, Lewis William, a very able experimental philoſopher, who died in 1799 But neither of theſe is to be confounded with an abbé of that name, who tranſlated Terence and Perſius into French, and was author of fables, tales, and epiſtles He died in 1796.

LEMOS, in *Geography*, a diſtrict of Spain, in Galicia, E. of Minho; the chief place is Montforte de Lemos.

LEMOSANO, a town of Naples, in the county of Moliſe; 8 miles N.E. of Moliſe.

LEMOV, Niznei, a town of Ruſſia, in the government of Penza; 72 miles W. of Penza. N. lat. 53° 25'. E. long. 43° 34'.

Lemov, *Verſchnei*, a town of Ruſſia, in the government of Penza; 38 miles S.W. of Penza. N. lat. 53 16'. E. long. 43 14'.

LEMPA, a river of Mexico, which runs into the Pacific ocean, N. lat. 13 36'.

LEMPACH, a town of Auſtria; 14 miles W.S.W. of Vienna.

LEMPALA, a town of Sweden, in Tavaſtland; 27 miles N.W. of Tavaſthus.

LEMPS, Grand, a town of France, in the department of the Iſere, and chief place of a canton, in the diſtrict of La-Tour-du-Pin; 18 miles N.W. of Grenoble. The place contains 1680, and the canton 14,883 inhabitants, on a territory of 200 kiliometres, in 17 communes.

LEMPSTER, an inconſiderable townſhip of America, in Cheſhire county, New Hampſhire; incorporated in 1761, and containing, in 1800, 729 inhabitants.

LEMPTA, a ſea-port town of Africa, on the E. coaſt of the kingdom of Tunis. It was the "Leptis parva" of the ancients; the other being in the kingdom of Tripoli. Lempta appears to have been a mile or more in circuit; but nothing now is left but the ruins of a caſtle; with a low ſhelf of rocks, that probably made the northern mound of the ancient Cothon; 60 miles S. of Tunis. N. lat. 35° 30'. E. long. 10° 54'.

Lempta, a deſert country of Africa, inhabited by a barbarous and fierce people, who plunder the caravans that paſs from Conſtantina and other towns towards Nubia, ſituated about N. lat. 26° 30'. E. long. 9°.

LEM-TCHIN, a town of Thibet; 12 miles W.N.W. of Pitchan

LEMUI, a ſmall iſland in the Pacific ocean, between the iſland of Chiloe and the continent. S. lat. 44° 10'.

LEMVIG, a town of Denmark, in North Jutland, ſituated on the Lime-Fiord, or Lympfurt; 84 miles N. of Ripen. N. lat. 56° 44'. E. long. 8 18'.

LEMUR, in *Zoology*, a genus of Primates. The foreteeth in the upper jaw amount to four in number, the intermediate ones remote; thoſe in the lower jaw to ſix, their form more elongated, extended, compreſſed, parallel, and approximate: grinders many, ſomewhat lobate, the foremoſt longer, and ſharper.

The animals of the lemur genus approach the monkey tribe in the form of their feet, which in ſeveral of the ſpecies are furniſhed with flat and broad nails, reſembling thoſe of the human hand, excepting generally that of the firſt finger next the thumb, which is long and incurvated; they have either two or four teats, and ſome of the ſpecies have the tail of conſiderable length, while others have none. Notwithſtanding the reſemblance theſe animals bear to the monkey race, they have nothing of the miſchievous and petulant diſpoſition of thoſe creatures; they are mild and peaceable in their manners, at leaſt when domeſticated, and there are few ſpecies of the tribe that cannot readily be reduced to that ſtate of docility by proper treatment. Some of the ſpecies feed on fruits, eggs, and ſmall birds, others ſubſiſt entirely on the former. They inhabit chiefly the Indian iſlands, and the continent of South America.

Species.

Tardigradus. Tail none; body ſomewhat tawny aſh. Gmel. *Lemur tardigradus*, Erxleben. *Le loris grêle*, Audebert. *Slow lemur*, or *loris*.

Under the Linnæan ſpecific name of tardigradus, the beſt authors appear to have confounded two, if not a greater number of diſtinct ſpecies. The little animal deſcribed by Erxleben under that title, is remarkable for the peculiar elegance of its figure, and the ſingularity of its conformation. The head is roundiſh; the muzzle projecting; the eyes extremely large and contiguous to each other; the ears large and round; inſtead of a tail a tubercle is ſituated in that part; and the whole body is covered with fine hair of a reddiſh-grey colour. The ſexual organs of the female, according to the obſervations of Daubenton, preſent ſome curious particulars of intereſt to the comparative anatomiſt. This ſpecies inhabits Ceylon, is remarkable for its agility, is quick of hearing, and correſponds with the ſquirrel.

Ecaudatus. Tail none; a dark-ruſty line along the middle of the back from the rump to the forehead; orbits ſurrounded by a blackiſh line. *Lemur ecaudatus*, Linn. Gmel. *Loris tardigradus*, Audebert. *Pareſſeux pentadactyle de Bengale*, Voſmaer. *Le loris de Bengale*, Buff.

The diſtinction between this and the preceding ſpecies has not been regarded with ſufficient attention by all writers, and hence we ſometimes find the deſcription and hiſtory of one applied to and blended with the other. The latter is about thirteen inches in length, the head almoſt round, the muzzle very little pointed. The ears are ſmall, oval, and ſtraight, and almoſt entirely concealed under the woolly hair. The eyes are placed in front immediately above the noſe, and are very cloſe to each other; their form perfectly orbicular, their ſize remarkably large in proportion to the body, and of a brown colour. The noſe is ſmall, flat, and open at the ſides; the teeth of the ſame form and number as in the former animal. The hair of the fur is long, fine, and woolly, but rough to the touch; the colour in general grey, or yellowiſh-aſh, inclining rather more to reddiſh upon the flanks and limbs.

INDRI. Tailleſs, black; beneath greyiſh; rump whitiſh. *Lemur indri*, Gmel. *Indri*, Sonnerat. *Indri macauco*, Penn.

This is a very large ſpecies; the colour entirely black, except on the face and beneath, which is greyiſh; and the ſpace of white on the rump, or ſometimes the face, is white. The muzzle is lengthened as in the dog tribe, the ears ſhortiſh and ſlightly tufted; the hair ſilky, thick, and in ſome parts curly. According to Sonnerat, its firſt deſcriber, the height of this animal is three feet and a half; the tuſks in each jaw are eight, the fore-teeth above two, beneath four; the feet five toed; nails flat and acute, thoſe of the great toe large; the rudiment of a tail is ſenſible to the touch. It is ſaid to be a gentle, docile animal, capable, like the dog, of being trained when young to the chaſe, and is commonly employed in hunting by the natives of Madagaſcar, the country it inhabits: its voice reſembles the crying of an infant. At Madagaſcar it is known by the name of indri, which ſignifies the man of the wood. Geoffroy obſerves, that the cutting teeth in the upper jaw are four in number, inſtead of two, as mentioned by Sonnerat.

RUFUS. Yellowiſh-red; head at the ſummit, temples, cheeks, and tail beneath whitiſh. *Lemur rufus*, Audebert. *Maki-roux*, Deſm.

This reſembles the mongoz in ſize, and various other reſpects; it nevertheleſs differs in having the ears ſhorter, the tail longer, the hair in general ſhorter, and the colour of the fur yellowiſh-red inſtead of brown-grey; upon the ſummit of the head is a black line, and the tail at the extremity is brown. Whether allied to the following ſpecies or not ſeems difficult to determine.

LANIGER. Tailed; above reddiſh-yellow, beneath white; tail uniformly tawny-brown. Gmel. *Maquis à bourres*, Sonn. *Flocky lemur*, Shaw.

A native of Madagaſcar; the length twenty-one inches; hair ſoft, curled, about the loins reddiſh-tawny; face black; ears ſmall; eyes large and greeniſh-grey; in the upper-jaw two fore-teeth, in the lower four; tail nine inches long; feet five-toed; nails long, great toe-nail rounded. There are two or three ſuppoſed varieties of this ſpecies.

POTTO. Sub-ferruginous; tail ſame colour. Gmel. *Potto*, Boſman.

Inhabits Guinea. An obſcurely deſcribed ſpecies, conceived to differ from the indri only in the length of the tail. Boſman, who relates the ſuppoſed hiſtory of this animal, on the authority of the negroes (in his account of Guinea), attributes to it nearly the ſame manners as thoſe of the European ſloth.

MONGOZ. Tailed, fuſcous-grey, the tail of the ſame colour. Linn. Erxleb. *Mongooz*, Edw. *Maki-mongozes*, Deſm. *Mongous*, Buff. *Woolly macauco*, Penn. *Mongoz lemur.*

The mongoz is a larger ſpecies than the ring-tailed lemur, the ſize about that of the common or domeſtic cat; the upper part of an uniform duſky-brown colour, with the breaſt and belly whitiſh. The fur conſiſts of ſilky curling hair. The noſe is larger than in the ring-tailed lemur, and much reſembling that of lemur macao, the colour black; the eyes are yellow, or orange, remarkably vivid, and are nearly ſurrounded by a circle of black placed at a ſmall diſtance above and beneath each eye, then uniting between them, and paſſing down the middle of the ſnout to the noſe; the hands and feet are naked and duſky; the nails flat, except on the interior toe of the hind feet next the thumb, which is furniſhed with a ſharp claw; and the tail, which is very long, covered with a thick fur.

No leſs than ſeven ſuppoſed varieties of this ſpecies are deſcribed by writers; in one kind the body is grey or brown, with the face and hands black; in another grey or black, with a black ſpot near the eyes; and in a third the body is brown, with the noſe and hands white; the face is alſo ſometimes black, the hands yellow, or varying from that to deep tawny, and the body grey; and again, others occur that are uniformly brown.

This animal is a native of Madagaſcar and ſome other Indian iſlands: it is an active animal, filthy in its diſpoſitions, and feeding on fruits and leaves of trees; it conſtantly reſides in woods: like ſome other animals, which nature has furniſhed with a tail of great length, it is obſerved occaſionally to amuſe itſelf by nibbling and biting the end of the tail, and is on this account ſometimes found with that part deſtitute of the four or five extreme vertebræ.

The individual deſcribed by Buffon was neither of a gentle nor ſportive diſpoſition, and was neceſſarily confined by means of a chain to prevent its doing miſchief; fruits, ſugar, and comfits it devoured with apparent eagerneſs and ſatisfaction, beſides which it was fed on bread; it almoſt inceſſantly uttered a low grunting noiſe, or when tired of being alone, croaked in the manner of the frog, and ſo loud as to be heard at a great diſtance. The tongue was rough like that of the cat; and Buffon obſerves, that when permitted it would lick a perſon's hand till the ſkin became inflamed; its careſſes, uſually concluding with a bite of its teeth upon withdrawing the hand from him. This individual was a male, and from its partiality to cats it was ſuſpected its attachment might have been productive of an hybrid offſpring; but theſe expectations were never realized.

MACAO. Tailed, black; collar bearded with a kind of ruff. *Lemur macao*, Linn. Erxleb. *Vari*, Buff. *Maki-vari*, Deſm. *Black macauco*, Edw. *Ruffed macauco*, Penn. *Ruffed lemur*, Shaw.

An inhabitant of Madagaſcar, and the adjacent iſlands; its ſize exceeds that of the mongoz, and in the ferocity of its manners it very far ſurpaſſes that ſpecies. Travellers deſcribe it as being ſcarcely leſs furious than the tiger; it is dangerous even to be met in the woods by two together, or even one, and yet they ſometimes aſſemble to the amount of a hundred in company, when nothing can reſiſt their attacks. Edwards is the only writer who ſpeaks of it as an inoffenſive creature, and the individual he mentions was in a ſtate of captivity; he mentions it as "a very ſociable, gentle, harmleſs-natured animal, not having the cunning, miſchievouſneſs, or malice of the monkey kind." The colours of this animal vary much in different individuals, yet are in general diverſified with patches of black and white, though ſometimes it appears they are totally white or brown. The voice of this animal is loud and terrible, and is by ſome compared with the roaring of the lion, or rather its cries reſemble thoſe of the howling-monkey of Braſil and Guiana; it delights in ſun-ſhine, and ſleeps in dark places. The fur of this animal is long, the muzzle large and rather long, the ears ſhort and fringed with long hairs; and the eyes of ſuch a deep orange as to appear of a fiery redneſs. The ruff, or cravat-like ring of long fur that ſurrounds the neck, is peculiarly ſtriking in its appearance, and ſerves principally to characterize this ſpecies; beſides which it may be obſerved, that the great hind-toes are almoſt ſubulate. It refuſes eggs, fleſh, and fiſh.

CATTA. Tail annulated with black and white. Linn. Erxleb. *Mococo*, Buff. *Maki-mocaco*, or *maucoco*, Deſm. *Maucauco*, Edw. *Ring-tailed macauco*, Penn. *Ring-tailed lemur*, Shaw. Lev. Muſ.

The mococo, ſays Buffon, is a beautiful animal, with a fine countenance. Its ſize is rather ſmaller than that of the full-grown cat, the ſhape more ſlender; its colour above and on the outſide of the limbs ſomewhat ferruginous, the under parts whitiſh, and the fur throughout remarkable for its luſtre. The eyes are large, of a bright orange, inclining to hazel, and are ſurrounded by a diſtinct circle of black; the muzzle is black, and the hands and feet of the ſame colour; the fingers and toes furniſhed with round nails, the nails of the great toes not being longer or ſubulate as in moſt other ſpecies. The tail, which it always carries erect in a graceful poſition, is very long; the hair upon it longer than the reſt of the fur, and marked with about thirty equi-diſtant or regular diſtinct circles of black and white.

The manners of this ſpecies are gentle and lively, in various reſpects reſembling thoſe of the monkey tribe, without its petulance and malice; when pleaſed it purrs like a cat. In a ſtate of liberty theſe animals live in ſocieties of thirty or forty together in the woods; in aſcending trees they climb with all their feet like the ape; their food conſiſts of fruits, herbs, and roots, and it is alſo aſſerted they will eat animal food; like the ſquirrel they ſometimes feed ſitting upright, and often extending their hands forwards, and in the ſame manner, when in a ſtate of captivity, take their ſtation before a fire to warm themſelves. This ſpecies inhabits Madagaſcar.

BICOLOR. Blackiſh, beneath and heart-ſhaped ſpot on the forehead white; tail long. *Lemur bicolor*, Gmel. *Lemur albifrons*, Audebert. *Heart-marked maucauco*, Penn. *Heart-marked lemur*, Shaw. Gen. Zool.

Suppoſed to inhabit South America; the head is obtuſe; nails ſubulate; toes white.

PUSILLUS. Grey; eyes large and brown. *Lemur puſillus*, Audebert. *Rat de Madagaſcar*, Buff. *Maki-nain*, Deſm.

This ſpecies inhabits Madagaſcar; its length is five inches and a half from the tip of the noſe to the baſe of the tail; the muzzle ſhorter than in moſt other ſpecies. An individual of this kind brought from its native country was preſerved alive in France for ſome years. It evinced a remarkable degree of activity in its motions; its cry was feeble like that of the ſquirrel; and its food conſiſted of fruits and almonds. The hiſtory of this curious little ſpecies, as related by Buffon (under the title of rat de Madagaſcar), is erroneouſly placed by Mr. Pennant, in his work on quadrupeds, under the deſcription of his Murine maucauco, by which means the two ſpecies are confounded together. Dr. Shaw, from his adherence to this writer, has alſo fallen into the ſame opinion in his General Zoology.

MURINUS. Cinereous; tail tawny. Gmel. *Lemur griſeus*, Audebert. *Griſet*. *Maki-gris*, Deſm.

This beautiful little animal is a native of Madagaſcar. The whole body, except the face, feet, and hands, are covered with greyiſh woolly hair; the tail is very long, and covered with ſhort woolly hairs, like the reſt of the body. It much reſembles the lemur catta in its general appearance; the poſterior limbs are much higher than thoſe before.

GALAGO. Tailed; whitiſh, beneath grey; tail ferruginous. *Galago*, Geoff. Adanſon, &c. *Galago ſenegalenſis*, Audebert.

One of the ſmaller ſpecies of the tribe, meaſuring ſix or ſeven inches from the noſe to the tail, the latter eight inches. The ears are very large, thin, upright, and rounded at the tip; the hind legs much longer than the anterior ones; the nails of the hands rounded, except that of the fore-finger of each, which conſiſts of a ſharp claw. Theſe animals, according to Adanſon, are of a peaceable diſpoſition; they feed on inſects, and live in trees. The negroes of Galam hunt them for the ſake of their fleſh, the flavour of which is, however, very indifferent.

PSILODACTYLUS. Ruſty cinereous; tail extremely villoſe; middle finger of the fore-feet very long and naked. *Lemur pſilodactylus*, Schreber Suppl. *Aye-aye*, Sonnerat. *Aye-aye ſquirrel*, Penn.

This is a ſpecies allied ſo nearly to the ſquirrel tribe, to which it is referred by Gmelin, that it admits of doubt whether Schreber is entirely correct in conſigning it to the lemur tribe; and it alſo approaches very cloſely the family of monkies. Its length is eighteen inches, the colour pale ferruginous grey, with a blackiſh caſt on the back and limbs; the tail entirely black, ſides of the head, neck, lower jaw, and belly greyiſh. The head is ſhaped like that of the ſquirrel; the ears large, round, and naked, their colour black; and in front of each jaw are two cutting teeth; the feet long; the interior toes of the hind feet ſhort, and furniſhed with flat round nails. All the claws on the fore-feet ſharp and crooked, the two middle ones in particular very long, extremely thin and naked, except at their baſe. It is a timid animal, uncommonly ſlow in its movements, and of a mild diſpoſition. M Sonnerat obſerves, that its eyes were of an ochre-colour, and reſembled thoſe of the owl, and like that bird the animal can ſcarce ſee diſtinctly by day. The individuals kept by Sonnerat lived only about two months; they ſlept almoſt continually, and were ſcarcely to be awakened but by ſhaking two or three times. Their nouriſhment conſiſted of boiled rice which they took up with their long fore-toes, in the manner that the Chineſe uſe their eating ſticks. It is a native of Madagaſcar, where it is rare. Fruits and inſects appear to be its uſual food.

Some indeciſion prevails among naturaliſts reſpecting the lemur genus, and its immediate affinities; the Linnæan and Gmelinian character is not altogether ſufficiently preciſe, and thus embraces more than one diſtinct natural genus, of which the galeopithecus (lemur volans, Linn.) is a prominent example. The number of genera into which Geoffroy divides the lemures is conſiderable, amounting (independently of the galeopithecii) to no leſs than five, namely, lemur, indri, loris, galago, and tarſius. This diſtribution, with ſome ſlight occaſional deviations, is adopted by the lateſt French writers. The genus LEMUR (maki) is characterized as having the muzzle very long; four inciſive teeth in the upper jaw, beneath ſix, inclining forwards; grinders tuberculated; ears ſhort, or ſhortiſh; tail very long. Under this are retained the Linnæan lemur cata, mongoz, and macaco; lemur rufus of Audebert; lemur bicolor (albifrons, Geoff.) and the two little ſpecies, called by Geoffroy griſeus and puſillus. Indri, the ſecond new genus, conſiſts at preſent but of two ſpecies, the Linnæan lemur indri and laniger; the former of which is indri brevicaudatus of Geoffroy; and the latter indri longicaudatus of the ſame author. Theſe have the muzzle very long; in each jaw four inciſive teeth; the upper ones ſtanding diſtant in pairs; and grinders tuberculated; in other reſpects they reſemble the lemur. In the genus Loris the head is rounded, the muzzle ſhort; inciſive teeth in each jaw four, the lower ones directed forwards; eyes very open; ears moderate; noſtrils ſituated on the ſides of the noſe; no tail, but in its place a tubercle; pectoral teats four; this conſiſts of two ſpecies, lemur tardigradus, Linn.; and lemur gracilis, Geoff. Galago, the fourth genus, is diſtinguiſhed by the rounded form of the head, ſhort muzzle, two inciſive teeth in the upper jaw, very remote; in the lower one ſix; grinders with pointed tubercles; noſtrils placed at the ſides of the noſe; ears naked, ſometimes very large; anterior legs ſhort, poſterior ones elongated; ſecond finger of the hind feet ſhorter than the reſt; tail longer than the body, and hairy; ſcrotum very large. This comprehends galago ſenegalenſis of Geoffroy, and le petit galago, (lemur minutus, Cuvier.) Tarsius is the laſt of theſe new genera; its character conſiſts in having the head rounded; muzzle a little prolongated; in the upper jaw four inciſive teeth, in the lower only two; canine teeth ſeveral, and ſhorter than the inciſive ones; the grinders with pointed tubercles; poſterior ſhanks uncommonly long; tail long and tufted; ears large and naked. This genus, which can ſcarcely, perhaps with propriety, be referred to the Gmelinian lemur, although partially aſſented to by ſome authors, compriſes tarſius daubentonii of Geoffroy (lemur tarſius, Pallas), and didelphis macrotarſus, Gmel.; with two others, one lemur ſpectrum of Pallas, the other tarſus Fiſcherii, Nob.; a ſpecies very recently deſcribed, and named Fiſcherii after profeſſor Fiſher, by whom it was firſt introduced to general obſervation.

LEMURES, in *Antiquity*, *ſprites* or *hobgoblins;* reſtleſs ghoſts of departed perſons, who return to terrify and torment the living.

Theſe are the ſame with larvæ, which the ancients imagined to wander round the world to frighten good people, and plague the bad. For which reaſon, at Rome they had Lemuria, or feaſts inſtituted to appeaſe the manes of the defunct. See Lares.

Apuleius explains the ancient notion of *manes* thus: the ſouls of men, releaſed from the bands of the body, and freed from performing their bodily functions, become a kind of dæmons or genii, formerly called *lemures*. Of theſe lemures, thoſe that were kind to their families, were called *lares familiares;* but thoſe who, for their crimes, were condemned to wander continually, without meeting with any place of reſt, and terrified good men, and hurt the bad, are vulgarly called *larvæ*.

An ancient commentator on Horace mentions, that the Romans wrote *lemures* for *remures;* which laſt word was formed from Remus, who was killed by his brother Romulus, and who returned to earth to torment him.

But Apuleius obſerves, that in the ancient Latin tongue lemures ſignifies the ſoul of a man ſeparated from the body by death.

LEMURIA, or Lemuralia, a feaſt ſolemnized at Rome on the ninth of May, to pacify the manes of the dead, or in honour of the lemures.

The inſtitution of this feaſt is aſcribed to Romulus, who, to rid himſelf of the phantom of his brother Remus (whom he had ordered to be murdered) appearing always before him, ordained a feaſt, called after his name *Remuria*, or *Lemuria*.

In the Lemuria, they offered ſacrifices for three nights together, during all which time all the temples of the gods were ſhut up, nor were any marriages permitted. There were many ceremonies in this feaſt, chiefly intended to exorciſe the lemures, and prevent their appearing, or giving any diſturbance to the living.

LENA, in *Geography*, the greateſt river of Eaſtern Siberia. It takes its origin on the north-weſtern ſide of the Baikal, in a moraſs; runs at firſt weſtwards, then to the diſtrict of Yakutſk eaſtwards, and laſtly towards the north, where, after having divided itſelf into five great branches at its mouth, and thereby formed four conſiderable iſlands, it flows into the Frozen ocean. Its courſe is computed to be 5000 verſts. Its ſource is in N. lat. 52° 30′, its mouth in 73° lat., and the eaſtern arm in 153, and the weſtern in 143° of longitude. This river has in general a very gentle current; its bottom is moſtly ſandy, and the ſhore only in the upper regions beſet with hills and cliffs. Of the numerous rivers which it takes up in its courſe, the largeſt are the Vitim, the Olekma, the Viluy, and the Aldan. Out of the Lena travellers paſs into the Aldan, from that into the Maia, from the Maia into the Yadoma, and from this they have but a ſhort route to make by land to Okhotſk. Tooke's Ruſſ. Emp. vol. i.

Lena, a harbour on the W. coaſt of Mindanao. N. lat. 6° 42′. E long. 122° 12.

LENÆA, Ληναια, in *Antiquity*, a feſtival of Bacchus, ſurnamed *Lenæus*, from ληνος, *i. e.* a *wine-preſs*. Beſides the uſual ceremonies at feaſts ſacred to this god, it was remarkable for poetical contentions, and tragedies acted at this time. Potter's Archæol. lib. ii. cap. 20. tom. i. p. 412.

LENATO, in *Geography*, a town of Italy, in the department of the Olona; 5 miles S. of Milan.

LENBERAN, a town of Perſian Armenia; 168 miles E. of Erivan.

LENCLOISTRE, a town of France, in the department of the Vienne, and chief place of a canton, in the diſtrict of Chatellerault; 14 miles N. of Poitiers. The place contains 2114, and the canton 7350 inhabitants, on a territory of 182½ kiliometres, in nine communes.

LENCLOS, Anne, or Ninon de, in *Biography*, an illuſtrious woman, born at Paris in 1616, was daughter of the ſieur De l'Enclos, a gentleman of Touraine, who had ſerved with reputation in the army: her mother was a devotee. She loſt both her parents at the age of fifteen, and being left miſtreſs of a large fortune without any one to controul her, ſhe determined to adopt a mode of life ſuited to her inclinations. She had already derived her philoſophy from the works of Charron and Montagne: ſhe was beautiful, and by much attention became very accompliſhed, and qualified for the company of the moſt cultivated perſons of her time. Amorous in her conſtitution, and licentious by principle, ſhe reſolved to give free indulgence to the tender paſſion, without the ſhackles of a ſerious engagement. She never ſold her favours; and her attachments ſeem partly to have been prompted by perſonal attractions, and partly by vanity, as they included perſons of high rank and reputation, as well as men of gallantry and faſhion. She was complimented and conſulted by the moſt eminent writers of that time, and her friendſhip was ſought by ſome of the moſt reſpectable of her own ſex. She was intimate with madame de Maintenon, when the wife and widow of Scarron, who wiſhed to engage Ninon to live with her, when a partner in the throne, to diſpel the dreadful ennui which was the price of her elevation. Ninon preferred her liberty to the priſon of a palace, and as ſhe retained her perſonal charms to a late period, and her mental attractions to the cloſe of life, ſhe was very long the object of admiration, and had the honour of forming more than one generation of young men of faſhion. Mothers, ſo licentious was the age, were pleaſed to ſee their ſons in her train, as ſhe always promoted decorum, and the air of good company; and it was univerſally admitted that ſhe was capable of diſintereſted friendſhip to thoſe who confided in her. If ſhe were an object of envy to bye-ſtanders, ſhe was, at the ſame time, conſcious of having miſtaken the way to true happineſs; for in one of her letters to St. Evremond, ſhe ſays, "Every one tells me that I have leſs to complain of time, than any other perſon. However that may be, if ſuch a life, as I have ſpent, had been propoſed to me as my lot, I would have hanged myſelf rather than have paſſed through it." She died at the age of eighty. She is reputed to have been the author of a ſet of letters to the marquis de Sevignè. Some of her real ones are contained in the works of St. Evremond. Moreri.

LENCZICZ, or Lentschitz, in *Geography*, a town of the duchy of Warſaw, formerly capital of a palatinate of the ſame name in Poland; ſurrounded with a wall and moat, and defended by a caſtle placed on a rock. A provincial diet, a court of judicature, and provincial ſynods of the clergy, are held in this town; 60 miles W.S.W. of Warſaw. N. lat. 51° 52'. E. long. 19° 17'.

LENCZNA, a town of Poland, in the palatinate of Lublin; 16 miles N.E. of Lublin.

LENDAR, a town of Iſtria; 19 miles E. of Capo d'Iſtria.

LENDENARA, a town of Italy, in the Poleſe di Rovigo; containing two churches and four convents; 8 miles W. of Rovigo.

LENDORA, a town of Ruſſia, in the government of Olonetz; 100 miles W.N.W. of Povenetz.

LENE Lough, a lake of Ireland, in the county of Weſtmeath, near the ſmall town of Fore.

LENES, a ſmall iſland in the North ſea, near the coaſt of Norway. N. lat. 67° 40'.

L'ENFANT, David, in *Biography*, a French Dominican friar, was born at Paris in the year 1603. He embraced the eccleſiaſtical life at the age of ſeventeen, and manifeſted a moſt ardent thirſt for knowledge, together with very uncommon literary induſtry. He died in the year 1688, at the age of eighty-five. His principal work is "A General Hiſtory of all Ages," in three vols.; which was afterwards extended to ſix volumes. He alſo publiſhed "Sancti Bernardi Abbatis Biblia," containing a collection of all the illuſtrations of texts of ſcripture diſperſed throughout the works of that author; and ſimilar works reſpecting biblical illuſtrations of St. Auguſtine, and St. Thomas Aquinas. Moreri.

L'Enfant, James, an eloquent as well as very learned French Proteſtant divine, was born at Bazoche in the year 1661. He purſued his theological ſtudies at Saumur, under Lewis Cappel, profeſſor of Hebrew, and afterwards at Geneva. In 1683 he left Geneva, and was admitted in the following year to the exerciſe of the miniſtry at Heidelberg, and ordained paſtor of the French church in that place. Owing to his ſuperior pulpit talents he was appointed chaplain to the dowager electreſs palatine. In 1688, on the invaſion of the palatinate, he removed to Berlin, and was appointed paſtor of one of the churches. He was in a ſhort time nominated preacher to the queen of Pruſſia. In 1707 we find him in England, and nominated one of the chaplains to queen Anne, an honour which he declined on account of his great attachment to Berlin. He died in 1728, at the age of ſixty-ſeven. His publications were numerous in divinity, eccleſiaſtical hiſtory, criticiſm, and polite literature. Thoſe which are held in the higheſt eſtimation are his "Hiſtories of the Councils of Piſa, Conſtance, and Baſil." Theſe hiſtories are written with great ability and impartiality, and they abound with intereſting facts and curious reſearches. L'Enfant, in conjunction with M. Beauſobre, publiſhed "The New Teſtament tranſlated from the original Greek into French," in two volumes 4to. with notes, and a general preface, or introduction to the reading of the holy ſcriptures, uſeful for ſtudents in divinity. He is known alſo by his "De Inquirenda Veritate," which is a tranſlation of Malebranche's "Search after Truth;" "The Hiſtory of Pope Joan;" "Poggiana, or the Life, Character, Opinions, &c. of Poggio, the Florentine, with the Hiſtory of the Republic of Florence," and other works. Moreri.

LENGA de Bazasa, in *Geography*, a province on the coaſt of Caramania. N. lat. 36° 33'. E. long. 34° 11'.

LENGEFELD, a town of Saxony, in the circle of Erzgeburg; 12 miles S.E. of Chemnitz. N. lat. 50° 40'. E. long. 13° 7'.

Lengefeld, or *Lengenfeld*, a town of Saxony, in the Vogtland; 10 miles S.S.W. of Zwickaw. N. lat. 50° 27'. E. long. 12° 22'.

LENGER, a town of Perſia, in Khoraſan; 162 miles N.N.W. of Herat.

Lenger *Kuran*, a town of Perſia, in Ghilan; 120 miles N.W. of Reſhd.

LENGFURT, a town of Germany, in the county of Wertheim; 12 miles S.S.W. of Wertheim.

LENGHIER, a town of Perſia, in Khoraſan; 70 miles E. of Herat.

LENGIUM, a town of Sweden, in Weſt Gothland; 42 miles E. of Gothenburg.

LENGLET, du Fresnoy, Nicholas, in *Biography*, was born at Beauvois in 1674. He applied himſelf particularly to the ſtudy of theology, and compoſed ſeveral works in a ſtrain of freedom, which attracted the cenſure of the Sorbonne, and other eſtabliſhed bodies. Diſguſted with the oppoſition which he met with, he quitted divinity for politics, and in 1705 was ſent by Torey, miniſter for foreign affairs, to reſide at the court of the elector of Cologne, as ſecretary for the Greek and Latin languages. He was entruſted with the management of the foreign correſpondence with Bruſſels and Holland, by means of which he became acquainted with various plots againſt the French intereſt. Lenglet returned to France at the concluſion of the war, and employed himſelf in many literary works. In 1721 he went to Vienna, and was appointed librarian to prince Eugene, a poſt which he did not long retain, on account of ſome miſconduct. Owing to this circumſtance, he always remained in indigence, though he had friends that would have raiſed him to a better condition. Some of his writings were compoſed in ſo free a ſtyle as to cauſe the author to be impriſoned ſeveral times in the Baſtile. He was accidentally burnt to death in the year 1755, in his eighty-ſecond year. Of his various works we may notice thoſe which are moſt eſteemed, *viz.* "Méthode pour étudier l'Hiſtoire, avec un Catalogue des principaux Hiſtoriens," 12 vols.; "Méthode pour étudier la Géographie," with maps; "Hiſtoire de la Philoſophie Hermetique," and "Tablettes Chronologiques de l'Hiſtoire Univerſelle," two vols. 1744. An enlarged edition of this work was publiſhed in 1777, by Bruyere, to which we have been indebted in the courſe of our inquiries. Moreri.

LENGO SERGANDO, in *Geography*, a town of Africa, in Congo; 45 miles S.S.W. of Bombi.

LENGTH, in the *Manege*. *To paſſage a horſe upon his own length*, is to make him go round in two treads, at a walk or trot, upon a ſpot of ground ſo narrow, that the horſe's haunches being in the centre of the volt, his own length is much about the ſemidiameter of the volt; the horſe ſtill working between the two heels, without putting out his croupe, or going at laſt faſter or ſlower than at firſt.

LENGTHENING, in *Naval Architecture*, is the operation of ſeparating a ſhip athwart the midſhips, and adding a certain portion to her length. It is performed by clearing all the faſtenings near the butts of thoſe planks as may be retained, and the others are cut aſunder. The after end is then drawn or launched apart to the required diſtance. The keel is then made good, and a ſufficient number of floors croſſed, and timbers raiſed to fill up the vacancy produced by the ſeparation. The keelſon is then replaced to give good ſhift to the ſcarfs of the keel. The planks on the outſide are then replaced with a proper ſhift, alſo the clamps and foot-waling inſide. As many beams as are neceſſary are next placed athwart and kneed, the decks made good, and the ſhip completed in all reſpects as before. Sometimes ſhips are ſhortened in a ſimilar manner.

LENGUR, in *Geography*, a town of Perſia, in the province of Mazanderan; 15 miles N.W. of Amol.

LENHOFDA, a town of Sweden, in the province of Smaland; 30 miles N.W. of Calmar.

LENIOR, a county of America, in Newbern diſtrict, North Carolina, ſurrounded by Glaſgow, Craven, Jones, and Dauphin; containing 3898 free inhabitants, and 1457 ſlaves. The chief town is Kingſton.

LENIS SPIRITUS, in *Proſody*. See SPIRIT.

LENITIVE, in *Phyſic*, ſometimes denotes a ſoftening, reſolutive remedy, that moiſtens the parts diſeaſed, and diſſipates any ſharp humour collected there.

LENITIVE is more frequently uſed for laxative.

LENITIVE *Electuary* is more peculiarly uſed for a gentle purging electuary. See ELECTUARY *of Senna*.

LENKERAN, in *Geography*, a town of Perſia, in the province of Ghilan, near the Caſpian ſea. N. lat. 28° 40′. E. long. 49°.

LENNAN, LA, a town of Peru, in the dioceſe of La Paz; 27 miles N. of Potoſi.

LENNEP, a town of the duchy of Berg, inhabited for the moſt part by Lutherans; 20 miles E.S.E. of Duſſeldorf. N. lat. 51° 9′. E. long. 7° 18′.

LENO, a harbour on the W. coaſt of the iſland of Mindanao.

LENNICK-SAINT-MARTIN, a town of France, in the department of the Dyle, and chief place of a canton, in the diſtrict of Bruſſels. The place contains 1559, and the canton 10,606 inhabitants, on a territory of 120 kiliometres, in 12 communes.

LENOS, in Hippocrates, denotes an old machine for reducing fractures and diſlocations.

LENOX, in *Biography*. See RICHMOND, *Duke of*.

LENOX, in *Geography*, an iſland in the Mergui Archipelago, about five miles in circumference. N. lat. 9° 2′.

LENOX, the ſhire town of Berkſhire county, Maſſachuſetts; it is a pleaſant and thriving town, and has a court houſe and a gaol. The river Houſatonick traverſes the town; 145 miles N. of Boſton. The number of inhabitants is 1041.

LENOX *Caſtle*, a poſt-town of Buckingham county, North Carolina; 390 miles from Waſhington.

LENS, in *Dioptrics*, properly ſignifies a ſmall, roundiſh glaſs, of the figure of a *lentil*; but is extended to any detached portion of a tranſparent ſubſtance, of which the oppoſite ſides are regular poliſhed ſurfaces of ſuch forms as may be deſcribed by lines revolving round a common axis; or to any optic glaſs, not very thick, which either collects the rays of light into a point, in their paſſage through it, or diſperſes them farther apart, according to the laws of refraction. A lens is generally ſuppoſed, in ſimple calculations, to be infinitely thin, and to be denſer than the ſurrounding medium.

Lenſes have various figures; that is, are terminated by various ſurfaces, from which they acquire various names. The lines that form them may be portions of circles, of ellipſes, of hyperbolas, or of any other curves, or they may be right lines. But, in general, one of the ſides is a portion of a ſpherical ſurface, and the other either a portion of a ſpherical ſurface or a plane. Hence ſome are plane on one ſide, and convex on the other; others convex on both ſides; both which are ordinarily called *convex* lenſes; though, when we ſpeak accurately, the former are called *plano-convex*, and the latter, *double convex*. Again, ſome are plane on one ſide, and concave on the other; and others are concave on both ſides, which are both uſually ranked among the concave lenſes; though, when diſtinguiſhed, the former is called a *plano-concave*, and the latter, a *double concave*. Others, again, are concave on one ſide, and convex on the other; which are called *convexo-concave*, or *concavo-convex* lenſes. The figures of all theſe are ſufficiently deſcribed by their names (ſee alſo *Plate* VI. *Optics*, *fig.* 5.); except that the term *meniſcus*, which properly implies a little moon or creſcent, is applied in general to all lenſes which are convex on the one ſide, and concave on the other, although they may be thicker at the edges than in the middle. Sometimes, however, a lens of this kind is diſtinguiſhed by the term concavo-convex. See MENISCUS.

When the particular figure is not conſidered, a lens that is thickeſt in the middle is called a *convex* lens; and that which is thinneſt in the middle is called a *concave* lens, without farther diſtinction.

It is to be here obſerved, that in every lens terminated in any of the forementioned manners, a right line perpendicular to the two ſurfaces is called the *axis* of the lens; which axis, when both ſurfaces are ſpherical, paſſes through both their centres; hence it is manifeſt, that no lens, except the ſphere, can have but one axis; and therefore all pencils of rays are oblique, excepting thoſe whoſe foci are in the axis of the lens: but if one of them be plane, it falls perpendicularly upon that, and goes through the centre of the other. The points where the axis cuts the ſurface are called the *vertices* of the lens, and the middle point between them is called the *centre*. This is the caſe, when the lenſes are thin, as they are uſually ſuppoſed to be; but when the lens is pretty thick, and its ſurfaces of unequal curvatures, then the centre of the lens is nearer to one vertex than to the other; by as much as the radius of curvature of the former ſurface is leſs than that of the other.

For the explanation of other terms that pertain to lenſes, and of their general effect, it is obvious, that if a ray of light falls perpendicularly upon the vertex of a lens, or coincides with its axis, it muſt paſs ſtraight through the lens without ſuffering any refraction; but when it falls obliquely upon it, it muſt emerge out of the lens in a direction inclined to its former direction. Thus, if the rays of light, which, iſſuing from the luminous point A, (*Plate* VI. *Optics*, *fig.* 6.) fall upon the lens B E, the ray A C, which proceeds in the direction of the axis of the lens, muſt paſs ſtraight through it; but the ray A B, falling obliquely upon the ſurface of the lens, muſt be refracted, or bent, and if the lens be a plano-convex, or double convex, that ray muſt be bent inwardly, that is, towards the axis; conſequently it muſt interſect the axis in ſome point, as F. This point F is called the *refracted focus* of that ray, or rather of the rays A B, A E, &c. which fall upon the lens at equal diſtances from the axis A C, and which all meet and croſs at the ſame point F; but the point A from which they iſſue, is called the *radiant point*, or the *focus of incident rays*; and both theſe points, in reference to each other, are called the *conjugate foci*. If a lens be concave, as in *fig* 7, then the oblique rays A B, A E, &c. will be bent outwardly, or from the axis; in which if the refracted rays be ſuppoſed to be continued backwards until they meet the axis as at F, then the point F is called the *virtual focus of the refracted rays*, being in fact the centre of divergency of the rays. In this caſe the conjugate foci are both on the ſame ſide of the lens; *viz.* the real focus of incident rays, and the virtual focus F of the refracted rays B G, D O, E S. It is to be obſerved, that all the rays which fall upon the ſurface of a lens, whether it be convex or concave, will not meet at one and the ſame point when the lens is convex, nor have a common virtual focus when it is concave; but thoſe rays which are more diſtant from the axis, after the refraction, meet ſooner than thoſe which are nearer to the axis; and this effect is greater in proportion as the ſurfaces of the lens are farther from each other, and conſiſt of larger ſpherical ſegments. Hence a glaſs globe renders the above-mentioned effect very conſpicuous; and hence the lenſes are made as thin as poſſible; but in all caſes, a lens which conſiſts of ſpherical ſurfaces, does never refract the rays which fall from a luminous point, preciſely to the ſame focus. The rays which fall upon the edge of the lens have their refracted focus not only nearer to the lens, but alſo fartheſt from the axis, *viz.* on one ſide of it. Lines drawn through the refracted foci of the rays, which belong to one luminous or radiant point, form two curves, which make an angle with each other at the axis, or principal focus, and are called "cauſtics by refraction" (ſee CAUSTIC); which are real in convex lenſes, but imaginary in thoſe that are concave. When the lenſes are thin, and their ſphericity not very great, theſe cauſtics are ſo trifling that the eye does not perceive them; but lenſes that are thick and of great convexity produce a conſiderable aberration of the rays, and an evident diſtortion of the object to an eye that looks through them. This aberration may be exhibited experimentally by covering one ſide of a glaſs globe or thick lens with a circular piece of brown paper, having a row of equidiſtant pin-holes in its diameter. Let the light which paſſes through theſe holes, and through the lens, fall upon a piece of white paper held perpendicular to the rays of light, and you will find that when the paper is held near to the globe or lens, the ſpots of light upon it are at equal diſtances from one another ſucceſſively; but if the paper be gradually withdrawn from the lens, the intervals between the exterior ſpots grow leſs than the intervals between the interior, and ſoon unite. If the ſame operation be performed with a thick concave lens, the intervals between the exterior ſpots will be found to grow larger than the interior, &c. There is another aberration, reſulting from the different refrangibility of the rays of light; and which cauſes a much greater imperfection in lenſes. For an account of both, ſee ABERRATION. Notwithſtanding theſe aberrations, glaſs lenſes, that are not very thick, are reckoned to have a determinate focus of refracted rays, originally iſſuing from a ſingle radiant point; and the diſtance of that focus from the ſurface of the lens is called the *focal diſtance* of theſe rays. In order to prepare the way for determining their focal diſtance, it may be conſidered, that about the middle of the ſurface of every lens there is a point, upon which, if a ray falls and paſſes through the lens, the emergent part will be parallel to the incident; for the point of incidence and the point of emergence may be ſo ſituated, that if two planes touch the ſurfaces at theſe points, they may be parallel to each other. That ray or part of a pencil of light, which thus paſſes through the lens, without being bent, is called the *axis* of that pencil, and this axis paſſes through the *centre* of the lens. When rays of light fall upon the ſame lens with different inclinations, it is evident that after the refraction, they muſt have their foci at different diſtances from the lens. When rays of light come parallel to each other, ſuch as thoſe which come from a point of the ſun's ſurface, or from any other diſtant point, and fall perpendicularly, or nearly ſo, upon the ſurface of a lens; then the focus of theſe rays, after refraction, is called the *geometrical focus*, or the *principal focus* of that lens, and its diſtance from the lens the *principal focal* diſtance of that lens. The principal focus of a lens may be found either experimentally or by computation. In a plano-convex, double-convex, or meniſcus, the principal focus is real; in the other lenſes the focus is virtual. See the *Theory of Lenſes demonſtrated* under REFRACTION and DIOPTRICS, and the application thereof under MICROSCOPE, TELESCOPE, BURNING-GLASS, and FOCUS.

Some confine lenſes within the diameter of five or ſix lines, and will have ſuch as exceed that diameter called *lenticular glaſſes*.

Lenſes are diſtinguiſhed, with regard to the manner of their preparation, into *ground* and *blown*.

LENSES, *Blown*, are little globules of glaſs, melted in the flame of a lamp, or taper. See MICROSCOPE.

LENSES, *Manner of grinding*. A little piece of copper is cemented to the end of the arbor of a lathe, and turned till it form a diſh, or baſon, of the diameter of the lens required. Then a piece of clear glaſs is cemented, on one of its flat ſides, to the end of a little maundrel, with black Spaniſh wax; and thus ground, on the ſide not cemented, on a grindſtone, with water, till it hath nearly acquired a convex figure. It is finiſhed in the lathe, by turning it in the baſon, with fine wet ſand, grit-ſtone, or emery. The grit muſt be often repeated freſh till the lens appear very round; when it is come to that point, they ceaſe to take any freſh ſtone, but continue to turn it in the baſon, till the remains of the ſand are become ſo fine as to have poliſhed it. This they perceive, when, upon wiping it, the image of the window of the place is ſeen painted on its ſurface; if it does not, it is wetted in water without any ſand, and turned till it hath got a poliſh. The baſon is then covered, withinſide, with two or three folds of linen, and the poliſh finiſhed with putty, or tripoly of Venice ſteeped in water. It is known to be perfectly poliſhed, when, viewing it with a magnifier, there appear no ſcratches of the ſand. The cement is then broken off, and the ſide poliſhed cemented, to work and grind the other, as before, till the edges of the lens be become ſharp, and it be perfectly poliſhed on either ſide. When finiſhed, it is waſhed in ſpirit of wine, to take off all remains of the wax.

According to the mode now generally practiſed, optical glaſſes are fixed on blocks by means of a cement, and ground with emery by a tool of proper convexity or concavity; if they are ſmall, a large number is fixed on the blocks at the ſame time. The tool is ſometimes firſt turned round its axis by machinery, and when the lenſes are to be finiſhed, a compound motion is given to it by means of a crank; and in order to make it more ſmooth, the wheels turn each other by bruſhes inſtead of cogs. The point of the lens where its two ſurfaces are parallel, is determined by looking through it at a minute object, while it is fixed on a wheel with a tubular axis, and ſhifting it, until the object appears no longer to move; a circle is then deſcribed, as it revolves, in order to mark its outline. The diſhes in which lenſes are ſometimes ground are of bell metal; and the emery is prepared by elutriation.

In the Philoſophical Tranſactions we have the figure of a machine for grinding lenſes ſpherically. It is a contrivance to turn a ſphere at one and the ſame time on two axes, interſecting each other at right angles, with an equal velocity and preſſure on each. See the Tranſactions, N° 459. ſect. 1. See GRINDING *of Optic Glaſſes*.

LENSES, *for convex*, the laws of their refraction, and their effects depending thereon, are as follow.—1. A ray of light, E G, near the axis (*Plate* VI. *Optics*, *fig*. 8.), and parallel to it, ſtriking on the plane ſurface of a plano-convex lens, directly oppoſite to the luminous body, after refraction concurs with the axis in the point F: and if C be the centre of the convexity, C F will be to F L, that is, the diſtance of the centre from the point of concourſe, or focus, will be to the diſtance of the centre, from the convex ſurface, in the ratio of the refraction.

For the plane ſurface being directly oppoſed to the luminous body, the ray E G is perpendicular to A B, and therefore will paſs unrefracted to H: thus it ſtrikes on A H B, ſtill parallel to the axis; and therefore coming out of a denſer medium into a rarer, it will meet with the axis of the lens in F: and ſo as that C F will be to F L in the ratio of the ſine of the refracted angle to the ſine of the angle of incidence: as will be demonſtrated under the head REFRACTION.

And, therefore, C F — F L, or C L is to F L as the difference of theſe ſines is to the ſine of the angle of incidence; and C F — F L, or C L is to C F as the ſame difference is to the ſine of the refracted angle.

If then the refraction be out of a glaſs lens into air, $CF : FL :: 3 : 2$, or $CL : FL :: 1 : 2$, and $CL : CF :: 1 : 3$; and therefore $FL = 2\,CL$; that is, parallel rays, near the axis, will concur with it at the diſtance of the diameter. Moreover, if parallel rays paſs out of air into glaſs, it will be $CF : FL :: 2 : 3$, and $CL : FL :: 1 : 3$, and $CL : CF :: 1 : 2$. It is evident from hence, that if C L be diminiſhed, without any variation in the refracting power, F L would alſo be diminiſhed. Again, if the refraction were out of a water lens, *i. e.* out of a plano-convex lens filled with water, $CF : FL :: 4 : 3$, or $CL : FL :: 1 : 3$; and therefore $FL = 3\,CL$; *i. e.* parallel rays, near the axis, will concur with it at the diſtance of a diameter and a half. It is eaſy to deduce the effect of refraction out of air into water. So that if a lighted candle be placed in the focus of a plano-convex lens, that is, in the point F, diſtant from the ſurface of the lens A L B, by the length of the diameter; and from the ſurface of the water lens by a diameter and a half, its rays, after refraction, will become parallel.

2. If the ray K I, (*Plate* VI. *Optics*, *fig*. 9.) near the axis of a plano-convex lens, and parallel to it, ſtrike on its convex ſurface A H B, after a double refraction, it will meet the axis in F; ſo as that H G will be to G C, and G D to F D, in the ratio of the refraction.

For the ray K I, parallel to the axis E G, by virtue of the firſt refraction in I, will tend to the point G, ſo that G H will be to G C in the ratio of the ſine of the angle of incidence to the ſine of the refracted angle: therefore, by virtue of the ſecond refraction in L, it will concur with the axis in F; ſo that G D will be to F D in the ratio of the ſine of the refracted angle, to the ſine of the angle of incidence. See REFRACTION.

So that the ſemidiameter, and thickneſs of the plano-convex lens, with the ratio of refraction, being given, we ſhall have a method of determining the focus of parallel rays ſtriking on the convex ſurface. For, if the ratio of refraction be expreſſed by $n : m$, $HG : GC :: n : m$; therefore $n - m : n :: HC : HG$; and $HG = \frac{n}{n-m} \times HC$: from which ſubtracting the thickneſs of the lens, D H, and $GD = \frac{n}{n-m} \times HC - HD$. Then ſince the ratio of G D to F D is the given ratio of refraction, $FD = \frac{m}{n-m}CH - \frac{m}{n}HD =$ (rejecting the quantity $\frac{m}{n}HD$ as very ſmall) $\frac{m}{n-m}CH$.

Hence, if the lens be glaſs, $FD = 2\,CH - \frac{2}{3}HD$. So that if two thirds of the thickneſs of the lens be inconſiderable, (as in practice it uſually happens,) parallel rays meet with the axis at the diſtance of the diameter from the lens, even when they ſtrike at a convex ſurface.

So that, as to the place of the focus, it is the ſame thing whether the plane ſurface, or the convex one, be turned to a luminary of parallel rays; though it appears, both from experience and trigonometrical calculations, that there are more rays united in a leſs ſpace, if the convex ſurface, than if the plane one, be turned towards the ſun.

If the lens were full of water, $FD = 3\,CH - \frac{3}{4}HD$, and therefore, if $\frac{3}{4}HD$ be inconſiderable, $FD = 3\,CH$, or if $\frac{1}{4}HD$ be inconſiderable, $FH = 3\,CH$. Parallel, and near rays, therefore, are united at the diſtance of a diameter and a half, if the refraction be in water, even when the convex ſurface is oppoſed to the luminous body.

3. Hence, alſo, ariſes a method of determining the focus of parallel rays ſtriking on a lens convex on both ſides, the two ſemidiameters, and the thickneſs of the lens, being given.

For if the ray H I, (*Plate* VI. *Optics*, *fig*. 10.) near the axis D G and parallel to it, fall on a lens convex on both ſides, after a double refraction, it will meet the axis in F, provided that $GE : GC$ and $DK : DO$ have the ratio of refraction. And G D will be to G K as G O to G F. Since $EG : GC$ in the ratio of refraction, the ray H I will tend to the point G; and if D K be to D O in the ratio of refraction, after the ſecond refraction at its egreſs, it will meet the axis in F, and $GD : GK :: GO : GF$. See REFRACTION.

And therefore, $GD : DK :: GO : FO$. Let the ratio of refraction be that of $n : m$, then $GE : GC :: n : m$, and $DK : DO :: n : m$; and, therefore, $n - m : n :: CE : GE$, and $n - m : n :: KO : DK$; wherefore if the ratio of refraction and the ſemidiameters C E and K O are given, G E and D K may be found: and ſince $GD = DK + EG - EK$, and $GK = GE - EK$, and $GO = GE + KO - EK$, and $GD : GK :: GO : GF$; G F may be found: moreover $GE - GF = EF$. If E K be rejected as very ſmall, $GD = DK + EG$, $GK = GE$, and $GO = GE + KO$; and therefore, $DK + EG : GE :: GE + KO : GF$.

Hence, if the lens be glaſs, ſince $GE = 5\,CE$, and $DK = 3\,KO$, $3\,KO + 3\,CE : 3\,CE :: 3\,CE + KO : GF$; conſequently $KO + CE : CE :: 3\,CE + KO : GF$. And ſubſtituting for KO, a, CE, b, and GF, x, $x = \frac{3bb + ab}{a + b}$, and FE or FK, (rejecting EK) $= 3b - \frac{3bb + ab}{a + b} = \frac{3ab + 3bb - 3bb - ab}{a + b} = \frac{2ab}{a + b}$: therefore the ſum of the ſemidiameters $KO + CE$ is to the double of one of them, or $2\,CE$, as the other KO is to FK the diſtance of the focus from the lens.

If the glaſs lens were equally convex on both ſides, then $KO = CE$, and $2\,CE : CE :: 4\,CE : GF$, and therefore, $GF = 2\,CE$; and $FK = \frac{2a^2}{2a} = a = EC$; *i. e.* the diſtance of the focus from the lens is equal to the radius of convexity.

If the lens were full of water, ſince $GE = 4\,CE$, and $DK = 4\,KO$, $4\,KO + 4\,CE : 4\,CE :: 4\,CE + KO : GF$; conſequently $KO + CE : CE :: 4\,CE + KO : GF$. Wherefore ſubſtituting as before $x = \frac{4bb + ab}{a + b}$, and FE or $FK = 4b - \frac{4bb + ab}{a + b} = \frac{3ab}{a + b}$: conſequently the ſum of the ſemidiameters $KO + CE$ is to the triple of either, $3\,CE$, as the other KO is to FK, the diſtance of the focus from the lens.

If this lens were equally convex on both ſides, we ſhould have $2\,CE : CE :: 5\,CE : GF$; therefore $GF = \frac{5}{2}\,CE$; and $FK = \frac{3aa}{2a} = \frac{3}{2}a$: *i. e.* the diſtance of the focus from the lens is $\frac{3}{2}$ of the radius.

In order to find the principal focus of a plano-convex, or double convex lens experimentally, various methods have been deviſed and recommended. One is as follows: Meaſure exactly the thickneſs of the lens in the middle and at the edge, and alſo its breadth; then it will be, as the difference of the above thickneſſes is to half the breadth, ſo is half the breadth to the focal length required. The following method will ſerve, according as the centres of the ſides are on different ſides or on the ſame ſide of the lens; as the ſum or difference of the radii of the ſides is to one of them, ſo is double the other to the focal diſtance from the lens. If the curvity of each ſide is the ſame, the radius of that curvity may be deemed the focal length; and if one ſide of the lens is plane, the focal length may be reckoned equal to twice the radius of the ſpherical ſide. The focal length of a convex lens may be alſo found by the following methods: darken a room, ſo that no light ſhall enter into it except through a tube in one of the window-ſhutters; then, placing the lens againſt and cloſe to this hole, move a white paper behind it, till the picture of a particular object, directly facing the lens, appears moſt diſtinct, and there fix the paper; then meaſuring the diſtances betwixt the paper and the object from the lens reſpectively, there will be ſufficient data for finding the focal length required. Let QP (*fig.* 11.) be the object without doors, A the lens in the window-ſhutter, qp the place of the paper where the image of QP is moſt diſtinct, and QAq the axis of the lens. Having meaſured the diſtances QA, qA, it will be, $Qq : QA :: QA : QF$; and $QA - QF = AF$ the focal length required. The focal length of any lens, it is obſerved, is in ſtrictneſs the diſtance from its principal focus to the reſpective focal centre: and in the example above given, the diſtances betwixt the focal centres of the lens ſhould have been ſubtracted from Qq; and for QA we ſhould have taken the diſtance from Q to the neareſt focal centre. But in experiments of this kind, theſe niceties would be ſuperfluous. Moreover, in the above experiment, there will be a certain part of the axis, extending on each ſide of the geometrical focus q, within which, wherever the paper is placed, the picture as to ſenſe will be equally diſtinct. Having found nearly the place of q, move the paper from thence both ways along the axis, till an indiſtinctneſs begins to be perceptible in a particular ſmall part of the picture; and having noted theſe two places, the middle point between them may be taken for the focus q. Again, if the focal length of the lens does not exceed two or three feet, it may be found without darkening the room, by holding the lens at ſuch a diſtance off, that the image of the window-ſaſh may be diſtinct upon the oppoſite wainſcot: then computing as above, the window-ſaſh being now the object. And for common purpoſes, when the focal length of a lens is but ſhort, this length may be reckoned the diſtance from the lens to the place where the image of a remote object appears moſt diſtinct. For if the object be diſtant from the lens 100 or 1000 times the focal length, the image will be beyond the principal focus only the 100dth or 1000dth part of that focal length. The focal length of a lens may be found, without computation, by making the flame of a candle the object, thus: Move the lens or the candle, and the paper for receiving its image, ſo that, when the image is moſt diſtinct, the lens be exactly in the middle betwixt the other two; then half the diſtance betwixt the object or its image and the lens is the focal length required. Or if either the lens, or the candle, or the paper for receiving its image, be moved, while the other two are fixed; having meaſured the reſpective diſtances, the focal length may be found in the manner already ſtated. Or, if a ſmall hole, of about one-fourth or one-eighth of an inch broad, be made in the window-ſhutter of a darkened room, and a lens and a paper be held behind this hole at proper diſtances; the place where the image of the hole is moſt diſtinct may be determined very accurately, and ſo the focal length of the lens may be found as above. Again, place the lens ſo that its axis may point as nearly as poſſible towards the ſun; then holding a paper behind it, the burning point, or that in which the ſun's image is ſmalleſt, and when its limb appears moſt diſtinct, is the focus of the lens. See theſe various methods illuſtrated more at large in Harris's Optics, book ii. § 4.

On the principles above illuſtrated is founded the ſtructure of refracting burning-glaſſes, the ſun's light and heat being exceedingly augmented in the focus of the lens, whether convex or plano-convex; ſince the rays, falling parallel to the axis of the lens, are reduced into a much narrower compaſs; ſo that it is no wonder they burn ſome bodies, melt others, and produce other extraordinary phenomena. See BURNING *Glaſs*.

4. If a luminous body be placed in a focus behind a lens, whether plano-convex, or convex on both ſides; or whether equally or unequally; the rays, after refraction, become parallel. In this caſe the refracted rays become the incident rays, and *vice verſâ;* and conſequently the refracted are parallel. Hence, by means of a convex lens, or a little glaſs bubble full of water, a very intenſe light may be projected to a vaſt diſtance.

And this furniſhes us with the ſtructure of a lamp, or lantern, to project an intenſe light to an immenſe diſtance;

for a lens, convex on both ſides, being placed oppoſite to a concave mirror, if in the common focus of both be placed a lighted candle, or wick, the rays reflected back from the mirror to the lens will be parallel to each other; and after refraction will converge, till they concur at the diſtance of the ſemi-diameter, after which they will again diverge. But the candle being likewiſe in the focus of the lens, the rays it throws on the lens will be parallel: and therefore a very intenſe light meeting with another equally intenſe, at the diſtance of the diameter from the lens, the light will be ſurpriſing; and though it afterwards decreaſe, yet the parallel and diverging rays going a long way together, it will be very great at a very great diſtance. Lanterns of this kind are of conſiderable ſervice in the night-time to diſcover remote objects, and are uſed with ſucceſs, by fowlers and fiſhermen, to gather their prey together, in order to take them.

If it be required to have the light, at the ſame time, tranſmitted to ſeveral places, as through ſeveral ſtreets, &c. the number of lenſes and mirrors is to be increaſed.

If the luminous body placed in the focus be of a larger extent, the rays, flowing from points ſenſibly diſtant from each other, cannot be parallel; but they will conſtitute ſeveral trains, or parcels of rays, parallel to each other.

5. The images of objects, oppoſed in any manner to a convex lens, are exhibited, invertedly, in its focus.

Hence, if a paper be applied to a convex lens (eſpecially in a dark room) at the diſtance of its focus, the images of objects ſhining upon it will be repreſented diſtinctly, and in their natural colours, upon it: nor is the focus of the ſun's rays any thing elſe, in effect, but the image of the ſun. Hence in ſolar eclipſes, the ſun's image, eclipſed as it is, may be burnt by a large lens on a board, &c., and exhibit a very entertaining phenomenon.

Hence, alſo, if a convex lens, of any kind, be expoſed both to nearer and remoter objects, and a paper at the ſame time be applied, ſo as to receive the images of objects diſtinctly, the diſtance of the focus from the lens, and thence the diameter of the convexity, may be determined. See the above.

6. If a concave mirror be ſo placed, as that an inverted image, formed by refraction through a lens, be found between the centre of the focus, or even beyond the centre, it will again be inverted by reflection, and ſo appear erect in the firſt caſe beyond the centre; and in the latter, between the centre and the focus. On theſe principles is conſtructed the *camera obſcura*, which ſee.

7. The diameter of the image of an object delineated beyond a convex lens, is to the object itſelf in the ratio of the diſtance of the image to that of the object.

Since then the image of a remoter object is leſs diſtant from the lens than that of the nearer, the image of the more remote will be leſs than that of the nearer. And becauſe the diſtance of the image from the lens is greater, if the lens be a ſegment of a greater ſphere than of a leſs; hence the image will be greater in the former caſe than in the latter. The image therefore will be of ſuch a magnitude, as it would be of, were the object to ſhine into a dark room through a little hole upon a wall, at the ſame diſtance from the hole at which the focus is from the lens. When an object is leſs diſtant from a lens than the focus of parallel rays, the diſtance of the image is greater than that of the object; otherwiſe the diſtance of the image is leſs than that of the object; in the former caſe, therefore, the image is greater than the object; in the latter leſs.

If the images be made greater than the objects, they will not appear diſtinctly; becauſe in that caſe there are fewer rays which meet after refraction in the ſame point; whence it happens, that rays proceeding from different points of an object terminate in the ſame point of an image, which is the cauſe of confuſion. Hence it appears, that the ſame aperture of a lens may be admitted in every caſe, if we would keep off the rays which produce confuſion. However, though the image is then more diſtinct when no rays are admitted but thoſe near the axis, yet for want of rays the image is apt to be dim.

8. If the eye be placed in the focus of a convex lens, an object viewed through it appears erect, and enlarged in the ratio of the diſtance of the object from the eye, to that of the eye from the lens, if it be near; but infinitely, if remote.

The theory of real images may be thus illuſtrated by an experiment. Upon a long table draw the line B D (*Plate* VIII. *Optics*, *fig.* 1.) and over ſome point there as A, place the convex lens O, whoſe principal focuſes are F, f, ſo that the axis F f of the lens be parallel to B D. In the line B D, take A F, A f, each equal to O F or O f in the axis Q q. On one ſide of A divide the line A B into the parts 1, 2, 3, 4, &c. each equal to A F; and on the other ſide take f 1 equal to A f or A F, and divide it into $f\frac{1}{2}$, $f\frac{1}{3}$, $f\frac{1}{4}$, &c. ſo that theſe parts be reſpectively equal to $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c. of f 1 or A f. Then if the room be darkened, and a lighted candle be placed over any one of the diviſions in the line A B, as at 2; the image of the candle will be ſeen diſtinct but inverted, upon a paper held over the correſponding fraction on the other ſide, as at $\frac{1}{2}$. If the candle be placed at the point 3 or 4, &c. the paper for receiving the image muſt be held over $\frac{1}{3}$ or $\frac{1}{4}$, &c. So that if the candle be moved from 2 to an infinite diſtance, the whole motion of the image will be from $\frac{1}{2}$ to f. If the candle be placed at 1, the image will be at 1, at the ſame diſtance from the lens on the other ſide. If the candle be brought nearer to F, the motions of the image and candle will now be reciprocal, to what they were before. But if the candle be placed any where between F and the lens, there will be no image formed.

Since an object placed at any diſtance, and its image, ſubtend equal angles at the focal centres s, v, of any lens; the angle under which any remote object appears being given, it will be eaſy to find the diameter of its image: let q (*fig.* 2.) be the principal focus of the convex lens O, and let the angle P s R ($= p v r$) be that under which the ſun (or any other very remote object) appears to the naked eye: biſect the angle $p v r$ with the line $v q$; then in the right-angled triangle $v q p$ or $v q r$, we ſhall have the ſide $v q$ and all the angles; whence it will be eaſy to find $q p$ or $q r$, the ſemi-diameter of the image. See IMAGE and REFRACTION.

LENSES, *for concave*, their laws are as follow.—1. If parallel rays ſtrike on a plano-convex lens K L, and F C be to F B in the ratio of refraction, the rays will diverge from the axis; and the point of divergency, or diſperſion, called the *virtual* focus, will be F. See *Plate* VII. *Optics*, *fig.* 3. See FOCUS.

For the ray H I, parallel to the axis, is perpendicular to K L, and will therefore paſs unrefracted to E. Wherefore F C being to F B in the ratio of refraction, F will be the virtual focus.

If then the lens be glaſs, F B = 2 B C; *i. e.* the virtual focus F will be diſtant from the lens K L by the ſpace of the diameter 2 B C.

If the refraction be in water, F B = 3 B C; *i. e.* the virtual focus F will be diſtant from the lens K L a diameter and a half 3 B C.

2. If the ray A E, parallel to the axis F P, ſtrike on a lens concave on both ſides; and both F C be to F B, and I P to P H in the ratio of refraction; and F P : P H : : F B : B G; G will be the point of diſperſion, or the virtual focus. See *Plate* VII. *Optics*, *fig*. 4.

If, therefore, the ratio of the refraction be $= n : m$, C B $= a$, and I H $= b$; F B $= \frac{na}{n-m}$, and P I $= \frac{nb}{n-m}$; conſequently, diſregarding the thickneſs of the lens, F P $=$ F B $+$ I P $= \frac{na+nb}{n-m}$, and P H $=$ P I $-$ I H $= \frac{nb}{n-m} - b = \frac{mb}{n-m}$: therefore, $\frac{n \times \overline{a+b}}{n-m} : \frac{mb}{n-m} :: \frac{na}{n-m}$: B G; *i. e.* $a+b : \frac{mb}{n-m} :: a$: B G, or $\overline{n-m} \times \overline{a+b} : mb :: a$: B G; *i. e.* $\overline{n-m} \times \overline{\mathrm{CB}+\mathrm{IH}} : m\,\mathrm{IH} :: \mathrm{CB} : \mathrm{BG}$.

If, therefore, the refraction be in a glaſs lens, ſo that $m = 2$, $n = 3$, and $\overline{a+b} : 2b :: a$: B G; the ſum of the ſemidiameters C B and H I will be to the diameter of the concavity of either, 2 H I, as the ſemidiameter of the other C B, to the diſtance of the virtual focus from the lens, B G.

But if the ſemidiameters H I and C B are equal, or $a = b$, B G $= \frac{2a^2}{2a} = a$; or B G, the diſtance of the virtual focus from the lens, is equal to the ſemidiameter C B or H I. If the refraction be made in water, $m = 3$ and $n = 4$, and, therefore, $a + b : 3b :: a$: B G; *i. e.* the ſum of the ſemidiameters C B and H I will be to a diameter and a half of either concavity, 3 H I, as the ſemidiameter of the other C B to B G, the diſtance of the virtual focus from the lens: in this caſe, if $a = b$, or H I $=$ C B, B G $= \frac{3a^2}{2a} = \frac{3}{2}a = \frac{3}{2}$ C B, *i. e.* the diſtance of the virtual focus from the lens B G, is to the ſemidiameter B C in a ſeſquilateral ratio.

Hence, the ſun's rays ſtriking on a concave lens, their light, after refraction, will be conſiderably weakened; ſo that the effect of concave lenſes is oppoſite to that of the convex ones.

To find the focal length of a concave lens experimentally. Let the lens be covered with paper, having in it two ſmall circular holes, as at O, v (*Plate* VII. *Optics*, *fig*. 5.); and on the paper for receiving the light, deſcribe two ſmall circles as a, b, whoſe centres are placed at twice the diſtance apart of the centres of O, v, and it will be beſt if their diameters are alſo double thoſe of O, v. Thus, moving the paper to or fro, till the middle of the ſun's light coming through the holes O, v, falls exactly on the middle of the circles a, b; that diſtance of the paper from the lens will be the focal length required. For it is evident, that ab : O v :: a F : O F; or, whatever is the diſtance of a, b, it will be, ab $-$ O v : a O :: O v : O F, the focal length of the lens. Inſtead of the paper with the holes, ſmall patches may be ſtuck on the lens.

The focus may be alſo found by candle-light, thus: let Q be the place of the flame; c, d, the bright ſpots upon the paper, and q the point where the lines vd, O c, produced, backwards, would interſect. To find the point q, it will be cd $-$ O v : O v :: O c : O q. Then Q q : Q O :: Q O : Q a, and O a is the focal length required.

The focal length of a concave lens may be readily found by joining it to a convex one, having a ſhorter focus. Let q (*fig*. 6.) be the image of any object formed by the convex lens A, fixed at A; and let Q be the image of the ſame object, when the convave lens O is joined to A. Having meaſured the diſtances Q q, q O, for finding the focal length of the concave lens, it will be (as before) Q q : Q O :: Q O : Q F; then Q F $-$ Q O $=$ O F.

3. An object viewed through a concave lens appears erect, and diminiſhed in a ratio compounded of the ratios of the ſpace in the axis between the point of incidence, and the point to which an oblique ray would paſs without refraction, to the ſpace of the axis between the eye, and middle of the object; and the ſpace in the ſame axis between the eye and the point of incidence, to the ſpace between the middle of the object, and the point the oblique ray would paſs to without refraction.

Though the properties of lenſes have been here conſidered principally with regard to rays falling near the axis, and parallel to it; yet the reaſoning will be eaſily transferred to rays remoter from the axis, and falling in any direction.—Thus we may ſay univerſally, that in a convex lens, all parallel rays become converging, and concur in a focus: that diverging rays either become leſs diverging, or run parallel, or converge; and that converging rays converge the more: all which alterations are more ſenſible in oblique rays than in perpendicular ones, becauſe the angles of incidence in that caſe are greater.

In concave lenſes all parallel rays become diverging, and all diverging rays diverge more; converging rays either converge leſs, or become parallel, or go out diverging; all which things hold of oblique as well as direct rays, but more ſenſibly in the firſt.

For the further illuſtration of this part of the ſubject of the article before us, we ſhall here ſubjoin two or three propoſitions; firſt premiſing, that all pencils of rays (ſee PENCIL), refracted by a lens, excepting that whoſe axis is perpendicular to both the ſurfaces, are ſaid to be oblique, and are called "oblique pencils."

1ſt "In every oblique pencil of rays, refracted by any lens, there is one ray whoſe incident and emergent parts are parallel; and this ray is the axis of that pencil, or that ray of it which undergoes the leaſt refraction." In *Plate* VII. *Optics*, *fig*. 7 to 12, let R, r, be the centres of the ſpherical ſides A, a; and in *figs*. 7, 8, let r be the centre of the ſpherical ſide a. In the flatteſt ſide of any lens whatſoever aſſume any point B, at which let a ray of light be refracted, either at its entrance into the lens, or at its emerſion out of it; draw R B perpendicular to that ſide, and parallel to it draw alſo rb perpendicular to the other ſide a; join B b, then will B b be a ray, whoſe parts P B, pb, without the lens, will be parallel. For the ray B b, drawn between the two parallels R B, rb, is equally inclined to them both; and conſequently P B, bp are alſo equally inclined to R B, rb, (by the law of refraction,) and therefore parallel to one another. After the ſame manner, wherever the point B is aſſumed, we can find a ray B b, that ſhall be equally inclined to both the ſurfaces; and therefore in every oblique pencil of rays there is one ray whoſe incident and emergent rays are parallel. It is evident alſo, that every other ray paſſing through B will be more refracted than the ray B b; for a plane touching the lens in any other point beſides b will be inclined to a plane touching it in B; and, therefore, a ray paſſing through B, and any other point beſides b, will be bent out of its courſe, more or leſs, according as theſe planes are more or leſs inclined. Whence the propoſition is evident. Q q is the axis of an oblique pencil on the contrary ſide of the axis of the lens. Hence it appears, that the axis of any oblique pencil whatſoever is equally inclined to each ſide of the lens, and the leſs oblique is the pencil, the nearer the point B will be to the vertex A; and the leſs will be the diſtance between the parallel rays P B, *b p*.

2. In every oblique pencil of rays (*figs.* 7 to 12), the part B *b* of the axis within the lens, produced, if need be, will interſect the axis of the lens in the very ſame point O; and the point O divides the axis of the lens in ſuch a manner, that A O : *a* O :: R : *r*; that is, 1. The point O is in the vertex of a plano-convex and plano-concave lens (*figs.* 7 and 8.) 2. In the double convex and double concave (*figs.* 9 and 10), the point O divides that part of the axis, which is within the lens, in the ratio of the radii of the ſides, the ſhorteſt part being next that ſide which has the greateſt curvity. 3. The line B *b* muſt be produced without a concavo-convex lens (*figs.* 11 and 12), before it will interſect the axis; and the point O in the axis, where the ſaid line B *b* produced interſects it, lies next to that ſide which has the greateſt curvity; and its diſtance from the ſides is as the radii of theſe ſides reſpectively."

Let the radius of the flatteſt ſide A be called R, and the radius of the other ſide, *r*; and becauſe the axis B *b* of any oblique pencil is equally inclined to both the ſides of the lens (as we have above ſhewn), it neceſſarily follows: *Caſe* 1. In a plano-convex and plano-concave lens (*figs.* 7 and 8), the axis B*b* of any oblique pencil paſſes through the vertex *a*, and therefore the point O is alſo in *a*. For no perpendicular to the ſpherical ſide can be parallel to a perpendicular to the plane ſide, but that only which paſſes through the vertex *a*. Again, becauſe R in this caſe is infinite, and O coincides with *a*; it will be R : *r* :: A O : *a* O. *Caſes* 2 and 3. Becauſe the radii R B, *r b* are parallel (by hyp.), the triangles R B O, *r b o* are ſimilar; and, therefore, R B : *rb* :: R O : *r* O. Alſo R B ± *rb* : R B or *rb* :: R O ± *r* O : R O or *r* O. But the three firſt terms being invariable quantities, the 4th is ſo likewiſe; that is, in the ſame lens the point O is invariable. And from the poſition of the parallel radii R B, *r b*, it is plain that the point O muſt be within the double convex and double concave lens, and without the concavo-convex. Again, becauſe R O : R A (R B) :: *r* O : *ra* (*rb*); we ſhall have A O (R O $\backsim$ R A) : R A :: *a* O (*r* O $\backsim$ *ra*) : *r a*; that is, A O : *a* O :: R : *r*; whence another part of the propoſition is manifeſt.

Hence it follows; that the point O is in the middle of a double convex and double concave, whoſe ſides are ſegments of the ſame ſphere: and in every lens whatſoever, the greater proportion the greater radius bears to the leſſer, the nearer will the point O be to the vertex *a* of that ſide which has the greateſt curvity.

3. "If the axis B *b* (*fig.* 7 to 12.) of a pencil of rays is not very oblique to the axis of the lens; the points, *s*, *v*, where the parts without the lens, P B, *p b*, produced, of the axis of the oblique pencil, and the axis of the lens, divide that axis in ſuch a manner, that A O : A *s* :: *m* : *n* :: *a* O : *a v* nearly." The angles, R B *s*, R B O, or their ſupplements, are the angles of incidence and refraction at the firſt ſide A; and therefore their ſines are as *m* to *n*. In *figs.* 7 and 8, the angle R B *s* = A *s* B; and R B O = A O B. And in *figs.* 9 and 10, the difference between the angles, R B *s*, R B O, or their ſupplements, and the reſpective angles A *s* B, A O B, is equal to the angle A R B, as will appear by drawing *d* B parallel to the axis R A. And therefore the ſines of theſe reſpective angles are pretty nearly in the ſame ratio; that is, ſine < A *s* B : ſine < A O B :: *m* : *n* nearly. But the ſines of the angles, A *s* B, A O B, are as the ſides B O, B *s*; and when the point B is not very remote from A, B O and B *s* will be as A O and A *s* nearly; and therefore when the point B is the neareſt of all to A, it will be A O : A *s* :: *m* : *n*. In *figs.* 7 and 8, the points *a*, *v*, and O, coincide; and in *figs.* 9 and 10, it might be proved as above, that when the point *b* is very near to *a*, it will be, *a* O : *a v* :: *m* : *n*. Hence the further the point B is from A, and *b* from *a*, the greater will be O *s* and O *v*. Let *s* and *v* be points belonging to pencils that have the leaſt obliquity to the axis of the lens; then will A *s* = $\frac{n}{m}$ A O; and *a v* = $\frac{n}{m}$ *a* O. Let the thickneſs, A *a*, of any lens be called *t*; then in a plano-convex and plano-concave lens, A *s* = $\frac{n}{m}t$. And in a double convex and double concave, whoſe ſides are ſegments of the ſame ſphere, A *s* = *a v* = $\frac{n}{2m}t$. Hence again, in a plano-convex and plano-concave glaſs, A *s* = $\frac{2}{3}t$; and in a double convex glaſs of equal convexities, and in a double concave glaſs of equal concavities, A *s* = *a v* = $\frac{1}{3}t$. It appears, moreover, that the focal length of any lens is to be reckoned from the point *v*, if the flatteſt ſide is expoſed to parallel rays; and from the point *s*, if the parallel rays are incident upon the moſt convex or concave ſide; the point *v*, in all caſes, being the moſt remote from the flatteſt ſide, A, of the lens. The points, *s* and *v*, may occaſionally be called the "focal centres" of the lens. Hence it follows, that the focal length of a convex lens is, properly, the diſtance between the principal focus and the next focal centre; and the focal length of a concave lens is to be reckoned from its principal focus to the fartheſt focal centre. As the axes of the ſeveral pencils that are not very oblique, are refracted from the ſame point *s* or *v* nearly; ſo the refraction of theſe axes cauſes no ſenſible confuſion in the image. Moreover, becauſe A *s* = $\frac{n}{m}$ A O, and *a v* = $\frac{n}{m}$ *a* O, and becauſe R : *r* :: A O : *a* O; it will be, $R \pm r : \frac{R}{r} :: t\ (AO \pm aO) : \frac{AO}{aO}$; therefore A O = $\frac{Rt}{R \pm r}$; and *a* O = $\frac{rt}{R \pm r}$; wherefore, A *s* = $\frac{n}{m} \times \frac{Rt}{R \pm r}$; and *a v* = $\frac{n}{m} \times \frac{rt}{R \pm r}$; and multiplying one ſide of *each* equation by $m \times \overline{R \pm r}$, it will be A *s* : *a v* :: *n* R *t* : *n r t*.

4. "The foci of both direct and oblique pencils of parallel rays are nearly at the ſame diſtance from the focal centre (*s* or *v*, as the caſe is) of any lens." Let A *r* Q (*Plate* VIII. *Optics*, *fig.* 1 to 6.) be the axis of the lens, *r* the centre of the firſt ſurface *a b*, Q the principal focus of that ſurface, and F the focus of the lens. Let *p b* B P be the axis of any oblique pencil; and let the emergent part, B P, produced backwards cut the axis of the lens in *s*. Of all the rays parallel to the axis *p b* B P, there ſhall be one as D *d* which will fall perpendicular upon the firſt ſurface *a d*; and therefore if the medium was continued, this ray (produced backwards from a concave lens, but continued

through a convex lens) would paſs through the centre r, and the geometrical focus of rays parallel to it would be at q, ſo that $rq = r\mathrm{Q}$. This is plain, becauſe drq is perpendicular to the ſurface a, as well as $ar\mathrm{Q}$. Again, of all the rays parallel to the axis pb, there ſhall be one as Ee (if the lens is broad enough) which ſhall be refracted into eG, perpendicular to the ſecond ſurface A B; and therefore the focus of this ray ſhall be in sP produced, and in eG produced; that is, in the point of interſection f. Neglecting the aberration of the firſt ſurface ab, eG would unite with the axis drq in q. Hence we are to ſhew that $sf = s\mathrm{F}$ nearly.

Caſe 1. When one ſide of the lens is plain. (*Figs.* 1, 2.) Becauſe sr, fq, and sf, rq are parallel; $sf = rq = r\mathrm{Q} = s\mathrm{F}$.

Caſe 2. When both ſides of the lens are ſpherical. (*Fig.* 3—6.) Let R be the centre of the ſecond ſurface A B, and becauſe eG is perpendicular to this ſurface, it will paſs through the centre R. And becauſe rq is parallel to sf, it will be $\mathrm{R}r : \mathrm{R}s :: rq : sf$. The two firſt terms, R$r$, R$s$, being invariable quantities, and rq being allowed to remain invariable, sf will alſo be invariable; that is, sF will deſcribe the ſector $s\mathrm{F}f$, and $sf = s\mathrm{F}$. But becauſe of the aberration by the firſt ſurface de, no ray, as Ee, parallel to and remote from the axis Drq, can be refracted to the focus q; but it will cut the axis rq in ſome point y between q and r (*fig.* 1 to 6.); and therefore a ray parallel to pb, that ſhall be refracted perpendicularly to the ſecond ſurface A B, muſt be ſome ray hk between Ee and the axis pb, if the centres, R, r, are on different ſides (*figs.* 3 and 4.); otherwiſe hk will be farther from the axis than Ee (*figs.* 5 and 6.); and conſequently this ray will cut the axis sf in ſome point x, between f and s. But it has been already ſhewn, that if the lens had no aberration, f would be the focus of all the rays parallel to the axis $pb\mathrm{B}f$; and as the aberrations at the different ſurfaces are contrary, it is ſufficiently evident that the focus of thoſe rays which are neareſt to the axis $pb\mathrm{B}f$, will not be remote from f.

In every lens whatſoever, the true focus g of an oblique pencil of parallal rays will be between f and s; that is, sg will be leſs than sf or sF. Becauſe if there was no aberration at either ſurface of the lens, sg would be equal to sF or sf; and therefore it muſt follow, that if the aberrations at each ſurface were equal, they would deſtroy each other. (*Figs.* 3, 4.) Let rays of light be within the lens, on each ſide of the axis bB, and let their inclination to that axis be ſuch, as that they would emerge at the ſide b, parallel to bp. It is plain, that a ray parallel to the oblique axis pbBP, and between the ſaid axis and the perpendicular dr, will be more oblique to the emergent ſide A than to the incident ſide a; and therefore, in this caſe, the aberration at the ſide A is the greateſt, and this exceſs of the aberration contracts the focus nearer to s than f, as to g. In like manner, if the parallel ray be on the other ſide of the oblique axis, the greateſt aberration will be on the incident ſide a; and in the preſent caſe likewiſe, this exceſs of aberration contracts the focus nearer to the lens, as to g; and it is plain, that the more oblique is the pencil, the greater will be fg: whence the propoſition is manifeſt.

5. "The focus of incident rays, either diverging or converging upon any lens, being given: to find the focus of the emergent rays." Let Ff (*Plate* VIII. *Optics*, *fig.* 7 to 12.) be the axis of any lens Bb, whoſe focal centres are s, v; and principal foci are F, f. Let any point Q in the axis of the lens be the focus of incident rays, either diverging as Q B, or converging as M B; and let f be the geometrical focus of thoſe rays parallel to the axis of the lens, whoſe incidence is on the ſame ſide with the ray Q B, or M B. To find the focus of the emergent rays, ſay $\mathrm{QF} : \mathrm{F}s :: vf\ (\mathrm{F}s) : fq$; and placing q the ſame way from f that F is from Q, the point q thus found will be the focus required. Let the point of incidence B be not remote from the vertex of the lens; from the centre v deſcribe the arc fd, and draw vd parallel to the incident ray Q B, or M B; then will d be the point where the emergent ray interſects the axis vd; and therefore the point q, where the emergent ray bd (or Nb) produced, interſects the axis of the lens, is the focus required. Again, draw sD parallel to qB; then will the triangles, Q Ds, vdq, be equiangular, and therefore $\mathrm{QD} : \mathrm{D}s :: vd : dq$. But D is a point where the incident ray qb, or Nb, after refraction by the lens, will interſect the axis sD, ſo that $s\mathrm{D} = s\mathrm{F}$ nearly; and when the triangles, Q Ds, vdq, are vaniſhing, the point D will coincide with F, and d with f; wherefore $\mathrm{QF} : \mathrm{F}s :: vf : fq$. Hence it follows, 1. Becauſe $\mathrm{F}s = vf$, Fs or vf is a mean proportional between Q F and fq; that is, $\mathrm{QF} : \mathrm{F}s :: \mathrm{F}s : fq$. 2. $\mathrm{QF} : \mathrm{F}s :: (vf : fq ::)\ \mathrm{Q}s\ (\mathrm{QF} \underset{\backsim}{+} \mathrm{F}s) : vq\ (vf \underset{\backsim}{+} fq)$. 3. $\mathrm{QF} : \mathrm{Q}s :: (\mathrm{F}s : vq ::)\ \mathrm{Q}s\ (\mathrm{QF} \underset{\backsim}{+} \mathrm{F}s) : \mathrm{Q}s \underset{\backsim}{+} vq$. Obſ. When the lens is not very thick in proportion to its focal length, the focal diſtances, S F, vf, may, without ſenſible error, be reckoned from the point O, which biſects vs; and then the preceding proportions will be convertible into the following: *viz.* $\mathrm{QF} : \mathrm{FO} :: \mathrm{FO}\ (= \mathrm{O}f) : fq$; and $\mathrm{QF} : \mathrm{FO} :: \mathrm{QO} : \mathrm{O}q$; and $\mathrm{QF} : \mathrm{QO} :: \mathrm{QO} : \mathrm{Q}q$. 4. If q be the focus of incident rays, Q will be the focus of the emergent rays. 5. The focuſes, Q, q, move both the ſame way, and always lie contrary to F and f. And the diſtances, F Q, fq, vary reciprocally; that is, as one increaſes, the other decreaſes, but with a different velocity, according as they are differently ſituated. When Q coincides with F, q will be at an infinite diſtance; that is, the refracted rays will emerge parallel to the axis. And in *figs.* 7, 8, when $\mathrm{QO} = 2\,\mathrm{OF}$, $\mathrm{O}q$ will be $= \mathrm{OQ}$: whence the difference of the focal diſtances of the refracted rays, when $\mathrm{QO} = 2\ \mathrm{OF}$, and when O Q is infinite, is only equal to Of. 6. When the focus Q of rays diverging upon a convex lens (*fig.* 9.) lies between F and the lens, the refracted rays (bN inſtead of croſſing the axis) will diverge from the focus q. And if incident rays upon a concave lens converge towards the point that is nearer to it than F (as in *fig.* 10.), the lens in this caſe will have a real focus; that is, the refracted rays will croſs the axis in q. And univerſally, 7. When the focuſes, Q, q, lie both on the ſame ſide of the lens; if the incident rays diverge from Q (*fig.* 9—12.), the emergent rays will diverge from q. And if the incident rays emerge towards Q (*fig.* 10, 11.), the emergent rays will converge towards q. And in all theſe caſes, the nearer Q is to O, the nearer alſo will q be to O; and if one of theſe focuſes be in O, the other alſo will coincide with it. And the contrary happens, when Q and q are on different ſides of the lens; that is, rays diverging from Q (*fig.* 7.) will converge towards q; and rays converging towards Q (*fig.* 8.) will diverge from q.

We have hitherto taken notice of the progreſs of a ſingle pencil of rays, or ſuch as come from a ſingle point, through a lens; but it is eaſy to apply the ſame kind of reaſoning to the various points of an object. Let D E (*Plate* VIII. *Optics fig.* 13.) be an object, A B a double convex lens, whoſe centre is C; and let us examine the pencils of rays which come from three points only of the object, ſince the ſituation of the intermediate pencils is evidently comprehended between thoſe three. Of all the rays which proceed from each of theſe points, that which paſſes through the centre C of the lens muſt proceed, if the lens is not remarkably thick, in a ſtraight line, ſo that D C I, F C H, and E C G, are ſtraight lines; ſecondly, the focus of the rays D B A, after refraction, muſt be ſomewhere in the axis or ſtraight line D C I; alſo that of the middle pencil, F B A, muſt be ſomewhere in F C H, and the focus of the third pencil muſt be in E C G. Thirdly, the refracted focus of each pencil muſt be on the contrary ſide of the axis of the lens, to what its incident or radiant focus is; for inſtance, the refracted focus I is below the axis of the lens, whilſt its incident or radiant focus D is above it; and the refracted focus G is above the axis, whilſt its radiant point E is below it: the conſequence of which is, that if the object D E be ſufficiently luminous, and a piece of white paper, or other flat and opaque body, be ſituated at G I, an image of the object D E will be formed upon it, but in an inverted poſition. If the opaque body be removed, then no image will be ſeen by a ſpectator ſituated on one ſide; for the rays of light, though they meet at their reſpective foci in I H G, yet they proceed divergingly beyond that place through the air or other tranſparent body, and none come to the lateral ſpectator. If the paper be ſituated nearer or farther from the lens than the place G I, then an imperfect image, or no image at all, will be formed upon it, becauſe the rays of the reſpective pencils do not meet at any other place.

From what has been ſaid above with reſpect to the conjugate foci of the ſame pencil, it will be clearly deduced, that if the object D E be brought nearer to the lens, the refracted foci, or the image G H I, will be formed farther from the lens, and *vice verſâ*. And from this it follows, that (ſince the angles D C E, G C I, formed at the centre of the lens by the axes of the two extreme pencils, are equal) when the diſtance of the object from the lens is equal to that of the image from the lens, then the ſize of the image is equal to that of the object; when the former diſtance is leſs than that of the latter, then the image is larger than the object; and when the former diſtance is longer than the latter, then the image is ſmaller than the object,

With reſpect to the brightneſs of that image it muſt be conſidered, that of the innumerable rays which are inceſſantly emitted in every direction from each point, for inſtance D, of the object, a conſiderable number, *viz.* D A B, falls upon the lens, and are converged to a ſingle point I; therefore that point muſt be more or leſs bright in proportion as the ſurface of the lens is larger or ſmaller. Hence alſo a very remarkable property of thoſe lenſes is eaſily comprehended, which is, that when an image G H I is thus formed, if you cover part of the lens, be it the middlemoſt or ſome lateral part of it, the image I G will not thereby be rendered partly inviſible,—the whole image will be ſeen as well as before, but it will appear leſs bright than before; for if we conſider each indefinite part of the lens, we may eaſily perceive that rays of light from every point of the object muſt paſs through that part, and muſt meet at the reſpective foci in G H I.

The above explanation of the progreſs of various pencils through a convex lens, may, *mutatis mutandis*, without much difficulty be adapted to explain the action of concave lenſes. Newton's Optics. Smith's Optics. Harris's Optics. Cavallo's Philoſophy, vol. iii.

Lens, or *Lenticula*, was the name of a kind of weight among the Romans; being the hundred and eighth part of a drachm; equal to a grain and a half.

Lens, in *Anatomy*, a tranſparent body, nearly ſpherical in figure, placed in a depreſſion in front of the vitreous humour of the eye. It is generally mentioned with the epithet cryſtalline. See Eye.

Lens, in *Botany*, the Lentil, *Ervum Lens* of Linnæus, but in reality a ſpecies of *Cicer*; ſee Sm. Fl. Brit. 776, and our article Ervum. The Latin word *lens* is ſaid to have originated from *lenis*, mild, becauſe thoſe who fed on this ſort of pulſe were ſuppoſed to become mild and gentle in diſpoſition.

Lens, *Paluſtris*. See Duck's *Meat*.

Lens, in *Geography*, a town of France, in the department of Jemmape, and chief place of a canton, in the diſtrict of Mons. The place contains 1229, and the canton 13,714 inhabitants, on a territory of 237½ kiliometres, in 19 communes.—Alſo, a town of France, in the department of the ſtraits of Calais, and chief place of a canton, in the diſtrict of Bethune; ſeven miles N.W. of Douay. The place contains 2325, and the canton 13,246 inhabitants, on a territory of 152½ kiliometres, in 21 communes.

LENSWYCK, a town of Norway; 20 miles W.N.W. of Drontheim.

LENT, Quadragesima, a time of mortification, during the ſpace of forty days, wherein Chriſtians are enjoined to faſt, in commemoration of our Saviour's miraculous faſting ſo long in the deſert, and by way of preparation for the feaſt of Eaſter.

In the ancient Latin church, Lent only conſiſted of thirty-ſix days. In the ninth century, to come ſomewhat nearer to the miracle, ſeveral took upon them to add four days more; which in time became a general practice: though the church of Milan is ſaid ſtill to take up with the ancient thirty-ſix.

According to St. Jerom, St. Leo, St. Auguſtine, and others, Lent muſt have been inſtituted by the apoſtles. Their way of reaſoning is thus: whatever is generally received throughout the whole church, and whoſe inſtitution we do not find in any council, muſt be eſteemed to have been eſtabliſhed by the apoſtles. Now ſuch, they ſay, is the faſt of Lent. Its inſtitution is not ſpoken of in any council; but many of the ancient councils, particularly that of Nice, that of Laodicea, &c. and ſome of the oldeſt fathers, particularly Tertullian, ſpeak of it as a thing of ſome ſtanding.

The reformed, generally, hold Lent to be a ſuperſtitious inſtitution, ſet on foot by ſome vain enthuſiaſts, who durſt undertake to ape the miracles of Jeſus Chriſt; as, in effect, it appears to have been from a paſſage of Irenæus quoted by Euſebius.

Some will have it to have been firſt inſtituted by pope Teleſphorus, in the ſecond century: others, who own that there was a kind of abſtinence obſerved in the ancient church before Eaſter, yet contend that it was entirely voluntary, and was never enjoined by any law till the third century. See Fast.

This religious ſeaſon is ſaid to have been firſt obſerved in England by our Saxon anceſtors in the year 640. Anderſon's Hiſt. of Commerce, vol. i. p. 25.

Political Lents have been often enjoined by ſtatute and royal proclamation. See Abstinence.

King James I. iſſued a proclamation againſt eating fleſh in Lent in 1619, and another in 1625. A ſimilar proclamation was alſo iſſued by Charles I. in 1627, and another in 1631.

There was ſome difference between the practice of the

Greek and Latin churches, as to the buſineſs of Lent ; the Greeks beginning it a week ſooner, but at the ſame time allowing more days of intermiſſion than the Latins : thoſe who held it ſeven weeks did not faſt on Saturdays, as thoſe who obſerved but ſix did.

The ancient Latin monks had three Lents: the grand Lent before Eaſter, another before Chriſtmas, called the Lent of St. Martin ; and a third after Whitſunday, called the Lent of St. John Baptiſt ; each of which conſiſted of forty days.

The Greeks, beſides that before Eaſter, obſerved four others ; that of the Apoſtles, of the Aſſumption, of Chriſtmas, and of the Transfiguration ; but they reduced each of them to the ſpace of ſeven days. The Jacobites added a fifth, which they called the Repentance of Nineveh ; and the Maronites a ſixth, called the Exaltation of the Holy Croſs. By the ninth canon of the eighth council of Toledo, it is ordained, " That if any perſon, without evident neceſſity, eat fleſh in Lent, they ſhall be deprived the uſe of it all the reſt of the year."

By the fifth chapter of the fourteenth ſeſſion of the council of Trent, confeſſion is enjoined as peculiarly fit and acceptable at this ſeaſon. Hard. Conc. tom. x. p. 93.

The forty days in Lent, ſay ſome, are obſerved in remembrance of the forty days wherein the world was drowned ; or, as others ſay, of the forty years wherein the Jews wandered in the deſart ; others of the forty days allowed Nineveh for repentance ; others of the forty ſtripes by which malefactors were to be corrected ; or, the forty days during which Moſes faſted at the receiving of the law ; or the forty days faſt of Elias ; or finally, the forty days faſt of our Saviour.

LENTAGO, in *Botany*, a name adopted by Cæſalpinus, (de Plantis, 76,) for the Lauruſtinus, *Viburnum Tinus* of Linnæus, and ſaid to be of Tuſcan origin. Linnæus has applied it to an American ſpecies of *Viburnum*.

LENTELLA, in *Geography*, a town of Naples, in Abruzzo Citra ; 18 miles N.E. of Civita Borella.

LENTEMENT, *Fr.* in *Muſic*. This word is equivalent to *largo* in Ital., and implies a *ſlow* movement. Its ſuperlative, *treſlentement*, very ſlow, is the ſloweſt of all movements.

LENTEN, in *Geography*, a town of Norway ; 20 miles N. of Berga.

LENTES LAPIDEÆ, *foſſile lentils*, in *Natural Hiſtory*, the name given by many writers to a very remarkable foſſile ſubſtance, uſually found immerſed in hard ſtones, and of a roundiſh but flattened ſhape, reſembling not unaptly a pea or lentil flattened by preſſure. They generally lie in great quantities in the ſame maſs of ſtone; and are of very different appearance when their ſides or ends are ſeen, from that which they exhibit when their flat ſurfaces come in view.

They are generally ſuppoſed to be lentils petrified and bedded in ſtone, and as their ſides come in view in ſome parts of the maſſes, they are not perceived to be a part of the ſame ſubſtance, but are called the remains of ſeeds of other plants, and the whole ſtone is uſually named *lapis frumentarius*.

We are not to ſuppoſe, that ſo ſoft a body as the lentil ſeed, or a common pea, could be eaſily petrified and preſerved in its own form in ſtone; ſince if theſe ſoft ſubſtances were readily capable of ſuch a change, they are ſo very common in their recent ſtate, that they muſt be expected to be found in this foſſile condition very frequently alſo, and in great variety. This, however, is not the caſe. But this improbability is not all the reaſon we have to conjecture, that theſe are not what they are vulgarly ſuppoſed to be, that is, foſſile ſeeds ; for a ſtricter examination of the things themſelves proves this to be impoſſible. Seeds, and other ſuch things, are of ſome determinate growth ; the ſize of which we know, and are well acquainted with their internal ſtructure, which is only a farinaceous matter contained in a thick ſuperficial ſkin or covering.

On the contrary, theſe foſſils, when examined, prove to be of various ſizes, from the minuteſt ſpeck viſible to the eye, to near an inch in diameter, a ſize that no lentil could be ſuppoſed to arrive at. They are of two kinds; the one convex on both ſides, the other convex on one ſide only, and plane on the other. The firſt are thickeſt in the middle, and gradually leſſen in thickneſs all round, till they terminate in a thin edge; the others are juſt like the halves of theſe when ſplit horizontally. Thoſe which are convex on both ſides, have uſually ſeveral crooked lines, riſing from the umbilicus on each ſide, and tending towards the circumference; and the flat ones have uſually on the flatted ſide a number of concentric circles ſurrounding the umbilicus, and one another to the edge. When theſe are broken, they are found to conſiſt of a number of caſes, or coats, one within another, all of the ſame ſhape with the outer one ; and ſome of them are ſtriated, or made up of tranſverſe fibres. They are plainly of animal origin, though they differ from all the parts of animals hitherto known. Woodward's Cat. of Foſſils. vol. ii.

Dr. Woodward, in one place, ſuppoſes them to have been the looſe bones which are found in the heads of ſome ſea-fiſhes, and are ſuppoſed to ſerve for hearing ; but that they belong to ſome fiſh at preſent unknown, or that has not been yet examined in this particular : there is, however, another much more probable opinion, which he mentions afterwards, that they may have been opercula of ſhell-fiſhes, of the nature of the umbilicus Veneris, of which the fiſhes we know afford us a great variety ; and the many others we are yet unacquainted with, may furniſh numbers of other kinds very different from all we do know.

Theſe bodies are found in a hard greyiſh ſtone, and ſome of the large ones, which are flattened on one ſide, give great reaſon to judge that they are of this origin, as ſome of the large ones have on the flat ſide a reddiſh line, beginning at the centre, and thence continuing in a ſpiral form for eleven or twelve turns, till it reaches the edge of the ſtone. This is exactly the formation and lineation of the common umbilicus Veneris, only that it has fewer ſpires. The ſtone, called by authors *lapis numiſmalis*, is generally allowed to be of the nature of theſe opercula, and this differs very little from theſe large *lentes lapideæ*, as they are called.

LENTHALL, William, in *Biography*, an Engliſh lawyer, and famous as a ſpeaker in the Long Parliament, was born at Henley on Thames, in Oxfordſhire, in 1591, and educated at Alban-hall, Oxford, from whence he removed to Lincoln's Inn, where he was called to the bar. In 1639 he was elected into parliament for Woodſtock, and in 1640 was choſen ſpeaker, in which capacity he was ſaid to have made a conſiderable fortune by joining the ruling party. He was alſo maſter of the rolls, a commiſſioner of the great ſeal, and chancellor of the duchy of Lancaſter. He was turned out by Cromwell in 1653, but in the following year he became ſpeaker of the parliament called by the protector. At the reſtoration he was exempted from the act of indemnity, but obtained a pardon from the king. He died, it has been aſſerted, expreſſing great penitence for the part which he had borne in the rebellion, in 1662. Several of his ſpeeches and letters have been printed.

LENTIBULARIA, in *Botany*. See Utricularia.

LENTICULA, ſo called from the convex figure of its little round leaves, which reſembles that of the *Lens*, or Lentil ſeed. See Lemna.

Lenticula. See Petechia.

LENTICULAR Scalpel, from *lenticulaire*, doubly convex, in *Surgery*, denotes an inſtrument uſually placed among thoſe which are conſidered neceſſary in the operation of the trepan. Its particular uſe is to cut off the irregularities which often preſent themſelves at the edge of the perforation made with the trephine, and which might, if unremoved, cauſe irritation and injury of the dura mater. The ſhape of the inſtrument can hardly be conceived without ocular examination, or, at leaſt, a reference to an engraving. (See the *Plate of Trepanning Inſtruments.*) We can only ſtate, that one ſide of its blade is convex, the other concave, and one of its edges ſharp. On the end of the blade is fixed a little ſhallow cup, with its concavity towards the handle of the inſtrument. This ſmall cup-like part ſerves the purpoſes of receiving the little pieces of bone when detached, keeping the end of the blade from hurting the dura mater, and when applied under the margin of the perforation in the cranium, enables the operator to guide the inſtrument all round with ſteadineſs and ſecurity. Dict. of Practical Surgery.

LENTICULARE, Ganglion, in *Anatomy*, a ſmall ganglion in the orbit, from which the nerves of the iris are produced. See Nerve.

Lenticulare *Os*, is a ſmall round bone of the carpus, oftener deſcribed under the term piſiforme. See Extremities.

LENTICULARIA, in *Botany*. See Lemna.

LENTIGO. See Freckles.

Lentigo is alſo uſed by Dr. Quincy for a brown, ſcaly, or ſcurfy eruption upon the ſkin; ſuch, eſpecially, as is common to women in the time of child-bearing.

LENTIL, Lens, in *Botany*, a ſpecies of *Ervum;* which ſee.

Lentils are the beſt as well as cheapeſt food for pigeons.

The ſeeds of lentils are frequently the common food of the poor in ſome of the iſlands of the Archipelago, and other warm countries, when they can meet with no better fare. Another ſort of lentil has of late years been cultivated in England, under the name of French lentil. This is the *lens major* of Caſpar Bauhine; and being twice the ſize of the common lentil, is by ſo much the better worth cultivating. This is called *tills* in many parts of England. Miller's Gard. Dict.

The ancients affirm, that lentils, eaten with their ſkins on, bind the body, and ſtop a looſeneſs; and yet at the ſame time, that the liquor they are boiled in looſens the belly. They are but rarely uſed in phyſic, though the flour of them may be uſed outwardly in cataplaſms, for the ſame purpoſes as bean-flour.

Lentil, in *Agriculture*, the name of a plant of the vetch or tare kind, which is cultivated in ſome places as fodder for cattle. Lentils grow a foot and a half in height, with ſtalks and leaves like thoſe of tares, but ſmaller; and, like them, they bear their ſeeds generally three or four in little pods. Theſe ſeeds are round, hard, ſmooth, and flat, but thicker at the ſides. There are two ſorts of lentils, the white and the yellow; but the latter affords the greater quantity of fodder. The ſeeds of this plant are commonly ſown in March, where the land is dry; but in moiſt ground, April is a better ſeaſon. The uſual quantity of ſeed allowed to an acre of land is from one buſhel and a half to two buſhels. If theſe are ſown in drills in the ſame manner as peaſe; they are ſaid by ſome to ſucceed better than when they are ſown broad-caſt. The drills ſhould be a foot and a half aſunder, to allow room for the hoe to clean the ground between; for if weeds are permitted to grow among them, they are apt to get above the lentils, and prevent them from being properly ſupported.

This is a crop not uncommon about Cheſterford, in Eſſex, where they ſow a buſhel an acre on one ploughing in the beginning or middle of March. "It is there the cuſtom," Mr. Young ſays, "to make hay of them, or ſeed them, for cutting into chaff for trough-meat for ſheep and horſes, and they ſow them on both heavy and dry ſoils." It is added, that the whole country is of a calcareous nature; and likewiſe that attention ſhould be paid not to water horſes ſoon after eating this ſort of food, as they are apt to hove them. They are likewiſe aſſerted to be cultivated for the ſame purpoſe in Oxfordſhire, and probably in other diſtricts.

LENTILIUS. See Linsenbahrt.

LENTINI, in *Geography*, anciently *Leontini* or *Leontium*, which was a ſpacious, rich, and celebrated city of Sicily, and the rival of Syracuſe, is now reduced to a population of 4000 perſons, who occupy a very inconſiderable portion of the ruins of ancient Leontium. It is ſituated in Noto, on a river of the ſame name, about five miles from the ſea. The air of the adjacent country, which abounds in marſhes, is ſo inſalubrious, that it prevents the increaſe of inhabitants, notwithſtanding the fertility of the ſoil and the variety of its productions. Three miles from Lentini is a large lake, eſtimated at about 20 miles in compaſs, called "Bivieri," or the lake of Lentini, belonging to the prince de Butera, which produces 1500*l.* a-year; for the leaſe of the fiſhery, conſiſting of eels, tench, and ceſalu, or a ſort of barbel, that feeds in either freſh or ſalt water. The vicinity alſo yields great plenty and variety of game; 19 miles N.N.W. of Syracuſe. N. lat. 37° 18'. E. long. 15°.

LENTISCASA, a town of Naples, in Principato Citra; nine miles S.W. of Policaſtro.

LENTISCUS, in *Botany*, the Maſtic tree, ſuppoſed to have derived its name from *lentus*, and *lenteſco*, alluding to the pliability and tenacity of its gum or reſin. See Pistacia.

LENTISK. See Pistacia and Mastic.

Lentisk, *African* and *Peruvian*, or *Indian* Mastic. See Schinus.

LENTO, *Ital.*, a muſical term for ſlow, or a movement between largo and grave.

Lento, in *Geography*, a town of the iſland of Corſica; 11 miles S. of Oletta.

LENTON, John, in *Biography*, a muſician in the band of king William and queen Mary, whoſe inſtrument was the common flute. He compoſed and publiſhed, in conjunction with Tollet, a work entitled "A Conſorte of Muſick, in three parts," probably two flutes and a baſe-viol or archlute. At the beginning of the laſt century, the flute à bec, or common flute, was in much higher favour than the violin, or German flute, which was then hardly known in this country. There are catches of Lenton's compoſition printed in "The Pleaſant Muſical Companion."

LENTOR, in *Medicine*, a term employed by Boerhaave and his followers, to denote a ſuppoſed glutinous or viſcid condition of the fluids of the living body, to which they aſcribed the origin of many diſeaſes.

It is ſcarcely neceſſary to enter at any length into the detail or refutation of an hypotheſis, which was founded at the beſt upon a gratuitous and miſtaken view of the operations of the animal economy, and which a better pathology has long ago exploded. Boerhaave, in his obſervations on diſeaſes ariſing from a *ſpontaneous gluten*, (ſee his Aphoriſms, § 69, et ſeq. and the commentary upon them in his "Praxis Medica,") conſiders the direct effect of it to be an obſtruction to the free circulation of the blood, eſpecially through the ſmall ramifications of the veſſels. "Hence all the concoctions, circulations, ſecretions, excretions, all the vital, natural, and animal motions are diſordered; whence ariſe ſuffocation and death." (Aph. § 73.) Under this head, then, he readily includes not only inflammations, tumours, and concretions, but almoſt every ſpecies of chronic diſeaſe, eſpecially where there is any change either in the qualities of the ſecretions, as the ſaliva, urine, &c. in the colour and complexion, as in chloroſis, leucophlegmatia, jaundice, &c.: or where any part, either external or internal, is altered in its form; as in all eruptive or cutaneous complaints, in ſcrofula, cancer, ſchirrus, meliceris, or other ſpecies of ſwelling. But in all theſe inſtances, the aſſerted preſence of a *gluten* or *lentor* is gratuitous; there is no evidence of any ſuch change in the property of the circulating blood; and the morbid humour, where any ſuch palpably exiſts, is found *out* of the courſe of the circulation, and is, in all probability, the reſult of a deranged action of the veſſels in the part where it is found. Thus, in an abſceſs, following a phlegmonous inflammation, (as in a common boil,) it is clear that there is no ſuch thing as a purulent lentor in the maſs of the blood; the pus is generated in the inflamed part, by an operation of the veſſels, analogous to the ſecretion of bile or ſaliva, and is a new product, not a pre-exiſting matter. The argument, deduced from the appearance of the *buffy cruſt* on blood, drawn during the exiſtence of inflammatory fever, is altogether fallacious; as this *buff* is but the ordinary coagulable lymph of the blood, ſomewhat more ſeparated from the red globules. See Blood, and Humoral *Pathology*.

LENTZ, in *Geography*, a town of Pruſſia, in the territory of Ermeland; eight miles N.E. of Elbing.

LENTZBURG, an extenſive bailiwick of Switzerland, in the canton of Berne, which was formerly a rich and powerful country. Its capital, of the ſame name, is one of the four municipal towns of the Aryan, having a conſiderable trade, and manufactures of flowered linens and cotton, tobacco, &c.; 16 miles W. of Zurich.

LENTZEN, a town of Brandenburg, in the mark of Pregnitz, near the Elbe; 74 miles N.W. of Berlin. N. lat. 53° 9'. E. long. 11° 36'.

LENZA, a ſmall iſland in the Adriatic. N. lat. 44° 5'. E. long. 15° 31'.

LEO, Lion, in *Aſtronomy*, the fifth of the twelve ſigns of the zodiac.

The ſtars in the conſtellation Leo in Ptolemy's Catalogue are 27, beſides the informes, which are eight; in Tycho's 30, in the Britannic Catalogue 95. See Constellation.

Leo I., in *Biography*, emperor of the Eaſt, ſucceeded Marcian, in the year 457, through the favour and intereſt of the patrician Aſpar, who, on account of his Arian principles, was excluded from the empire. Leo was a native of Thrace, who had gradually riſen in the Roman armies to the rank of military tribune, and was principal ſteward of Aſpar's houſhold. He received the imperial crown from the hands of the patriarch of Conſtantinople, which is the firſt inſtance of an eccleſiaſtic being employed in that ceremonial. Under Genſeric the Vandals planted themſelves in Africa, and Aſpar favoured their cauſe. Leo became jealous of the influence and power of Aſpar, and in the end cauſed him and his ſon to be put to death without the form of a trial, upon the mere charge of a conſpiracy. The remaining parts of his family and friends attempted to revenge this treachery, and the Goths, attached to them, committed great diſorders in Conſtantinople, which were ſuppreſſed by Zeno. The Arians, having loſt their patron, were treated with great rigour by Leo. From the Goths he was obliged to purchaſe a peace, which he did not long ſurvive. He died in January 474, after a reign of nearly ſeventeen years. His moderation and love of juſtice have been praiſed, and ſeveral of his laws remain in the code of Juſtinian.

Leo III., ſurnamed the *Iſaurian*, from Iſauria, the place of his birth, was born of low and obſcure parents. He entered the army, and became a guard to Juſtinian II. He attained the rank of general under Anaſtaſius II. who took him in 717 as a coadjutor in the empire. The Saracens having ravaged Thrace, laid ſiege to Conſtantinople, which was bravely defended by Leo, who compelled them to retire. His reign was marked with acts of atrocious tyranny; he drove the patriarch Germanus from his place, and gave it to Anaſtaſius. In the fifth year of his reign, he cauſed his ſon Conſtantine, ſurnamed Copronymus, to be ſolemnly crowned. In 726 he made his famous attack on image worſhip, which has rendered his reign memorable in eccleſiaſtical hiſtory. The deſtruction of objects long ſo much venerated, and eſpecially of a ſtatue of Jeſus Chriſt placed over one of the gates of the city, ſtruck the people with ſo much horror, that a ſerious inſurrection was the conſequence. Leo had authority ſufficient to enforce his reform in the eaſtern empire, but in the Weſt it encountered a more formidable oppoſition. Pope Gregory II. declared with great warmth againſt the imperial edict, and the people of Italy openly revolted. Leo ſent a fleet to chaſtiſe the revolters, which was wrecked in the Adriatic, a circumſtance that was interpreted as a divine interpoſition. The emperor, irritated by his want of ſucceſs, inflicted great cruelties on the oppoſite party; the Saracens took advantage of theſe diſſenſions to make incurſions into the bordering provinces. A dreadful earthquake added to the calamities of this reign. Leo died in 741, after a reign of twenty-four years.

Leo IV., the ſon of Conſtantine Copronymus, ſucceeded his father in 775, at the age of 25. The firſt object of his reign was to ſecure the ſucceſſion of his ſon Conſtantine, whom he had by Irene, an Athenian lady of great accompliſhments. He cauſed the youth to be ſolemnly crowned, and declared a partner in the empire. Leo IV. inherited his predeceſſor's enmity to images, and is on that account reckoned, by the Catholics, one of the impious "iconoclaſts." He obtained ſome advantages over the Saracens, and initiated into the Chriſtian religion a king of the Bulgarians, who, in the preceding reign, had inflicted great evils on the empire. He died in 780, and his death was imputed to an eruption on his head, which was ſaid to have been excited by a crown that he wore, and which was ſtudded with jewels, that he had ſacrilegiouſly taken from the great church of Conſtantinople.

Leo V., the Armenian, ſon of a patrician, commanded an army againſt the Saracens in the reign of Michael I. His ſucceſs, contraſted with the diſgrace incurred by the emperor himſelf, cauſed a revolt of the army, and Michael himſelf quitted the throne, to which Leo ſucceeded, without oppoſition, in the year 813. He had been educated in the camp, and was ignorant of laws and letters; his adminiſtration, therefore, partook of ſeverity and military diſcipline. In religion he followed the ſteps of the iconoclaſts, and drew upon himſelf an excommunication from pope Paſchal I. He attempted a reformation in the abuſes of government, by which he made himſelf many enemies. At the head of theſe was Michael, formerly his fellow commander in the army, and a principal inſtrument of his elevation. Though he had been enriched and promoted by Leo, he was diſſatisfied with his reward, and formed a conſpiracy againſt him. This was detected, and Michael was arreſted, and condemned to die on Chriſtmas day, but the holineſs of the ſeaſon cauſed a reſpite of the execution. In the interval, the friends of Michael aſſembled, and mingling with thoſe who came to perform divine ſervice in the imperial chapel, concealed themſelves till the entrance of Leo. A ſignal was given, and an attack was made, by miſtake, on the prieſt who led the devotions; perceiving their error, they inſtantly turned their fury upon the emperor, who had retired to the altar, and diſregarding the croſs which he held, they cruelly aſſaſſinated him. This event took place in 820, after Leo had reigned with reputation ſeven years and a half.

Leo VI., the philoſopher, was the ſon and ſucceſſor of Baſil, the Macedonian, who had cauſed him to be crowned as his partner in the empire in 870. By the treachery of a monk he had nearly loſt his eyes and his inheritance, but his friends zealouſly exerted themſelves to procure his releaſe, and reſtoration to favour. On the death of Baſil in 886, Leo ſucceeded to the imperial throne, having a nominal partner in his brother Alexander, but he himſelf poſſeſſed the ſovereign power. The Bulgarians, in this reign, renewed their uſual hoſtilities againſt the eaſtern empire; and the ill ſucceſs of the generals of the emperor, obliged him to ſubmit to ſuch terms of peace as they were pleaſed to impoſe. With the Saracens likewiſe ſeveral actions were fought by ſea and land with various ſucceſs. But he was chiefly haraſſed by conſpiracies at home, and had more than once nearly loſt his life. By his literary reputation he acquired the title of "philoſopher," but his private conduct diſplayed an indolent and voluptuous character. He had in his theological zeal prohibited third marriages, whereas having himſelf loſt three wives, he entered into the holy ſtate a fourth time, which led to his excommunication. It has been urged, in excuſe of his conduct, that he had no remaining iſſue by the firſt three marriages. He was, during his whole reign, much under the dominion of favourites; he was ſuperſtitious, and made pretenſions to the art of foretelling future events by divination. A defeat of his fleet by the Saracens preceded his death, which happened in 911, after he had been on the throne twenty-five years. He bequeathed the empire to his brother Alexander, as a truſt for his ſon. Leo had been educated under the learned Photius, from whom he derived an attachment to various kinds of erudition. He was ſuppoſed by ſome to have been the author of a collection of ſermons or homilies; of a letter to the caliph Omar on the truth of the Chriſtian religion; of a paſtoral letter to his ſubjects; of a treatiſe on military diſcipline, and a collection of laws begun by his father. For farther particulars relating to the foregoing emperors, ſee Gibbon's Hiſt. and Univer. Hiſt.

Leo I. pope, ſurnamed "The Great," was a native either of Tuſcany or Rome; at the latter place he was educated. Nothing certain is known of him till he was raiſed to the dignity of archdeacon of the Roman church under the pontificate of pope Celeſtine. He occupied the ſame poſt under Sixtus III. and acquired a very high reputation for piety, orthodoxy, eloquence, and prudence, in the management of buſineſs. He was employed to negotiate certain differences which had ariſen in Gaul, between Aetius and Albinus, and ſucceeded in the object of his miſſion. While he was in Gaul, Sixtus III. died in 440, upon which the univerſal voice of the Romans proclaimed Leo his ſucceſſor, and upon his return he was received with the greateſt demonſtrations of joy. He commenced his pontificate with the moſt zealous exertions of a Chriſtian biſhop, and he was particularly anxious for the advancement and grandeur of the papal ſee. In the year 442, he extended the law of celibacy to the archdeacons, who nevertheleſs were not to abandon the wives whom they had married, while in inferior ſtations, but were in future to live with them as ſiſters. In the year 445, he quarrelled with Hilary, biſhop of Arles, for oppoſing the power of the papal ſee, and obtained an edict from the emperor Valentinian, which put an end to the ancient liberties of the Gallican churches, and enforced thoſe appeals to Rome which gradually ſubjected all the weſtern churches to the juriſdiction of the pretended ſucceſſors of St. Peter. About this time many of the Manichæans flying from Africa, after the conqueſt of Carthage by Genſeric, king of the Vandals, had repaired to Rome as a place of ſafety. The zeal of Leo would not ſuffer them long to enjoy tranquillity, but cauſed great numbers of them to be ſeized and impriſoned. Thoſe who abjured their diſtinguiſhing tenets were admitted into communion, but thoſe who ſteadily adhered to their principles were condemned to perpetual baniſhment. The pope found that many of the Manichæans had made their eſcape from Rome; he accordingly ſent a circular letter to all biſhops, exhorting them to be upon their guard againſt the ſaid heretics, and when diſcovered, to proſecute them without mercy. His holineſs was not contented with what he could do by the power with which he himſelf was armed, but he applied to the emperor Valentinian, for a law to exclude ſuch perſons from all civil and military employments, and to declare them incapable of giving or receiving any property by will or teſtament, or of making any contract. Leo was equally violent againſt the Priſcillians, who pretended to high degrees of purity of life and manners, who practiſed great mortifications, and whoſe opinions were a compound of Gnoſticiſm and Unitarianiſm. For propagating them, their leader, Priſcillian, had been put to death, and was accordingly regarded as a ſaint and martyr. Leo now condemned the doctrines and practice of his followers as impious and deteſtable, and declared all thoſe who tolerated heretics, no leſs guilty than thoſe who embraced their opinions. The doctrine of Eutyches, which maintained that there was but one nature in Chriſt, rouſed the zeal of Leo, and after much diſcuſſion, concerning which our limits do not allow us to enlarge, he cauſed the heretic to be condemned, ſent into baniſhment, and deprived of his ſacerdotal dignity; and a decree was paſſed, that "in Chriſt there were two diſtinct natures united in one perſon, and that without any change, mixture, or confuſion." During the pontificate of Leo the fourth general council was held, in which the famous canon was enacted, which rendered the ſee of Conſtantinople equal to the ſee of Rome in all reſpects, except precedency. This canon was evidently intended to check the growing power, and to oppoſe the daily encroachments of the biſhop of Rome. When Leo was made acquainted with the determination of the council, he was filled with the utmoſt rage, and reſolved to oppoſe it with all his might. He ſaw his rival but one ſtep behind him, and was apprehenſive he might ſoon get before him; he was, therefore, determined to diſpute his power in every ſtage. Wiſhing, however, that he might be thought to be acting upon Chriſtian motives, he pretended to be influenced only by a zeal for the decrees of the council of Nice, for the practice of antiquity, and for the rights and privileges of the patriarchal ſees of Alexandria and Antioch. During the year 452, Attila, king of the Hunns, made an irruption into Italy, ſoon became maſter of ſeveral important cities, and then bent his march towards Rome, hoping to enrich himſelf with the ſpoils of the metropolis. At this time the city was not in a condition to bear a ſiege, and the emperor ſent a ſolemn embaſſy to Attila, with ſuch propoſals as might be acceptable to him and his army. Leo himſelf went at the head of the embaſſy, in which he was joined by two men of the firſt rank, and of long experience in negociations. On their arrival with a grand and numerous retinue, at the enemy's camp, in the neighbourhood of Mantua, they were received by the king of the Hunns in a very favourable manner, which the eccleſiaſtical writers aſcribe to the fame of Leo's extraordinary ſanctity. The terms which they propoſed were readily agreed to by Attila, and a treaty of peace was ſoon concluded between him and Valentinian, in conſequence of which he repaſſed the Alps, and retired beyond the Danube. In the year 453, Leo's zeal was directed towards the converſion of the monks of Paleſtine and Egypt, who denounced war againſt all the abettors of the council of Chalcedon, and maſſacred, without mercy, ſuch of the clergy and laity, as had the courage to profeſs a belief in the two natures in Chriſt. In 455, Leo's attention was drawn off from the affairs of the Eaſt, by the calamities produced in Italy, in conſequence of the death of Valentinian. That prince was murdered by Maximus, who not only uſurped his throne, but obliged Eudoxia, the emperor's widow, to marry him. Determined to revenge the death of one whom ſhe had loved with the greateſt tenderneſs, and to deliver herſelf from the tyrant, ſhe applied to Genſeric, king of the Vandals, in Africa, who ſhe well knew would be glad of any favourable opportunity of invading and plundering Italy. To him ſhe diſpatched a confidential meſſenger, conjuring him to come without delay and reſcue her out of the hands of Maximus, aſſuring him that he would meet with no oppoſition, and promiſing to aſſiſt him to the utmoſt of her power. Genſeric gladly ſeized the opportunity, and appeared in a ſhort time with a very powerful army in the neighbourhood of Rome. His appearance ſtruck the Romans with diſmay, and inſtead of preparing for defence, they threw open their gates, and ſurrendered at diſcretion. In this extremity of diſtreſs, Leo went out to meet the enemy, and endeavoured by prayers and tears to mediate for the ſafety of the city. The pope could not prevail, and the army of Genſeric plundered the city, and carried away the inhabitants into captivity. After ſpending fourteen days in ranſacking the houſes, churches, and public buildings, and ſtripping them of all their wealth, and valuable monuments, the Vandals re-embarked, and returned to Africa with an immenſe booty, and as many captives as they could carry on board the fleet. Theſe troubles, and the miſchiefs which they occaſioned, engroſſed much of Leo's care and attention to mitigate them, till, on the death of the emperor Marcian in 457, the Eutychians once more obtained the aſcendency in Egypt. The chief of this revolution was Timothy, ſurnamed Ælurus; who aſſembled his council, conſiſting of a ſmall number of Eutychian biſhops, in which he openly anathematized the council of Chalcedon, pope Leo, and the Catholic biſhops. In virtue of this ſentence, he excommunicated, depoſed, and drove from their ſees, all the biſhops of the patriarchate of Alexandria, who refuſed to abjure the faith of Chalcedon, and in their room took care to place ſuch as had diſtinguiſhed themſelves by their zeal for the Eutychian doctrine. In the year 458, the emperor invited Leo to Conſtantinople, that he might converſe with him, in perſon, on the ſubjects of the decree of Chalcedon, and the intruſion of Ælurus. To this invitation his holineſs replied in two letters; one containing his excuſes for not undertaking ſuch a journey, and the other intended to explain and confirm, with the teſtimony of the fathers, the doctrine of the two natures. The laſt named letter became very famous with the orthodox, and was often quoted by the writers of that and ſucceeding ages. After this Ælurus gave the pope a public challenge to debate the points in diſcuſſion. But Leo refuſed to comply with the propoſal, alleging that it was dangerous and unneceſſary to examine anew, or to queſtion what had already been examined and defined by an œcumenical council. From this time Leo continued his efforts, with unabated zeal, in defence of the Catholic cauſe, and omitted no opportunity of endeavouring to impreſs the emperor's mind with a ſenſe of the heinouſneſs and enormity of Ælurus' crime. In 460, the biſhops of the Eaſt united in the ſame cauſe with ſo much ardour, that an order was obtained from the emperor to expel and baniſh the heretic, which was carried into execution without delay. This event was followed by the election of a Catholic biſhop to the ſee of Alexandria, and the reſtoration of thoſe prelates who had been diſplaced for their adherence to the council of Chalcedon. The news of this important change afforded the higheſt ſatisfaction to Leo, but the pleaſure was of ſhort duration only, as he died in the year 461, having preſided over the Roman church twenty-one years. Leo was a man of great learning, and of eminent abilities; but his ambition was unbounded, and with him every object, every conſideration was made to yield to his predominant paſſion for aggrandizing his ſee, or, in other words, for extending his own power and authority. His works conſiſt of 141 letters, and 96 ſermons. The beſt edition of them was publiſhed at Paris in 1675, in two vols. 4to. which was reprinted in folio at Lyons, in the year 1700. The ſtyle of Leo's writings is energetic and elegant, though ſometimes, in the purſuit of elegance, he renders his diſcourſes too highly poliſhed.

Leo II. pope, a Sicilian by birth, was raiſed to the papal dignity in the year 682. With the decree confirming his election, he received an account of the proceedings of the ſixth general council, held at Conſtantinople, by which pope Honorius I. was anathematized as a monothelite. In reply to this letter, he ſays, that he had received this council as he received the five preceding general councils, and anathematized all whom the council anathematized. He alſo ſent letters to the metropolitans of the different provinces of the Weſt, acquainting them with the proceedings of this council, and requiring them to receive it, as well as to cauſe it to be received by the biſhops in their reſpective juriſdictions. By this conduct he acquired ſo much intereſt at court, that he found the opportunity favourable for extending the power of the papal ſee, and procured an edict, ſubjecting for ever the ſee of Ravenna to that of Rome. He died in 683, after a pontificate of only ten months. Five of his letters may be ſeen in the ſixth vol. of the Collect. Concil.

Leo III., pope, born at Rome, was in due time appointed to the office of preſbyter in the church; and upon the death of Adrian, in 795, he was unanimouſly elected to the papal ſee. Upon his ordination, he wrote to Charlemagne, acquainting him with his promotion, and, at the ſame time, ſending him the keys of the tomb of St. Peter, and the ſtandard of the city of Rome, with other preſents, and requeſting him to ſend ſome fit perſon to receive the oath of allegiance from the Roman people. The anſwer of the king was conceived in equally civil and complimentary terms, and it was accompanied with immenſe treaſures to be employed by Leo in repairing and adorning the churches of Rome, eſpecially that of St. Peter. In the year 796, he reſtored the ſee of Canterbury to that juriſdiction over all the churches of England, which had been taken away by Offa. Towards the beginning of the year 799, Leo aſſembled a council at Rome, in which Felix, biſhop of Urgella, and Eliphand, archbiſhop of Toledo, were condemned. During the ſame year, a conſpiracy was formed againſt Leo, by two nephews of pope Adrian, who had been raiſed by him to high employments in the church, and governed all things at Rome, during his pontificate, with an abſolute ſway. To them, indeed, Leo had been greatly indebted for his election, and they ſuppoſed that gratitude would have led him to ſurrender all power into their hands. Leo, willing to ſhew his own authority, checked them in their deſigns, and in turn they reſolved to put him to death. The attempt was made on the feſtival of St. Mark, when the pope was proceeding from the Lateran palace to join in an annual proceſſion. The deſign did not ſucceed, though he was expoſed to the moſt imminent danger, and was in fact thrown into a dungeon covered with wounds. From his priſon he was reſcued by the duke of Spoleto, who conveyed him ſafely into his own territory. From Spoleto the pope wrote to Charlemagne, to acquaint him with the cruel treatment he had met with, and ſoon after ſet out on a viſit to that prince, to ſolicit protection againſt his enemies. Charlemagne received him with the greateſt marks of reſpect and friendſhip, and after aſſuring him of his protection, ſent him back to Rome, attended with ſeveral biſhops, and a force ſufficient to protect him againſt any farther attempt of his enemies. He entered the city amidſt the loud acclamations of the people, and took poſſeſſion once more of the Lateran palace, where the nobles and biſhops who had accompanied him aſſembled, and to which all were ſummoned who had any cauſe of complaint againſt Leo, theſe being commiſſioned by the king to hear them and do them juſtice, if in any reſpect they had been injured by the pope or his miniſters. Some did appear, and among theſe the nephews of Adrian, who accuſed him of ſeveral crimes; but not being able to ſubſtantiate the charge, they were ſent to priſon, tried, and ſentenced to death for the conſpiracy, in which they had been the principal actors. At the earneſt ſolicitation of Leo their lives were ſpared, and their ſentence exchanged to baniſhment. About this period, the title of emperor of the Romans was revived in the perſon of Charlemagne, who, on the propoſition of the pope, was ſaluted Auguſtus by all claſſes of the Roman people, and on the day of his coronation received their homage, as well as that of Leo. In 803, the pope having expreſſed his wiſh to celebrate the nativity of Chriſt, with the emperor Charlemagne, the latter ſent his ſon as far as St. Maurice, in the Valais, to meet his holineſs, and went himſelf to Rheims, where he received Leo with extraordinary marks of eſteem and friendſhip. From Rheims they proceeded to Quiercy, where they kept their Chriſtmas, and then repaired to Aix-la-Chapelle. Here, after entertaining him for eight days, Charlemagne diſmiſſed the pope with rich preſents, and an eſcort, who were ordered to attend him as far as Ravenna. In 809, the diſpute was revived in France on the queſtion concerning the proceſſion of the Holy Ghoſt: by the firſt council of Conſtantinople, an addition was made to the ſymbol of Nice, declaring that "The Holy Ghoſt proceeded from the Father." In the fifth and ſixth centuries, the churches of Spain added to the ſymbol of Nice and Conſtantinople the word *filioque*, "and from the ſon," and their example was followed by moſt of the Gallican churches. The queſtion now under diſcuſſion was, whether the expreſſion "filioque" ought to be added or omitted. Leo was for the omiſſion, though he adhered to the doctrine attached to it; becauſe he ſaid if it were received by the churches, it would be a fair plea for the addition of many other articles of equal importance. To ſhew more decidedly that he did not approve it, he cauſed two tables of ſilver to be ſet up at the tomb of St. Peter, and the ſymbol to be engraved in Greek on one, and on the other in Latin, without the words "and from the ſon," which, however, were afterwards added to the creed by his ſucceſſors. Leo paſſed the remainder of his pontificate in tranquillity, till the death of Charlemagne, his great friend and protector, in 814: when the relations of pope Adrian and their partiſans formed another conſpiracy againſt him, with the deſign of depoſing and murdering him. The plot he diſcovered in 815, ſome time before it was ripe for execution, and cauſed all who were concerned in it to be apprehended, and put to death without mercy. It has been ſaid that he glutted his revenge by executing ſome of the conſpirators with his own hands. His ſeverity excited the diſpleaſure of the new emperor Lewis, who commanded his nephew Bernard, king of Italy, to proceed immediately to Rome, and to take cognizance of the whole affair on the ſpot. The emperor was ſaid to be perfectly ſatisfied with the pope's juſtification of his conduct, but the people, who felt for themſelves and for their friends, who had been the victims of his cruelty, were not ſo eaſily appeaſed: they deſtroyed every thing belonging to his holineſs that they could get at, and would have excited an inſurrection, had they not been ſuppreſſed and diſperſed by a body of troops under the duke of Spoleto. The pope died in June 816, after he had preſided over the Roman church more than twenty years. He left behind him thirteen letters, which are to be found in the ſeventh vol. of the Collect. Concil. He has been celebrated for having enriched the churches of Rome with the moſt coſtly and valuable ornaments, for which he was chiefly indebted to the liberality of Charlemagne.

Leo IV., pope. was born at Rome, and educated in the monaſtery of St. Martin, ordained ſub-deacon by Gregory IV., and preſbyter of the Roman church by Sergius II. Upon the death of the latter, he was unanimouſly elected to the pontifical throne. The firſt object of his care was to reſtore to their former ſplendour, at an immenſe expence, the churches of St. Peter and St. Paul, which had been deſpoiled of their ornaments by the Saracens, and likewiſe to ſecure them againſt the future attempts of ſuch plunderers. With this view he reſolved to build a new city upon the Vatican, and to encloſe it, as well as the church of St. Peter, by a ſtrong wall. This reſolution met with the approbation of the emperor, who not only contributed himſelf to the work, but engaged contributions from his brothers in ſupport of the ſame cauſe. With this encouragement Leo ſet about the undertaking with the utmoſt diligence and ardour, performing in his own perſon the daily office of overſeer, in all kinds of weather. In 849, he was interrupted in the work by a threatened attack upon the city by the Saracens. The attempt was made, but a ſtorm ariſing, the enemy's fleet was driven on ſhore, and almoſt all the ſhips daſhed in pieces, and thoſe on board periſhed. Of the veſſels that eſcaped the fury of the waves, ſome fell into the hands of the Romans, of which the greater part of the crews were hanged, and left on gibbets to ſtrike terror into the minds of their countrymen, and the reſt were put into irons, and forced to labour in the pope's new works. While the Romans were celebrating the victory obtained over their enemies, Lewis king of Italy arrived to be crowned emperor, in order that he might ſhare the empire with his father. This was in 850, and in 852 Leo ſaw his new city completed, which was called, after the founder, the Leonine city. In the following year Leo aſſembled a council at Rome, for the purpoſe of reſtoring diſcipline, and baniſhing abuſes that had crept into the church; among other things which they did, was the depoſition of Anaſtaſius, cardinal preſbyter of the church, for abſenting himſelf from his ſee five years. In the ſame year, the illuſtrious Alfred was ſent by his father to Rome, to be educated under the care and direction of the pope. The Saracens continued ſtill to infeſt the court, notwithſtanding their late defeat and conſequent diſaſters: he accordingly fortified the cities on the coaſt to guard his people from their depredations, and he built a new city which he called Leopolis. Scarcely had he finiſhed this city, when he was ſurpriſed with the intelligence that the emperor Lewis was arrived in the neighbourhood of Rome, at the head of a large army. Leo was ſoon informed of the deſign of his coming, which was to bring to trial Gratian, commander of the Roman militia, one of the pope's counſellors, who was accuſed of having ſolicited another commander to join him in driving out the French, and calling in the Greeks in their room. On the day of trial, the innocence of Gratian appeared perfectly clear, and the accuſer was delivered up to be diſpoſed of at pleaſure. His life was, however, ſpared at the ſolicitation of the emperor. Leo died in 855, after a pontificate of eight years and upwards. He was, according to Anaſtaſius, poſſeſſed of all the moral and Chriſtian virtues, without the alloy of a ſingle vice. He left behind him two letters, and a diſcourſe, deſigned for the inſtruction of the clergy in the duties of their office, which are to be found in the eighth vol. of the Collect. Concil.

Leo V., pope, a native of Ardea, aſcended the pontifical throne in the year 903, but ſcarcely had he attained to this diſtinguiſhed honour, before he was depoſed by one of his own prieſts, and thrown into priſon, where he ſhortly died of grief.

Leo VI., pope, a Roman, was elected to the papal dignity on the death of pope John X., in the year 928. He held the high office but about ſix months, when he was depoſed and impriſoned.

Leo VII., pope, a Roman, was raiſed to the pontifical throne by the unanimous vote of the clergy and people, on the death of John XI., in the year 936. He is highly commended for his zealous efforts to reſtore eccleſiaſtical diſcipline, to reform the monaſtic orders, and to correct the abuſes which prevailed in the Roman and other churches. He died in 939, after having ſat on the pontifical throne three years and a half. He has left three letters, inſerted in the Collect. Concil.

Leo VIII., pope, though by others ſtyled antipope, was born at Rome, and was chief ſecretary of the Roman church, an office in which he ſucceeded his father. Upon the depoſition of John XII., in 963, Leo, on account of his excellent character, was elected to the pontifical dignity, with the approbation, if not by the influence, of the emperor Otho. He enjoyed his ſituation but a ſhort time; the people, inſtigated by John, drove him from his elevated ſtation, and Benedict was placed there in his ſtead, the partizans of whom bound themſelves by the ſanction of an oath, never to ſubmit to Leo, whom they called the emperor's pope. Leo was, however, in a ſhort time reſtored to his holy office, and died after a pontificate of fifteen months.

Leo IX., pope, was born at Toul, in Lorrain, in the year 1002, and being educated for the church, he was ordained deacon in 1025, and promoted to the biſhopric of his native place in the following year. By his conduct in that ſee he acquired ſo high a reputation for learning, prudence, and piety, that on the death of pope Damaſus II. in 1048, he was choſen as the moſt fit perſon to be his ſucceſſor. He went from Toul in the habit of a pilgrim, and was received by the people at Rome with ſongs of joy and loud acclamations. An aſſembly of the clergy and people was convened, at which he informed them of his having been nominated to the apoſtolic ſee by the emperor, but that he did not conſider his election valid unleſs made by them, and that, therefore, they were at full liberty to chooſe or reject him; and that, if he were not unanimouſly choſen by them, he would return to his biſhopric as willingly as he had unwillingly left it. This addreſs was received with every demonſtration of reſpect and ſatsfaction, and he was proclaimed ſovereign pontiff under the title of Leo IX. In the year 1049 he aſſembled a council at Rome, which was attended by the Italian and Gallican biſhops. By this council all ſimoniacal bargains were prohibited on pain of excommunication, and ſome biſhops convicted of crimes were depoſed from their high rank. When the council was broken up, Leo took a journey into Saxony to viſit the emperor, with whom he celebrated the feſtival of St. Peter and St. Paul at Cologne, and having ſummoned the Gallican biſhops and abbots to meet him at Rheims, he opened a council. At this council, among other excellent decrees, was reſtored to the people the right of chooſing their own paſtors. From Rheims Leo proceeded to Mentz, where he held another council of German prelates, at which the emperor, the chief lords and princes of Germany, aſſiſted. Leo returned to Rome towards the cloſe of the year 1049; and in the following ſpring he viſited ſeveral Italian cities, reſtoring every where the decayed diſcipline of the church. Soon after this he held a council at Rome, which is chiefly memorable for the unjuſt ſentence of condemnation which it paſſed upon the celebrated Berenger, without hearing him in his own defence, or ſo much as ſummoning him to attend. In 1053 he held another council at Rome, in which he condemned the practice of the Greeks, in adminiſtering the euchariſt with leavened bread, which was one of the principal ſubjects of a letter addreſſed by him at this time to Michael Cerularius, patriarch of Conſtantinople. In the mean time Leo had conceived a jealouſy of the Normans, who had made a conqueſt of Apulia, which they divided into twelve counties. He was ſtrongly prejudiced againſt them by the Apulians, who repreſented that their government was cruel and tyrannical, and painted them as barbarians without either laws or religion: he was therefore determined to expel them from Italy, which was one grand object of his laſt journey into Germany, but the emperor was too much engaged in his own affairs to afford any material aſſiſtance in his project. Upon Leo's return he reſolved to undertake the taſk himſelf. Having therefore aſſembled a numerous army, he marched with all poſſible expedition to the borders of Apulia, but before he could gain any deciſive advantages, the Normans had put themſelves into a poſture of defence, and in the end they prepared for offenſive meaſures; and put themſelves under the command of Umfred, count of Apulia, Richard, count of Averſa, and the brave Robert Guiſcard. Theſe experienced warriors fell upon the pope's army with incredible fury, and after a bloody action entirely routed it with immenſe ſlaughter. The pope was now glad to fly, but was obliged in a ſhort time to ſurrender at diſcretion. Leo now anticipated the moſt cruel treatment from thoſe whom he had been accuſtomed to think, and to treat as barbarous enemies. His apprehenſions were ſoon relieved: Umfred accoſted him with all the reſpect due to his character, and conducted him, attended by the chief officers of the army, to his camp. There he entertained him with great magnificence, and ſet him at liberty, providing him with an eſcort. With this behaviour of the Normans, Leo was ſo greatly pleaſed, that he abſolved them from all the cenſures which they had incurred, and even approved of the conqueſts which they had made, and likewiſe encouraged them to add the reduction of Calabria to that of Apulia. The pope now received a letter from the emperor, in which he expreſſed a great deſire to ſee the ancient union reſtored between the ſees of Conſtantinople and Rome, and offered to contribute whatever lay in his power towards ſo good a work. Before any thing could be done to effect this, the pope was ſeized with a ſevere and fatal illneſs, which put an end to his life in the year 1054, at the age of fifty-two, after having governed the Roman church five years and two months. He was zealous in reforming abuſes, and is highly commended for his prudence, his generoſity, and his piety. For his attempts to aggrandize the holy ſee he has been honoured with a place among the ſaints in the Roman calendar. He was the firſt pope who made uſe of the Chriſtian era in the date of his bulls, his predeceſſors having followed that of the Indictions. Nineteen of his letters are preſerved in the ninth vol. of the Collect. Concil. and ſeveral of his homilies or ſermons were publiſhed at Louvain in 1565.

Leo X., pope, born at Florence in December 1475, the ſecond ſon of Lorenzo de Medici the Magnificent, bore the baptiſmal name of Giovanni, or John, was originally deſtined by his father for the church, and received the tonſure at the age of ſeven years. Being then declared capable of receiving eccleſiaſtical preferment, Lorenzo obtained two rich abbacies; and the liſt given of the preferments accumulated upon him at an early age, amounts to the number of twenty-nine, a proof of the great intereſt of his family, and of the ſcandalous corruption of the church. It was the great object of his father's ambition to decorate his houſe with the popedom, and upon the acceſſion of Innocent VIII. to the pontificate, Giovanni, then thirteen years of age only, was nominated to the dignity of cardinal. Lorenzo was not wanting in exertions to make his ſon worthy of his premature advancement, and the diſpoſition of the youth, which was grave and ſolid beyond his years, contributed to the ſucceſs of his inſtructors. When he was nominated to the cardinalate, it was made a condition that he ſhould ſpend three years at the univerſity of Piſa in profeſſional ſtudies, before he was inveſted formally with the purple. In 1492 this ſolemn act took place, and he immediately went to reſide at Rome as one of the ſacred college. His father ſoon after died, and was ſucceeded in his honours in the Florentine republic by his eldeſt ſon Piero. The young cardinal's oppoſition to the election of pope Alexander VI. rendered it expedient for him to withdraw to Florence, from whence, at the invaſion of Italy by Charles VIII. he and the whole family were expelled, and obliged to take refuge in Bologna. About the year 1500 he again fixed his reſidence at Rome, where he reſided during the remainder of Alexander's pontificate, and likewiſe in the early part of that of Julius II. cultivating polite literature, and the pleaſures of elegant ſociety, and indulging his taſte for the fine arts, for muſic, and the chaſe, to which latter amuſement he was much addicted. The depreſſion of his houſe occaſioned frequent embarraſſments in his finances, but his cheerful temper ſupported him under difficulties, and he extricated himſelf without loſs of honour. In 1505 he began to take an active part in public affairs, and was appointed by Julius to the government of Perugia. By his firm adherence to the intereſt of the pope, the cardinal acquired the moſt unlimited confidence of his holineſs, and was entruſted with the ſupreme direction of the papal army in the Holy League againſt the French in 1511, with the title of legate of Bologna. At the bloody battle of Ravenna, in 1512, he was made priſoner, and was conveyed to Milan, where the ſacredneſs of his function cauſed him to be treated with great reſpect. The French in their retreat carried the cardinal with them, but on his arrival at the banks of the Po he effected his eſcape. About this time the family of the Medici was reſtored to its former condition at Florence, and the popular conſtitution of that republic was overthrown. The cardinal contributed to this event, and remained at Florence, till the death of Julius II. called him ſuddenly to Rome. At the ſcrutiny for a new pontiff in 1513, the election was declared to have fallen on the cardinal de Medici, who was then only in the thirty-eighth year of his age. He aſſumed the name of Leo X. and aſcended the throne with greater manifeſtations of good-will, both from Italians and foreigners, than moſt of his predeceſſors had enjoyed. One of his firſt acts was to interpoſe in favour of ſome conſpirators againſt the houſe of Medici, at Florence, and he treated with great kindneſs the family of Sodoreni, which had long been at the head of the oppoſite party in that republic. He exhibited his taſte for literature by the appointment of two of the moſt elegant ſcholars of the age, Bembo and Sadoleti, to the office of papal ſecretaries. With regard to foreign politics, he purſued the ſyſtem of his predeceſſor, in attempting to free Italy from the dominion of foreign powers: and in order to counteract the antipapal council of Piſa, which was aſſembled at Lyons, he renewed the meetings of the council of Lateran, which Julius II. had begun, and he had the good fortune to terminate a diviſion which threatened a ſchiſm in the church. Lewis XII. who had incurred eccleſiaſtical cenſure, made a formal ſubmiſſion, and received abſolution. Having ſecured external tranquillity, Leo did not delay to conſult the intereſts of literature by an ample patronage of learned ſtudies. He reſtored to its former ſplendour the Roman gymnaſium or univerſity, which he effected by new grants of its revenues and privileges, and by filling its profeſſorſhips with eminent men invited from all quarters. The ſtudy of the Greek language was a very particular object of his encouragement. Under the direction of Laſcaris a college of noble Grecian youths was founded at Rome for the purpoſe of editing Greek authors; and a Greek preſs was eſtabliſhed in that city. Public notice was circulated throughout Europe, that all perſons who poſſeſſed MSS. of ancient authors would be liberally rewarded on bringing or ſending them to the pope. Leo founded the firſt profeſſorſhip in Italy of the Syriac and Chaldaic languages: this was in the univerſity of Bologna. With regard to the politics of the times, the pope had two leading objects in view, *viz.* the maintenance of that balance of power which might protect Italy from the over-bearing influence of any foreign potentate; and the aggrandizement of the houſe of Medici. When Francis I. ſucceeded to the throne of France, it was ſoon apparent that there would neceſſarily be a new war in the north of Italy. Leo attempted to remain neuter, which being found to be impracticable, he joined the emperor, the Swiſs, and other ſovereigns againſt the French king and the ſtate of Venice. The rapid ſucceſſes of the French arms ſoon brought him to heſitate, and even to ſtand aloof, and after the Swiſs army had been defeated, the pope thought it expedient to detach his cauſe from that of his allies, and to form an union with the king of France. Theſe two ſovereigns, in the cloſe of the year 1515, had an interview at Bologna, when the famous PRAGMATIC *Sanction* (which ſee), was aboliſhed, and a concordat eſtabliſhed in its ſtead. The death of Leo's brother left his nephew Lorenzo the principal object of that paſſion for aggrandizing his family, which this pontiff felt full as ſtrongly as any one of his predeceſſors. Under the influence of this paſſion, he found a pretext, in 1516, for iſſuing a monitory againſt the duke of Urbino, and upon his non-appearance, Leo iſſued an excommunication againſt him, and ſeized his whole territory, with which, together with the ducal title, he inveſted his nephew. In the ſame year a general pacification took place, though all the efforts of the pope were made to prevent it. In 1517, the expelled duke of Urbino collected an army, and, by rapid movements, completely regained his capital and dominions. Leo, exceſſively chagrined at this event, would gladly have engaged a cruſade of all Chriſtian princes againſt him. By an application, which nothing could juſtify, of the treaſures of the church, he raiſed a conſiderable army, under the command of his nephew, and compelled the duke to reſign his dominion, upon what were called honourable terms. The violation of the ſafe conduct, granted by Lorenzo to the duke's ſecretary, who was ſeized at Rome, and put to torture, in order to oblige him to reveal his maſter's ſecrets, imprints on the memory of Leo X. an indelible ſtain. In the ſame year his life was endangered by a conſpiracy formed againſt him, in which the chief actor was cardinal Petrucci. The plan failed, and the cardinal, being decoyed to Rome, from whence he had eſcaped, was put to death; and his agents, as many as were diſcovered, were executed with horrid tortures. The conduct of Leo on this occaſion was little honourable to his fortitude or clemency, and it was believed that ſeveral perſons ſuffered as guilty who were wholly innocent of the crimes laid to their charge. To ſecure himſelf for the future, the pope, by a great ſtretch of his high authority, created in one day thirty-one new cardinals, many of them his relations and friends, who had not even riſen in the church to the dignity of the epiſcopal office; but many perſons alſo who, from their talents and virtues, were well worthy of his choice. He beſtowed upon them rich benefices and preferments, as well in the remote parts of Chriſtendom, as in Italy, and thus formed a numerous and ſplendid court attached to his perſon, and adding to the pomp and grandeur of the capital. During the pontificate of Leo X. aroſe the daring Luther, whoſe life will be given farther on; nevertheleſs, in this place, we muſt notice certain facts with which Leo and the reformation are cloſely connected. The unbounded profuſion of this pope, in every object of expence attached to a taſte for luxurious magnificence, had rendered it neceſſary to deviſe means for repleniſhing his exhauſted treaſury; and one of thoſe which occurred was the ſale of thoſe indulgences which the church claimed a right of diſpenſing from the ſtore of her ſpiritual wealth. The commiſſaries appointed for this traffic in Germany, exaggerated the efficacy of their wares in ſuch very extravagant terms, as gave great offence to the pious and thoughtful. Luther, a public preacher at Wittemberg, warmly proteſted againſt this abuſe in his diſcourſes, and in a letter addreſſed to the elector of Mentz. He likewiſe publiſhed a ſet of propoſitions, in which he called in queſtion the authority of the pope to remit ſins, and made ſome very warm ſtrictures on this method of raiſing money. His remonſtrances produced conſiderable effect, and ſeveral of his cloth undertook to refute him. Leo probably regarded theological quarrels with contempt, and from his pontifical throne looked down upon the efforts of a German doctor with ſcorn: even when his interference was deemed neceſſary, he was inclined to lenient meaſures. At length, at the expreſs deſire of the emperor Maximilian, he ſummoned Luther to appear before the court of Rome. Permiſſion was, however, granted for the cardinal of Gæta to hear his defence at Augſburg. Nothing ſatisfactory was determined, and the pope, in 1518, publiſhed a bull, aſſerting his authority to grant indulgences, which would avail both the living, and the dead in purgatory. Upon this, the Reformer appealed to a general council, and thus open war was declared, in which the abettors of Luther appeared with a ſtrength little calculated upon by the court of Rome. The ſentiments of the Chriſtian world were not at all favourable to that court. "The ſcandal," ſays the biographer, "incurred by the infamy of Alexander VI., and the violence of Julius II., was not much alleviated in the reign of a pontiff who was characterized by an inordinate love of pomp and pleaſure, and whoſe claſſical taſte even cauſed him to be regarded by many as more of a heathen than a Chriſtian."

The warlike diſpoſition of Selim, the reigning Turkiſh emperor, excited great alarms in Europe, and gave occaſion to Leo to attempt a revival of the ancient cruſades, by means of an alliance between all Chriſtian princes; he probably hoped, by this ſhow of zeal for the Chriſtian cauſe, that he ſhould recover ſome of his loſt credit as head of the church. He had, likewiſe, another object in view, *viz.* that of recruiting his finances, by the contributions which his emiſſaries levied upon the devotees in different countries. By the death of Maximilian in 1519, a competition for the imperial crown between Charles V. and Francis I. took place. Leo was decidedly againſt the claims of both the rival candidates, and attempted to raiſe a competitor in one of the German princes, but he was unable to reſiſt the fortune of Charles. At this period he incurred a very ſevere domeſtic misfortune in the death of his nephew Lorenzo, who left an infant daughter, afterwards the celebrated Catherine de Medicis, the queen and regent of France. The death of Lorenzo led to the immediate annexation of the duchy of Urbino, with its dependencies, to the Roman ſee, and to the appointment of Giulio, Leo's couſin, to the ſupreme direction of the ſtate of Florence. (See CLEMENT VII.) The rapid progreſs of the Reformation forcibly recalled the attention of the papal court, and Leo, anxious for an amicable negotiation, employed a Saxon nobleman to treat in perſon with Luther, but the matter was, at this period, carried too far to admit of reconciliation. Luther appealed to the ſcriptures for his authority; and the pope inſiſted upon unqualified ſubmiſſion to the decrees of the Catholic church. The Reformer was perſuaded to addreſs a letter to his holineſs; but, inſtead of expreſſions of humiliation, it contained much bitter invective againſt the court of Rome. It was, therefore, determined to condemn him and his doctrines; and a bull to that purpoſe was iſſued, June 15th, 1520, which occaſioned a total ſeparation between the papal ſee and the reformers. The writings of Luther were publicly burnt, an inſult which he boldly retaliated by an equally ſolemn and public conflagration of the papal decrees and conſtitutions, and the bull itſelf. Leo was not ſatisfied with his own exertions, but was deſirous of gaining on his ſide the Imperial court. Before, however, the emperor would condemn, he determined to hear, in perſon, what Luther had to ſay in his own juſtification, and a mandate was iſſued for his appearance at Worms. (See LUTHER.) We may obſerve here, that Leo conferred on Henry VIII. of England the title of "Defender of the Faith," for his appearance on the ſide of the church as a controverſial writer. The tranquil ſtate of Italy, at this period, allowed the pope to indulge his taſte for magnificence in ſhows and ſpectacles, and in the employment of thoſe great artiſts who have reflected ſo much luſtre on his pontificate. His private hours were chiefly devoted to indolence, or to amuſements, frequently of a kind little ſuited to the dignity of his high ſtation. He was not, however, ſo much abſorbed in them as to neglect the aggrandizement of his family and ſee. Several cities and diſtricts in the vicinity of the papal territories, and to which the church had claims, had been ſeized by powerful citizens, or military adventurers; ſome of theſe the pope ſummoned to his court to anſwer for their conduct ; and in default of an exculpation of their crimes, he cauſed them to be put to death. His holineſs next laid a plan to get into his poſſeſſion the city and territory of Ferrara. He had ſet his heart upon this object, and being unable to attain it by open means, he had recourſe to treachery, and it has been aſſerted that his plan included the aſſaſſination of the duke. The commander of a body of German troops was bribed to deliver up one of the gates to the papal forces, which were to be in readineſs ; but he took the pope's money, and apprized the duke of the plot, which was thus happily defeated Another project, which entered deeply into the views of the pope, was the expulſion of the French from Italy. In 1521, he formed a treaty with the emperor for the re-eſtabliſhment of the family of Sforza, in the duchy of Milan. He engaged a large body of Swiſs in his ſervice, who, under the pretence of different meaſures, made much progreſs againſt the French, and drove their troops before them ; but in the midſt of theſe ſucceſſes, and while public rejoicings were making in Rome on account of them, the pope was ſeized with an illneſs, which at firſt was conſidered as a ſlight cold only, but which put an end to his life in a few days. This event happened on the 1ſt of Dec. 1521, when Leo was in the 46th year of his age, and the ninth of his pontificate. The people at large expreſſed much concern at his death, but the honours rendered to his memory were not ſuch as might have been expected. An exhauſted treaſury was the pretext for an economical funeral, and amidſt all the eminent ſcholars of his court, an illiterate chamberlain was appointed to pronounce his funeral oration. Leo was himſelf but moderately furniſhed with ſolid erudition : he afforded liberal encouragement to uſeful and reputable ſtudies, but he alſo laviſhed his patronage upon productions and perſons of an oppoſite character. The merit of a ſovereign in promoting thoſe ornamental arts by which alone he can diſplay a magnificence ſuperior to that of a private citizen, can rank no higher than an exertion of good taſte ; and this quality may be undoubtedly conceded to Leo. He was, however, rather the unfortunate inheritor, than the creator of great talents. Michael Angelo and Raphael had both riſen to fame under his predeceſſor, Julius II., who had planned and made a commencement of the ſtupendous edifice of St. Peter's : the Vatican palace had likewiſe received ſome of its nobleſt ornaments in his and the former pontificates. But the reader who wiſhes to obtain an accurate view of the ſtate of literature and the arts in Italy prior to, and during the reign of Leo, will have recourſe to Mr. Roſcoe's "Life and Pontificate of Leo X.," from which the foregoing facts are principally drawn. The character of this pontiff has been finely celebrated by Pope in the following lines :

> But ſee ! each muſe, in Leo's golden days,
> Starts from her trance ; and trims her wither'd bays ;
> Rome's ancient Genius, o'er its ruins ſpread,
> Shakes off the duſt, and rears his rev'rend head.
> Then ſculpture and her ſiſter arts revive :
> Stones leap to form, and rocks begin to live ;
> With ſweeter notes each riſing temple rung,
> A Raphael painted, and a Vida ſung.

Leo XI., pope, the ſon of Octavian de Medici, couſin of Coſmo, duke of Tuſcany, was born in the year 1535. He was made archdeacon of Florence, and filled the poſt of ambaſſador from Francis, the great duke, at the court of Rome. He was created cardinal by Gregory XIII., and by Clement VIII. he was ſent legate to Henry IV. of France, and he was ſucceſsfully employed in adjuſting the terms of peace between Philip II., king of Spain, and the French monarch, and for his good offices he received from the latter a noble preſent. On the death of pope Clement VIII., in the year 1605, he was elected pope by the unanimous ſuffrages of the conclave when he took the name of Leo XI. The Romans and Florentines were highly delighted with his elevation on account of his diſtinguiſhed talents and virtues, and becauſe they knew that to his zeal for the intereſts of the church, he united a liberal ſpirit, a love of learning and learned men, and, as it were, an hereditary taſte for the polite arts. On the day of the proceſſion, when the pope commences his office with great pomp and form, the ſeveral orders of the city endeavoured to ſurpaſs each other in their demonſtrations of joy on the occaſion. Their ſatisfaction, however, was of very ſhort continuance, and was ſpeedily changed into grief and mourning, on account of his death, which happened on the 25th day after his election, in the 70th year of his age. Bower's Lives of the Popes. Bayle. Moreri. Lardner.

Leo Allatius. See **Allatius.**

Leo, the *Grammarian*, of whoſe perſonal hiſtory nothing is come down to us, was author of a continuation of the Chronicle of Theophanes, in the Greek language, compriſing the lives of the ſeven emperors of the Eaſt, from the year 813 to 1013. It is annexed to Combefis's edition of the chronicle, printed at Paris in 1655. Moreri.

Leo, John, named *Africanus*, a traveller and geographer, was a native of Granada of Mooriſh extraction. When that city was taken by Ferdinand and Iſabella, in 1492, he retired into Africa, and on that account obtained his ſurname. He ſtudied the Arabic at Fez, was employed by the king as ambaſſador, and took ſeveral journeys into Europe, Leſſer Aſia, and Africa, of which he wrote a narrative in the Arabic language. He once fell into the hands of ſome pirates, and was ſold as a ſlave to a maſter, who preſented him to Leo X. The pontiff highly eſteemed him on account of his learning and knowledge, and having perſuaded him to renounce Mahometaniſm, gave him his own names of John and Leo at the time of his baptiſm. He now applied himſelf to the attainment of the Italian language, and tranſlated into it his deſcription of Africa. This work is reckoned one of the moſt curious of the early voyages and travels. The author deſcribes what he had himſelf ſeen, chiefly on the northern and weſtern coaſts of that peninſula, and it ſupplies deficiencies from the relation of others ; but as a geographical work it has various imperfections and defects. It has been tranſlated into Latin and French. Leo probably died ſoon after he had rendered his work into the Italian language in 1526. He was author likewiſe of a treatiſe "De vitis Philoſophorum ;" printed at Zurich in 1664. Moreri.

Leo of Orvieto, born in the territory of Orvieto, in Tuſcany, became a monk of the Dominican or Franciſcan order, who flouriſhed towards the commencement of the fourteenth century. He was author of two "Chronicles," one of the popes, down to the year 1314 ; and the other of the emperors, terminating at the year 1308. They were brought into notice by John Lamy, who publiſhed them in his "Deliciæ Eruditorum, ſeu Veterum Anecdoton Opuſculorum Collectanea," printed at Florence. Both the chronicles were publiſhed in 1737, in two volumes 8vo., with notes and illuſtrations. The ſecond volume contains a ſketch of the hiſtory of France, written by John de l'Iſle, ſuppoſed to have been a monk of the abbey of St. Dennis, in the 15th century, entitled "de Geſtis et Faetis memorabilibus Francorum." Moreri.

Leo de Modena, a learned rabbi, whoſe Jewiſh name was R. Jehudah Arie, was born at Modena, and flouriſhed in the ſeventeenth century. He was for a conſiderable time chief of the ſynagogue, and eſteemed a good poet both in Hebrew and Italian. He was author of a valuable work on the ceremonies and cuſtoms of the Jews, which is held in eſtimation by the learned of all nations. It is entitled "Iſtoria de Riti Hebraïci, vita et Oſſervanze de gli Hebreï di queſti Tempi;" the beſt edition of this work was printed at Venice in 1638. It was tranſlated into the French language in 1674, by Richard Simon, with ſupplements relating to the ſects of the Karaites and Samaritans. Leo meant to have given an Italian tranſlation of the Old Teſtament, but he was prohibited from purſuing it by the Inquiſition. He compiled a Hebrew and Italian dictionary, entitled "The Mouth of the Lion." This work was publiſhed at Venice in 1612, and was afterwards reprinted in an enlarged form at Padua, in 1640. Leo died at Venice in 1654, in about the eightieth year of his age.

Leo de St. John, a French monk, born at Rennes in the year 1600. Before he entered into the religious profeſſion, his name was John Macè. He was nominated to all the honourable and confidential poſts of his order, and acquired the eſteem of popes Leo XI., and Alexander VIII. and of ſeveral cardinals. He was an eloquent preacher, and had the honour of performing the duties of his office before Lewis XIII. and Lewis XIV. He was the friend of cardinal Richelieu, by whom he was patronized. He died in 1671, leaving behind him numerous works, the principal of which is entitled "Studium Sapientiæ Univerſalis," in three volumes folio. His "Hiſtory of the Carmelites;" "Lives of different Romiſh Saints;" and "Journal of what took place during the laſt Sickneſs, and at the Death of Cardinal Richelieu," are well known and frequently referred to.

Leo, in *Botany*, a name uſed by ſome authors for the columbine, or *aquilegia*. Columella, beſides others, calls it by this name. See Aquilegia.

Leo, the *Lion*, in *Zoology*. See Felis *Leo*.

Leo, *Formica*. See Formica *Leo*.

Leo *Pulex*, a name given by M. Reaumur to a ſpecies of inſects which feeds on the *pulex arboreus*, or common tree-puceron, in the ſame manner that the creature called the *formica leo* does on the ants: this being alſo, like that, an animal, yet in an imperfect ſtate, and finally to be changed into a different creature. This author has kept up the remembrance of this analogy between them, by giving this a ſimilar name.

The leo pulex is uſually bred among the herds of the pulices, which he devours moſt unmercifully. He is a worm of the hexapode, or ſix-legged kind, and very ſoon arrives at the time of his change; after which he becomes a green fly with four wings. Another animal of this kind, and not leſs deſtructive of this ſmall race of animals, is a ſix-legged worm of a whitiſh colour, and ſmaller than the former, which finally becomes a round-bodied beetle. Another ſpecies of theſe devourers this author calls *vermis hyſtrix*, the porcupine-worm, from the vaſt number of ſpiculæ, or tender prickles, with which he is armed. This alſo finally becomes a round and ſmall beetle. Reaumur, Hiſt. Inſect. tom. i. See Lion *puceron*.

LEOBEN, or Leuben, in *Geography*, a town of the duchy of Stiria, on the Muehr; 68 miles S.W. of Vienna. At this town the preliminaries of peace between the emperor and the French republic, were ſettled on the 20th of April 1797. N. lat. 47° 22′. E. long. 14° 55′.

LEOBSCHUTZ, or Lubschutz, a town of Sileſia, and capital of a circle, in the principality of Ingerndorf; 16 miles N. of Ratibor. N. lat. 50° 5′. E. long. 17° 44′.

LEOCROCOTTA, in *Natural Hiſtory*, a name given by the ancients to an animal ſaid to be the ſwifteſt of all creatures in the world. It is deſcribed as a mongrel or baſtard animal, unable to propagate its own ſpecies, being begotten upon the lioneſs by the male hyæna of ſome of the larger kinds: but is one of thoſe animals, the exiſtence of which is much to be doubted. The Latin authors have made ſome confuſion between this creature and the manticora, attributing the things that have been ſaid of one to the other.

LEOGANE, in *Geography*, a ſea-port town of the iſland of Hiſpaniola, or St. Domingo, on the N. coaſt. It was once the ſeat of the French government. Although its ſituation is not good, the air is ſalubrious, and the ſoil of the adjacent territory is fertile. In 1796, it was taken by the Britiſh. It is a place of conſiderable trade, N. lat. 18° 30′. W. long. 73° 25′. See St. Domingo.

Leogane, *Bay* or *Bight of*, called alſo *Cul de Sàc* of Leogane, lies at the W. end of the iſland of St. Domingo, and is formed by two peninſulas. It opens between Cape St. Nicolas at the W. end of the N. peninſula, and Cape Dame Marie, the N.W. point of the S. peninſula, 45 leagues apart. At the bottom of the bay, which emboſoms a vaſt number of other fine bays, are the iſlands Gonave, and on the N. ſide of the S. peninſula the iſles Reſſif and Caymite. The town of Leogane is ſituated on the N. ſide of the neck of the S. peninſula, in the bay of Leogane, at the head of a ſmall bay which ſets up E. from the bay of Grand Goave, four leagues N.E. of the town of that name. See St. Domingo.

LEOMINSTER, or Lemster, a borough and market-town in the hundred of Wolphy, and county of Hereford, England, is ſituated in a very rich and fertile vale abounding with orchards, hop-yards, fine meadows, and arable lands. Its immediate ſcite is, as Leland deſcribes, "ſumwhat lowe, and all the ground very neere about it is farre lower." The river Lugg flows on its north and eaſt ſides; two ſmaller ſtreams run through the town, and three other conſiderable rivulets paſs it within half a mile. Its extent from north to ſouth is nearly a mile; and from eaſt to weſt about half a mile. "The towne of Leonminſter," Leland ſays, "is metely large, and hath good buildinges of tymbre. The towne, by reaſon of their principall wool, uſe great drapinge of clothe, and thereby it flouriſhed. Syns of latter days it chanced that the cittyes of Hereford and Worceſter complained of the frequency of people that came to Lemſter, in prejudice of bothe their marketts; whereupon the Saturday markett was removed from Lemſter, and a markett on Friday newly aſſigned to it; ſyns that time the towne of Lemſter hath decayed. The antiquity of the towne is moſt famous by a monaſtery of nunnes, that Merwaldus, kinge of the Marches, built and endowed."—"There is but one paroche church in Leonminſter; but it is large, ſomewhat dark, and of ancient building, inſomuch that yt is a greate likelihood that yt is the church that was afore the conqueſt. The common fame of the people about Lemſter is, that king Merewald, and ſome of his ſucceſſors, had a caſtle, or palace, on an hill ſide by the towne of Leonminſter, half a mile off by eaſt." In the year 1055, Leominſter was ſeized upon by the Welſh chieftains, who ſtrengthened it by fortifications, the remains of which may be traced even at the preſent period. The town appears to have been a place of ſome conſequence at the time of the Domeſday ſurvey: as that regiſter records that the manor, with its appurtenances, conſiſting of ſixteen dependent eſtates, had been aſſigned by Edward the Confeſſor to his queen Editha; and that it was governed by eight bailiffs, eight beadles, and eight free tenants. When the ſurvey was made, the manor belonged to the king; great part of the cuſtomary rent was paid as compoſition for ſalt, fiſh, and eels. Here was alſo a wood ſix miles in length, and three broad; but part of it was even then begun to be "aſſarted," and cleared for tillage; "an aerie of hawks" is alſo mentioned in the ſame record. About the time of William Rufus, the fortifications of Leominſter were ſtrengthened and enlarged, the better to ſecure it againſt the incurſions of the Welſh. In the reign of king John, William de Braoſe, lord of Brecknock, a turbulent and high-ſpirited baron, plundered this town, and burned great part of it, together with the priory and church. In Henry IV.'s reign, Leominſter was for ſome time in the poſſeſſion of Owen Glendour, after he had defeated the earl of March. In the next century, the inhabitants of this town took a deciſive part towards the eſtabliſhment of queen Mary on the throne; for which ſervice ſhe granted them the firſt regular charter of incorporation, with many valuable privileges. An annual fair had been granted in 1170, by Henry II.; two additional fairs, each of ſix days continuance, were granted by Edward I.

The church of Leominſter, having been partly deſtroyed by fire March 18, 1700, was re-edified at the expence of nearly 17,000*l.*; the whole of that part uſed for divine ſervice being entirely new. The church in its preſent ſtate is irregular, both in its form and architecture. The moſt ancient parts are the eaſt wall, the north ſide, the tower which ſtands at the north-weſt angle, the weſt end, and the wall and windows of the ſouth ſide. In the interior the chief part is modern, excepting what is called the back aiſle, which, as well as the lower part of the tower, is principally of Saxon workmanſhip. The exterior of the eaſt end has three large buttreſſes, a high pointed window with interſecting mullions, and two ſmaller windows. On the north ſide is a very ſtrong ſemi-circular arched door-way, with a ſmaller one within it. The upper part of the tower is in the pointed ſtyle and embattled; the lower part is Saxon; it diſplays a ſingularly rich entrance door-way on the weſt, having a receſſed arch, with three pillars on each ſide, the capitals of which are ornamented with ſculptures of foliage, a couchant man, a tyger, ſnakes entwined round branches, and birds. The mouldings ſupported by theſe pillars are ſlightly pointed, but are embelliſhed with lozenges and zig-zag work. On the north ſide of the church is the nave and north ſide of the ancient ſtructure, which are ſeparated from each other by a range of maſſive circular columns, with round arches, over which are Saxon arcades; the arch of the tower which opens into this part is pointed, and reaches nearly to the roof. Beſides the church, there are four places of religious worſhip in the town, for the reſpective denominations of Baptiſts, Preſbyterians, Moravians, and Quakers. During the time of rebuilding the church, divine ſervice was performed in a contiguous building, anciently called the Chapelle in the Forbury, erected by Peckham, archbiſhop of Canterbury, about the end of the thirteenth century. It was afterwards appropriated to the purpoſe of tuition, and thence called the ſchool-houſe; but has lately been converted into a regular theatre; it is a plain building, with pointed windows. The priory was ſituated to the north-eaſt of the church, on the little river Pinſley; ſome of the buildings are yet ſtanding, among which is the priory-houſe, which has undergone various alterations ſince the diſſolution. The town-hall, or butter-cloſe, as it is commonly termed, is a ſingular building, conſtructed of timber and plaſter about the year 1633. The architect was the celebrated John Abel, who built the Shire-hall at Hereford, in the year 1645. This fabric ſtands on twelve oak pillars, ſuſtained on ſtone pedeſtals; the brackets and ſpandrils above the arches, and the upper parts of the building, diſplay much carving. A new gaol was erected in the year 1750; and a market-houſe in 1803. Several improvements have been recently made in the town; the trade is flouriſhing, and many of the ſhops are reſpectable. The clothing and hat trade provide employment for a great number of the inhabitants. The wool grown in the vicinity is proverbially excellent; the cyder alſo, and the hops, are held in high eſtimation.

The corporation conſiſts of a bailiff, chief ſteward, recorder, twenty-four capital burgeſſes, a chamberlain, and two ſerjeants at mace. Two repreſentatives in parliament are choſen by the corporation and inhabitants paying ſcot and lot; the number of voters being about 500; the earlieſt return was in the twenty-third of Edward I.

Leominſter is 137 miles diſtant from London; the population, as returned under the act of 1800, amounted to 3019; the number of houſes to 736. The ſcite of the caſtle or palace mentioned by Leland as belonging to Merwald, is ſuppoſed to be the mount to the eaſtward which overlooks the Hay lane.

Berrington, about four miles to the north-eaſt, was the ſeat of the late Right Hon. Thomas Harley. About a mile to the ſouth-eaſt from the town is Eaton, formerly the ſeat of the Hackluyts, a family of great antiquity and reſpectability. On the Brierley hills, about two miles ſouth-weſtward from Leominſter, is Ivinton camp, a ſtrong fortification divided into two parts by an entrenchment more modern than the outer works. This is ſuppoſed, with great probability, to be the camp occupied by Owen Glendour. Price's Hiſtory of Leominſter, 8vo. Beauties of England and Wales, vol. vi.

Leominster, a poſt-town of America, in Worceſter county and ſtate of Maſſachuſetts; 46 miles W. of Boſton. It has a printing office and ſeveral neat buildings. This townſhip was taken from Lancaſter, incorporated in 1740, and contains 1486 inhabitants. On the ſtreams that paſs through this town are ſeveral mills of different kinds. About 200,000 bricks are annually made here. The manufacture of combs is alſo carried on in great perfection and with conſiderable profit.

LEON, in *Ancient Geography*, a promontory of Greece, in the iſle of Eubœa.—Alſo, a promontory of the iſle of Crete.—Alſo, a river of Phœnicia. Ptolemy.

Leon, in *Geography*, a province of Spain, called a kingdom, ſituated towards the N.W., and incloſed between Eſtramadura, Old Caſtile, Galicia, and Portugal. Its form is a kind of irregular long rectangular figure. Its mean length from N. to S. is eſtimated at about 52 leagues, and its mean breadth from E. to W. about 30 leagues. This is the country which was formerly inhabited by the Vettones, mentioned by Strabo. It is bounded on the E. by Old Caſtile; on the S.E and S. by Eſtramadura; on the W. by the provinces of Beira, Tra-los-Montes in Portugal, and Galicia; and on the N. by the Aſturias. Its capital has given name to the country, which was for a long time a ſeparate monarchy; but its crown was united with that of Caſtile in 1069; but without loſing the title of kingdom. Its territory is mountainous; nevertheleſs it contains many beautiful fields, good paſtures, and large fertile vallies, which produce a great quantity of grain, as wheat, barley, &c. wine, and excellent flax, both in ſmall quantities, vegetables, and good fruits. Its mountains are covered with different kinds of trees, and they afford iron and copper mines, mineral waters, &c. The mules bred in this country are of a ſuperior kind, and it furniſhes a good number of ſheep. The river Duero almoſt biſects the country. The kingdom of Leon contains ſix biſhoprics, *viz.* thoſe of Leon, Salamanca, Palencia, Zamora, Aſtorga, and Ciudad Rodrigo; ſix cathedral chapters, nine collegiate chapters, 2460 pariſhes, as well rectories as vicarages; 196 convents, 23 hoſpitals, five aſylums, two military governments, four intendencies of provinces, a celebrated univerſity, four ſuperior colleges, 25 colleges of all claſſes, ſix cities, 539 towns or boroughs, 2005 villages or ſettlements, of which 76, formerly inhabited, are now deſerted. Its mountains that are particularly diſtinguiſhed are thoſe that form part of the Sierras of Pico and Occa, formerly mount Idubeda; the former extends from the E. of the ſouthern point of the kingdom of Leon to the W. of the ſouthern point of Old Caſtile: the latter comes from the N. by E. point of Old Caſtile, and extends a little way into the kingdom of Leon, at the S. point of the E. Amongſt its rivers, which are numerous, we may reckon the Sil, the Buroia, the Sabor, the Baeza, the Arago, the Xero, the Piſuerga, the Alagon, the Agueda, the Cea, the Exla, the Tuerta, the Obrega, and the Berneſga, almoſt all of which riſe in Leon or near its confines; the Duero, the Carrion, the Ereſma, Rio de Salamanca or Torme, &c. The principal towns of Leon are, on the N. of the Duero, Leon, Aſtorga, Zamora, Toro, Palencia, Medina-del-Rio-Seco, Tor-de-Sillas, Villa Pando, Duenas, Marſilla, Villa Franca, and Benevente; and on the S. of the Duero, Salamanca, Ciudad Rodrigo, Alva-da-Tormes, Pena-Arande, Pena-de-Frania, Carpio, Medina-del-Campo, and Ledeſma near Los Banos.

When the Gothic king Roderic was defeated by the Moors in the battle of Xeres de la Frontera, the fugitives diſperſed to Galicia, Aſturias, Lower Biſcay, and the country at the foot of the Pyrenees; but their courage revived and they rallied their forces under prince Pelagius, who, in 717, obtained a ſignal victory over the Moors, and took poſſeſſion of Oviedo, of which he was acknowledged king. Having regulated this little ſtate, and gained new ſubjects, he again attacked the Moors, and retook from them the town of Leon, and ſome others. Thus was laid the foundation of this new kingdom, although Pelagius and his ſucceſſors only took the title of kings of Oviedo or the Aſturias, till Ordagno II. who in 915 aſſumed the title of king of Leon. The kingdom of Leon paſſed, in the year 1030, to Ferdinand, ſurnamed the Great, then king of Caſtile, by his wife. In the kingdom of Leon there are 5598 ſecular prieſts, 2064 monks, 1570 nuns, 196 convents, 2460 pariſh churches, 2695 villages, 31,540 nobles, 25,218 ſervants, and near 600,000 other inhabitants of all profeſſions; which gives a total of about 665,000 perſons. The agriculture of this country might be much improved, if the inhabitants availed themſelves of the water which their rivers ſupply in the irrigation of the land. They are alſo negligent in the culture of fruit trees, and though they have fine rich paſtures, their flocks are removed from one part of the country to another. The commerce of this province conſiſts chiefly of importation, and it ſcarcely furniſhes any thing to the neighbouring provinces. It ſends to Galicia part of the ſerges and baize manufactured at Rio Seco; but this is very trifling compared with the goods which it is obliged to import. It traffics in ſome wines, ſome of which, of an excellent kind, are found in the country towards the S.E. Palencia had formerly conſiderable manufactories for cloth. At Zamora there is ſtill a manufactory for hats; and they make ſome houſhold cloths in the country. The Engliſh, by way of Portugal, carry away the madder of the environs of Ciudad Rodrigo, and of Medina-del-Campo. In the province of Leon there are four ſprings of cold mineral waters. *viz.* at Amuſco, about 3½ leagues from Palencia, at Buron, at Bavila-Fuente, four leagues E. of Salamanca, and Aſtudillo, nine leagues from Palencia. There are alſo four thermal ſprings, *viz.* near Almeyda, at Ledeſma, at Bonar or Bonab, ſix leagues from Leon, and at Barnos, near the frontiers of Eſtramadura and Caſtile. The inhabitants of this province are very grave, and addicted to taciturnity; thoſe who retain remains of the national manners of Spain, and who live in the mountains in the Mauregatos, near Aſtorga, wear pyramidal hats, a kind of ruff round the neck, a jacket or ſhirt, and cloſe coat, wide breeches and ſpatterdaſhes. The women of Mauregatos wear large ear-rings, a kind of white turban, flat and widened like a hat, and their hair parted on the forehead. They have a chemiſe cloſed over the cheſt, and a brown corſet buttoned, with large ſleeves opening behind. Their petticoats and veils are alſo brown. Over all they wear immenſe coral necklaces, deſcending from the neck to the knee; twiſting them ſeveral times round the neck, paſſing them over the ſhoulders, where a row is faſtened that forms a kind of bandage over the boſom; another row is ſuſpended lower than this; and alſo a third and even a fourth row at ſome diſtance from each other. The laſt falls over the knee, with a large croſs on the right ſide. Theſe necklaces or chaplets are ornamented with many ſilver medals, ſhaped with the figures of ſaints. Theſe ornaments are chiefly worn on feſtivals. On the days of religious ſolemnities, particularly the Aſſumption, the fronts of the churches are illuminated, bonfires are made before them, muſicians attend, and the people dance all night; the women play the caſtanets, and are accompanied by an inſtrument called "Pandero," which is a kind of tambour de baſque. De Laborde's View of Spain, vol. ii.

Leon, *Legno*, the capital of the above province, or kingdom, is a very ancient town, founded before the reign of Galba; it was called by the Romans "Legio Septima Germanica," from the legion that bore that name being ſtationed there. This city is ſituated between the two ſources of the Exla, which are called the rivers of Torio and Bernesja. This is one of the moſt famous and moſt ancient epiſcopal ſees in Spain, and poſſeſſed, in the time of the Gothic kings, the privilege of appealing immediately to Rome. The biſhop is ſuffragan to the archbiſhop of Compoſtella, without being in any reſpect dependent on its juriſdiction; this biſhopric poſſeſſes a revenue of 22,000 ducats. Its dioceſe contains 823 villages, 883 pariſhes, 26 convents of monks, 11 of nuns, collegiates, and hoſpitals. When the kings reſided here, till the 13th century, its population was conſiderable; but it is now much reduced. According to the ſtatement of 1788, there were within the juriſdiction of the intendant of Leon 250,134 inhabitants. A great part of its walls conſiſts of green marble. It contains 13 pariſh churches, one collegiate church, four convents of monks, five of nuns, and a number of hoſpitals and hermitages. Here are the royal houſes of San-Iſidoro and San-Marios of the order of St. James; and a chapter of noble canoneſſes, not cloiſtered, but who take the vows. This town was the firſt of any importance which the Chriſtians retook from the Moors. Pelagius made himſelf maſter of it in 722, fortified it, and built a good caſtle, to defend the approaches to it.

It had the honour of being the capital of the firſt Catholic kingdom of Spain, and of being, for three centuries after the invaſion of the Arabs, the reſidence of the kings. The palace which the duke of Alphonſo built here at the end of the 12th century is ſtill to be ſeen. Among its moſt ſplendid edifices we may reckon the cathedral church, which in beauty ſurpaſſes the moſt admired in Spain, and is one of the moſt attractive monuments of Gothic architecture. The hotel of the counts of Luna is alſo large and handſome. The town-houſe has a good appearance, with a tolerably regular front. The palace of the Guzmam is magnificent, ornamented with a ſuperb portal, and ſecured by very ſtrong walls. Among the gates of the town one was formerly a famous priſon ; and at the bottom is the ſtatue of king Don Pelagius, with an inſcription. The Place Mayor has a beautiful appearance. There is a number of other ſquares and handſome fountains. Notwithſtanding the antiquity and importance of this city it is very deficient in cleanlineſs. It is ſurrounded by trees, and the country about it is every where embelliſhed ; it has beautiful promenades. as well as broad and noble avenues of handſome trees. In the environs of the town the corn harveſts are not abundant ; but this deficiency is ſupplied by many excellent vegetables, fruits, flax, and verdant meadows, which furniſh good paſtures. At Leon there are ſeveral manufactories for different woollen articles ; ſtockings, hoſiery, leather, gloves, &c. are alſo made here. Leon is 150 miles N.W. of Madrid. N. lat. 42° 36′. W. long. 5° 37′.

Leon, a town of Spain, in Catalonia ; 43 miles N.W of Urgel.

Leon, a town of France, in the department of Stura ; 4 miles N. of Savigliano.

Leon, *Iſle of*, a kind of iſland four leagues from Xerez, in Andaluſia, formed by a canal which ſurrounds it, ten miles long, and 24 feet deep in high water, and capable of admitting the largeſt ſhips. This iſland was entirely deſerted in the ſeventeenth century, and there was ſcarcely a houſe upon it. At preſent the principal ſtreet of the town is two miles long, with rows of ſhops on each ſide, and containing upwards of 2000 inhabitants. Proviſions are here abundant, and the place exhibits a moving ſcene. The iſland has an alcade-mayor for the adminiſtration of juſtice ; a municipality compoſed of a number of regidors, and a manufacture of ſtained linen, reſembling printed calico.

Leon, a river which falls into the gulf of Mexico, from the N.W. , at the bay of St. Bernard.

Leon, a town of Mexico, in the province of Guadalajara ; 40 miles E. of Guadalajara.

Leon, a town of Mexico, and capital of the extenſive province of Nicaragua, ſituated on a large lake of freſh water, abounding with fiſh. It is a biſhopric, but a town of little importance. It has about 1200 houſes, four churches, and ſeveral convents. Its ſituation near a mountain, in which is a volcano, renders it ſubject to earthquakes. The lake is ſaid to ebb and flow like the ſea. Realjo is a ſmall entrenched town, with an excellent port, and ſerves Leon the capital.

Leon *de Caraccas*. See Caraccas.

Leon *de Guanuco*. See Guanuco.

Leon, *New*, one of the ſeven domains, called kingdoms, into which the Spaniſh dominions in North America are diſtributed. This name is reſtricted by the maps to a ſmall province round the town of Monterey, which muſt not be confounded with another of the ſame name, to the N. of California. It is bounded on the N. by the Savage nations, on the E. by New Mexico Proper, on the S. by a part of Mexico, and on the W. by New Biſcay. New Leon proper, a diſtrict ridiculouſly called a kingdom, is divided from Guadalcazar on the S. by the deſert of Jaumave, and mountains of Tamalipa. It is very mountainous, produces little except lead, and is very thinly peopled. The other provinces of the domain of New Leon, beſides New Leon proper, are Sootander and Coaguila, or New Eſtramadura.

LEONAN, a ſmall iſland in the Eaſt Indian ſea, near the N.E. coaſt or Borneo. N. lat. 6° 39′. E. long. 117° 48′.

LEONARD of Piſa, in *Biography*, an Italian mathematician, who flouriſhed at the commencement of the thirteenth century, was the firſt perſon who brought into Europe the knowledge of the Arabic cyphers and algebra. He gives an account of the fact himſelf, and ſays, that being at Bugia, a town in Africa, he was inſtructed in the Arabic method of keeping accounts, and that, finding it more convenient, and preferable to the European method, he had drawn up a treatiſe for the purpoſe of introducing it into Italy. From Italy the knowledge of the Arabic cyphers and algebra was afterwards communicated to the other countries of Europe. He was author of a treatiſe on ſurveying, preſerved in the Magliabecchi library at Florence.

LEONARDO Leo, principal organiſt of the chapel royal at Naples, was not only admired and reſpected by his contemporaries, but his memory ſtill continues to be held in reverence by every profeſſor that is acquainted with his works. The firſt opera of his compoſition that we were able to find, is “ Sofoniſba,” which was performed in Naples in 1718, and the laſt, “ Siface,” in Bologna, 1737. Between theſe he produced three operas for Venice, and four for Rome. Leo likewiſe ſet the “ Olimpiade” of Metaſtaſio, in which the duo, “ Ne i giorni tuoi felice,” and the air, “ Non ſo donde viene,” are admirable ; as is “ Per quel paterno ampleſſo,” in Artaſerſe, the only air in that opera that we have ſeen. “ Dirti ben mio vovice,” was in extreme high favour, as ſet by Leo, about the middle of the laſt century, in England, where it was ſure to be heard at every muſical performance, both public and private. Leo likewiſe ſet Metaſtaſio's oratorio of “ St. Elena al Calvario,” of which we have ſeen ſome very fine airs. His celebrated “ Miſerere,” in eight real parts, though imperfectly performed in London at the Pantheon, for Anſani's benefit, 1781, convinced real judges that it was of the higheſt claſs of choral compoſitions.

The purity of his harmony, and elegant ſimplicity of his melody, are no leſs remarkable in ſuch of theſe dramas as we have been able to examine, than the judicious arrangement of the parts. But the maſſes and motets, which are carefully preſerved by the curious, and ſtill performed in the churches at Naples, have all the choral learning of the ſixteenth century. There are likewiſe extant, trios, for two violins and a baſe, ſuperior in correctneſs of counterpoint and elegance of deſign to any ſimilar productions of the ſame period. This complete muſician is equally celebrated as an inſtructor and compoſer ; and the “ Solfeggi,” which he compoſed for the uſe of the vocal ſtudents, in the conſervatorio over which he preſided at Naples, are ſtill eagerly ſought and ſtudied, not only in Italy, but in every part of Europe, where ſinging is regularly taught.

This great muſician died about the year 1742, at the age of fifty-three. His death was unhappily precipitated by an accident which at firſt was thought trivial ; for having a tumour, commonly called a *bur*, on his right cheek, which growing, in proceſs of time, to a conſiderable magnitude, he was adviſed to have it taken off ; but whether from the unſkilfulneſs of the operator, or a bad habit of body, a mortification enſued, which coſt him his life. After expreſſing the reverence which we have always had from our earlieſt youth, for the productions of this admirable compoſer, we ſhall tranſcribe a character of him from “ L'Eſſai ſur la Muſique,” drawn up with elegance, force, and feeling, which does not ſeem to flow from an excluſive admirer of Rameau, under the guidance of the intolerant preacher of the *triple progreſſion*.

"Leonardo Leo, a Neapolitan, the firſt maſter, and moſt ſublime genius for muſic of his time; who is never mentioned but with reſpect and admiration by every intelligent profeſſor. They all aver that no compoſer has given to muſic that intereſting elevation, that impreſſive dignity, which are the principal characteriſtics of the ſtyle of Leo. A noble pathos always reigns in his compoſitions; his ſerious and feeling character has inſtinctively guided his pen. This has made him partial to the chromatic, which he has ſo ably treated. In ſpite of the difficulty of compoſing in this genus, he joins all the grace and ſweetneſs which are ſo delightful, even in the moſt natural muſic. His taſte and expreſſion will be always celebrated; as all theſe natural gifts were under the guidance of the moſt profound knowledge of his art. In ſhort, this wonderful man cannot be too highly praiſed. His name and works are known to all Europe. He moſt delighted in dramatic muſic, which, however, did not prevent him from enriching the church and chamber with innumerable productions of the moſt finiſhed kind. The following are ſome of his operas; in 1720, Cajo Gracco; in 1722, Tamerlane and Bajazet; in 1723, Timocrate; 1728, Argene; in 1729, Catone and Utica; in 1735, La Clemenza di Tito; and in 1737, Siface. This truly great muſician died about the year 1742, at the age of 53."

LEONARDSTOWN, in *Geography*, a poſt-town of America, in the ſtate of Maryland, and capital of St. Mary's county, ſituated on the E. ſide of Britton's brook, where it falls into Britton's bay, five miles from its mouth in the Patowmac; and containing about 50 houſes, a court-houſe and gaol; 217 miles S.W. of Philadelphia. N. lat. 38° 18′.

LEONBERG, or Leonsberg, a town of Wurtemberg, on the Glems; 6 miles W. of Stuttgart. N. lat. 48° 51′. E. long. 9° 7′.

LEONE, one of the Navigator's iſles, about five miles in circumference, E. of Fanfoué, from which it is ſeparated by a channel.

LEONES, a ſmall iſland in the Atlantic, near the coaſt of Patagonia. S. lat. 50° 2′.

LEONESSA, a town of Naples, in Abruzzo Ultra: 19 miles N.W. of Aquila.

LEONFORTE, one of the largeſt and handſomeſt towns in Sicily, 10 miles from Argiro: ſituated on an eminence. The number of inhabitants amounts to 12,000. The convent of Capuchins is as populous as the town.

LEONI, a town of Naples, in Principato Ultra; 12 miles W. of Conza.

LEONICENUS, Nicholas, in *Biography*, an eminent Italian phyſician, was born in one of the Venetian ſtates in the year 1428. He was profeſſor of medicine at Ferrara during upwards of ſixty years, and was the firſt perſon who undertook to tranſlate the works of Galen into Latin. In fact he was ſo ſtrongly attached to literary purſuits, and to the duties of his profeſſorſhip, that he gave up little time to the practice of his profeſſion: and when his negligence in this reſpect was condemned, he ſaid, "I do more ſervice to the public, than if I viſited the ſick, by inſtructing thoſe who are to cure them." He extended his attention alſo to the belles lettres, which he conſidered as cloſely connected with the proper ſtudy of philoſophy and medicine; he wrote ſome reſpectable poetry, and tranſlated into Italian the hiſtory of Dion Caſſius, and the dialogues of Lucian. Until the age of thirty, Leonicenus was tormented with frequent attacks of epilepſy, which reduced him at times to melancholy and deſpair. This diſeaſe, however, afterwards left him, and, by means of great regularity and temperance, he attained the age of ninety-ſix years, and died in 1524, poſſeſſed of all his faculties. To one who inquired, with aſtoniſhment, by what ſecret he had preſerved this entire poſſeſſion of his faculties, together with an erect body, and vigorous health, at ſo great an age, he replied, that it was the effect of innocence of manners, tranquillity of mind, and frugality in diet. The duke and ſenate of Ferrara erected a monument to his memory. He left ſeveral works, moſt of which have been ſeveral times reprinted. "De Plinii et aliorum Medicorum in Medicina erroribus, &c." Ferrari, 1492. In a poſthumous edition, printed at Baſle, in 1532, ſome other opuſcula were added, particularly "De Herbis, Fructicibus, Animalibus, Metallis, Serpentibus, Tiro ſeu Viperâ."—"Liber de Epidemia quam Itali Morbum Gallicum vocant, Galli verò Neapolitanum," Venice, 1497. In ſeveral ſubſequent editions, the title "De Morbo Gallico" was adopted.—"Præfationes in Libros Galeni à ſe tranſlatos," ibid. 1508, folio, with ſome other treatiſes. "Opus de tribus doctrinis ordinatis ſecundum Galeni ſententiam," ibid. 1508, fol. "Libri duo Galeni de curandi ratione ad Glauconem Latinè verſi," Paris, 1514, 4to. "Hippocratis Aphoriſmorum Libri VII., Græcè et Latinè," ibid. 1526, 8vo. "Converſio et explanatio primi Libri Ariſtotelis de partibus Animalium," Baſle, 1541, 8vo. "Galeni Ars Medica," Venice, 1606. Eloy Dict. Hiſt. de Med.

LEONICO, Tomeo, Nicholas, was born in Venice, of an Albanian family, in the year 1456. He ſtudied Greek at Florence, and made ſuch progreſs, that he became able to explain Ariſtotle in the original language. For this purpoſe he was invited to Padua in 1497. He was brought up to the church, and taught the learned languages at Venice, but in 1520 he returned to Padua, where he gave inſtructions to cardinal Pole. He was much attached to the Platonic philoſophy, and paſſed his time remote from worldly purſuits, and ſolely intent upon his ſtudies. Bembo, Giovio, and others, ſpeak of him with great eſteem, and Eraſmus mentions him with honour, as a man equally reſpectable for the purity of his morals and the profundity of his erudition. He died in 1531, and was buried in the church of St. Francis, at Padua. He tranſlated ſeveral of the works of Ariſtotle, Proclus's Commentary on the Timæus of Plato, and other treatiſes of the ancient philoſophers. He wrote ten dialogues on ſubjects philoſophical and moral, a work, "De Varia Hiſtoria," and ſome Italian poems.

LEONIDAS I., king of Sparta, ſucceeded to the throne in the year 491, B.C. When Xerxes, king of Perſia, invaded Greece, Leonidas was appointed by the Lacedæmonians to the chief command of their forces to oppoſe him. He marched at the head of 4000 men, to take poſſeſſion of the ſtraits of Thermopylæ. Aware of the great danger of the enterprize, he conſidered himſelf as one devoted to the ſafety of the country. He poſted his ſmall army ſo ſkilfully, that the Perſians, on arriving at the ſtraits, found that it would be difficult to force them, and Xerxes endeavoured to bribe the commander to his intereſt, by the offer of making him maſter of Greece. The propoſal was rejected with indignation, and the monarch immediately ſent a herald to order the Grecians to lay down their arms. "Let him come and take them," was the reply of Leonidas. Thrice the Perſians were repulſed with great loſs; and when a treacherous Greek had led a choſen body of 10,000 Perſians by a ſecret paſſage to the rear of Leonidas, he was determined to afford a memorable example of what the Greeks could do when called upon to die for their country. Xerxes marched his whole army to the entrance of the ſtraits, where Leonidas advanced to meet him. The efforts of valour, heightened by deſpair, were terrible, and the Spartan king fell amidſt a heap of ſlaughtered enemies. His friends defended his body, till the appearance of the foe in the rear cauſed the ſurvivors to collect into one cloſe band, facing every way. All theſe, overpowered by numbers, were left on the field of battle, having amply revenged their fall. The Perſian tyrant, enraged at his loſs, cauſed the body of the hero to be nailed to a croſs, but the memory of his valour and patriotiſm could not be obliterated, and the defence of Thermopylæ is conſecrated among the nobleſt actions of antiquity. The gratitude of his country raiſed a ſplendid monument upon the ſpot to the fallen, and a funeral oration was for a long time annually pronounced amidſt the celebration of martial games, over their tombs.

LEONINE, in *Poetry*, is applied to a kind of verſes which rhyme at every hemiſtich, the middle always chiming to the end.

In this kind of verſe we find ſeveral ancient hymns, epigrams, prophecies, &c. For inſtance; Muretus, ſpeaking of the poetry of Lorenzo Gambara of Breſſe, ſays,

> “ Brixia veſtr*ates*, quæ condunt carmina v*ates*
> Non ſunt noſtr*ates* tergere digna n*ates*.”

The following one is from the ſchool of Salernum :

> “ Ut vites *pœnam*, de potibus incipe *cœnam*.”

The origin of the word is ſomewhat obſcure : Paſquier derives it from one Leoninus, or Leonius, who excelled in this way, and dedicated ſeveral pieces to pope Alexander III. ; others derive it from pope Leo ; and others, from the beaſt called *lion*, becauſe it is the loftieſt of all verſes.

M. Fauchet makes the leonine rhyme the ſame with what the French call the *rich*, and we the *double rhyme*, *i. e.* where two ſyllables have the ſame orthography, accentuation, and pronunciation, with two others.

LEONOTIS, in *Botany*, ſo called from λεων, *a lion*, and ους, ωτος, *the ear*. Lion's-ear. Brown Prodr. Nov. Holl. v. 1. 504, Ait. Hort. Kew. ed. 2. v. 3. 409. (Leonurus; Tourn. t. 87.)—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, oblong, with ten ſlight ribs, permanent ; its orifice unequally toothed, with from ſix to ten teeth. *Cor.* of one petal, ringent ; tube cylindrical, longer than the calyx ; upper lip elongated, ſlightly concave, bearded, undivided ; lower much ſmaller, in three nearly equal ſegments. *Stam.* Filaments four, concealed by the upper lip, two of them longer than the reſt ; anthers of two oblong divaricated lobes. *Piſt.* Germen ſuperior, four-lobed ; ſtyle the length and poſition of the ſtamens ; ſtigma cloven, acute, its upper ſegment ſhorteſt. *Peric.* none, except the permanent calyx. *Seeds* four, oblong, triangular.

Eſſ. Ch. Calyx with ten ribs ; unequally toothed. Upper lip of the corolla elongated, bearded, undivided ; lower much ſmaller, in three nearly equal ſegments. Lobes of the anthers divaricated. Upper ſegment of the ſtigma ſhorteſt.

1. L. *nepetifolia.* Catmint-leaved Lion's-ear. (Phlomis nepetifolia ; Linn. Sp. Pl. 820. Cardiaca americana annua, nepetæ folio, floribus brevibus phœniceis villoſis ; Herm. Lugd. Bat. 115. t. 117.)—Leaves heart-ſhaped, pointed. Calyx with eight ſpinous teeth ; the upper one largeſt. Stem herbaceous.—Native of the Eaſt Indies, from whence ſir Joſeph Banks procured it for Kew garden in 1778. It is a tender annual, kept in the ſtove, and flowering in September and October. Hermann received the ſeeds from Surinam ; Linnæus from the Eaſt Indies, and it flowered in the Upſal garden. The whole *plant* is hoary, with extremely ſoft minute pubeſcence. *Stem* four or five feet high, quadrangular, with oppoſite ſpreading branches. *Leaves* oppoſite, two or three inches long, and one or two broad, heart-ſhaped, veiny, deeply crenate or ſerrated, pointed, on *ſtalks* of their own length. *Flowers* in denſe whorls, with linear ſpinous *bracteas*, and ſtrongly ſpinous *calyx-teeth.* *Corolla* about an inch long, moſt elegantly clothed with denſe ſcarlet hairs, paler at the edges.

2. L. *Leonurus.* Narrow-leaved Lion's-ear. Lion's-tail. (Phlomis Leonurus ; Linn. Sp. Pl. 820. Curt. Mag. t. 478. Leonurus capitis bonæ ſpei ; Breyn. Cent. t. 86.)—Leaves lanceolate. Calyx with ten regular teeth, five ſmaller than the reſt.—Native of the Cape of Good Hope, from whence it was brought into the European gardens, for the ſake of its beauty, early in the laſt century, and is ſtill kept in greenhouſes, being propagated by cuttings, and flowering abundantly in autumn. The *ſtem* is ſhrubby, ſeven or eight feet high. *Leaves* lanceolate, rather narrow, bluntly ſerrated, about two inches long, of a dull green, roughiſh, tapering down into ſhort footſtalks. *Flowers* large, in denſe bracteated whorls. *Calyx* downy, its teeth regular, very ſmall, and ſcarcely ſpinous ; the five alternate ones ſmaller than the reſt. *Corolla* two inches long, ſlender, incurved, downy, of a fine tawny orange, or ſomewhat ſcarlet colour, the lower lip ſmall and brown.

3. L. *Leonitis.* Round-leaved Lion's-ear. (Phlomis Leonitis ; Willd. Sp. Pl. v. 3. 128. Ph. Leonotis ; Linn. Mant. 83. Leonurus minor, capitis bonæ ſpei ; Mill. Ic. t. 162. f. 1.)—Leaves ovate, blunt, crenate. Calyx with eight awned teeth ; the upper one largeſt. Stem ſhrubby.—Native of the Cape of Good Hope, from whence it was brought early in the laſt century, but is leſs frequent in our greenhouſes than the foregoing ; from which it differs in its ſmaller ſize, roundiſh long-ſtalked ſmall *leaves*, and rather ſhorter more obtuſe *corolla*, beſides the eſſential diſtinctions of the *calyx*.

LEONTARI, in *Geography*, a town of the Morea ; 20 miles N.W. of Miſitra.

LEONTESERES, in the *Natural Hiſtory of the Ancients*, the name of a ſpecies of agate, famous in early times for its imaginary virtues in taming the rage of wild beaſts, and not a little eſteemed among us for its beauty. It is the moſt variegated of all the agates. Its ground colour is yellow, and its variegations are flame-coloured, white, black, and green.

Sometimes it is one irregular congeries of all theſe colours, but more frequently it is very beautifully variegated with them in form of clouds and veins ; the black and green particularly are uſually diſpoſed in concentric circles round one or more points. It is found only in the Eaſt Indies, and is very ſcarce.

LEONTEVKA, in *Geography*, a town of Ruſſia, in the government of Novgorod; 40 miles S.E. of Valdai.

LEONTIASIS, in *Medicine*, a name given by the ancients to the elephantiaſis, improperly called the Arabian leproſy, from a ſuppoſed reſemblance of the tuberculated countenance of the patient, in ſome inſtances, to the viſage of the lion (*leo*). See ELEPHANTIASIS.

LEONTICA, feaſts, or ſacrifices celebrated among the ancients, in honour of the ſun.

They were called *leontica*, and the prieſts who officiated at them *leones*, becauſe they repreſented the ſun under the figure of a lion radiant, bearing a tiara, and griping in his two fore-paws the horns of a bull, who ſtruggled with him, in vain, to diſengage himſelf.

The critics are extremely divided about this feaſt: ſome will have it anniverſary, and to have made its return not in a ſolar, but in a lunar year; but others hold its return more frequent, and give inſtances where the period was not above 220 days.

The ceremony was ſometimes alſo called *Mithriaca;* Mithras being the name of the ſun among the ancient Perſians.

There was always a man ſacrificed at theſe feaſts, till the time of Hadrian, who prohibited it by a law. Commodus introduced the cuſtom afreſh, after whoſe time it was again exploded.

LEONTICE, in *Botany*, a name adopted by Linnæus from Pliny, as a ſubſtitute for *Leontopetalon* of Tournefort. (See LEONTOPETALON.) Lion's-leaf. Linn. Gen. 168. Schreb. 223. Willd. Sp. Pl. v. 2. 148. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 272. Sm. Prodr. Fl. Græc. Sibth. v. 1. 234. Juſſ. 287. Lamarck. Illuſtr. t. 254. —Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Corydales*, Linn. *Berberides*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, of ſix linear, ſpreading deciduous leaves, the intermediate ones ſmaller. *Cor.* Petals ſix, ovate, acute, twice as long as the calyx. Nectary of ſix half-ovate, ſpreading, equal, ſtalked ſcales, inſerted into the baſe of the petals. *Stam.* Filaments ſix, thread-ſhaped, very ſhort, oppoſite to the petals; anthers erect, of two cells, and two valves, burſting from the baſe upwards. *Piſt.* Germen ſuperior, oblong-ovate; ſtyle ſhort, nearly cylindrical, inſerted obliquely upon the germen; ſtigma ſimple. *Peric.* Berry hollow, inflated, globoſe with a point, of one cell, but ſlightly ſucculent. *Seeds* few, globoſe.

Eſſ. Ch. Corolla of ſix petals. Nectary of ſix ſpreading ſtalked leaves, attached to the baſe of the petals. Calyx of ſix leaves, deciduous. Berry inflated, of one cell. Seeds few, globoſe.

1. L. *Chryſogonum.* Pinnated Lion's-leaf. Linn. Sp. Pl. 447. (Leontopetalo affinis, foliis quernis; Moris. v. 2. 285. ſect. 3. t. 15. f. 7. Chryſogonum Dioſcoridis; Rauw. It. t. 119. Chriſogono di Dioſcoride; Pon. Bald. 141.)—Leaves radical, pinnated, deeply cut.—Native of corn-fields in Greece. Dr. Sibthorp gathered this ſpecies near Abydos. It is much to be regretted that ſo curious a plant, though cultivated by Miller, is now a ſtranger to our gardens, and that even dried ſpecimens are ſo very rare. Whether it be really the χρυσογονον of Dioſcorides, his ſhort deſcription muſt ever leave doubtful. The *leaves* are not much like an oak, nor the *flower* like a Mullein, though the tuberous *root* may be compared to a turnip. He deſcribes his as very red within. Authors repreſent our's as having a perennial, fleſhy, ſomewhat conical *root*, producing ſeveral upright ſtalked *leaves;* theſe are about a ſpan long, ſmooth, rather glaucous, ſimply pinnate; the leaflets not quite oppoſite, about nine or ten pair, ſeſſile, oblong or roundiſh, either wedge-ſhaped or in ſome degree heart-ſhaped at the baſe, entire at the ſides, but more or leſs deeply cut towards the top. In our ſpecimens they are by no means ſo deeply divided as in the figures above quoted, which have led profeſſor Willdenow to ſuppoſe them whorled. *Flower-ſtalks* one or two, radical, a little taller than the leaves, many-flowered, branched, corymboſe, round, ſmooth, leafleſs. *Bracteas* elliptical, coloured, ſolitary at the baſe of each branch. *Flowers* yellow, ſomewhat like thoſe of Celandine. *Anthers* ovate before they burſt.

2. L. *Leontopetalum.* Common Lion's-leaf. Linn. Sp. Pl. 448. (Leontopetalon; Camer. Epit. 565. Ger. em. 236. Barrel. Ic. t. 1029, 1030. Moris. v. 2. ſect. 3. t. 15. f. 6.)—Radical leaves twice or thrice ternate; ſtem-leaves ternate.—Abundant in corn-fields in the Levant, flowering early in the ſpring, and ripening fruit in May. Gerarde ſays, lord Zouch in his time brought a plant from Italy, but, as far as he knew, it periſhed. Miller, however, appears to have raiſed both this and the preceding from ſeed, but could not preſerve them, on account of the unfavourable ſpring ſo uſual here. *Root* tuberous, perennial. *Stem* ſolitary, erect, 12 or 18 inches high, branched, ſmooth, leafy. Radical *leaves* ſomewhat like thoſe of a Columbine, on long ſtalks, twice or thrice ternate, the leaflets rounded or obovate, entire, confluent or decurrent, veiny; thoſe of the ſtem much ſmaller, and ſcarcely more than ſimply ternate. *Flower-ſtalks* corymboſe, ſoon racemoſe, with ovate concave *bracteas*. *Flowers* yellow, copious, much like the laſt. *Fruit* an inch long, more or leſs ovate, ſoon becoming a dry, membranous, curiouſly reticulated bag, in the bottom of which are three or four large round *ſeeds*. The *Leontice incerta* of Pallas, in his Travels, v. 3. 726. t. V. f. 3, which Willdenow has adopted by the name of *L. veſicaria*, ſeems a mere variety, differing a little, as is perhaps uſual, in the ſhape of the fruit, but otherwiſe agreeing exactly with the *Leontopetalum*. Pallas was in doubt reſpecting it, as having ſeen nothing of the flowers.

3. L. *altaica.* Fingered Lion's-leaf. Willd. n. 4. Pallas. Act. Petrop. for 1779. 257. t. 8. f. 1—3. *Willd.* Lamarck. f. 2.—Radical leaves twice compound; ſtem-leaves fingered, oblong.—Diſcovered by Pallas on expoſed parts of the Altay mountains. We have never ſeen this ſpecies, but Willdenow, who examined a dry ſpecimen, ſays, "the radical *leaves* have their ſtalk firſt three-cleft, and that each diviſion bears five elliptic-lanceolate, entire leaflets at its ſummit; the ſtem-leaves are in like manner quinate, generally three together in a whorl. *Bracteas* elliptical, obtuſe." This latter part of the deſcription accords with Lamarck's figure, copied, we preſume, from Pallas.

4. L. *thalictroides.* Columbine-leaved Lion's-leaf. Linn. Sp. Pl. 448. (Caulophyllum thalictroides; Michaux Boreali-Amer. v. 1. 205. t. 21.)—Stem-leaves twice or thrice ternate; terminal leaflets three-lobed, acute.—Native of North America. It was procured from thence by Peter Collinſon before 1755, and is ſtill preſerved in ſome curious gardens, flowering in May. *Root* perennial. *Stem* a foot high or more, erect, ſimple, bearing one thrice compoud *leaf*, and another, cloſe to the flowers, twice compound, both ſeſſile, but with long partial ſtalks; leaflets dark green above, glaucous beneath, rounded at the baſe, with two or three deep acute ſegments at their fore part; as the fruit advances they become more rounded and much enlarged, reſembling ſome large kind of Meadow-rue, or Columbine. *Flowers* green, in a ſmall, ſlightly compound, ſlender, ſtalked cluſter, with little ovate acute *bracteas*. The whole plant is ſmooth. Michaux deſcribes the *fruit* as more pulpy than in the above ſpecies, and ſingle-ſeeded, like the drupa of the ſloe, but this is hardly ſufficient perhaps to eſtabliſh, as he does, a new genus. We find the *berry* hollow, and apparently ſomewhat inflated, though far leſs than in the ſecond ſpecies. American botaniſts muſt ſolve this difficulty.

5. L. *triphylla* Three-leaved Lion's leaf.—Leaves radical, ternate, bluntly toothed. Stalk radical, ſimple. Flowers ſpiked.—Gathered by Mr. Archibald Menzies, on the weſt coaſt of North America. The *root* is perennial, ſomewhat creeping. *Leaves* ſolitary, on a ſlender, ſimple, upright, ſmooth footſtalk, about ten or twelve inches high, with a few imbricated, elliptical, concave, ribbed ſcales at its baſe; leaflets three, ſeſſile, two inches wide, ſmooth, pale green, beautifully reticulated with innumerable veins; ra-

ther wedge-ſhaped at their baſe, the ſide-ones dilated laterally; the outer margin of all wavy or bluntly toothed. *Flower-ſtalk* ſolitary, from the ſame bud with the leaf, but a little taller, ſimple, ſlender, naked. *Spike* terminal, about an inch long, of numerous, ſeſſile, white *flowers*, of whoſe *calyx* or *corolla* we can find no traces, but the *ſtamens* agree ſo well with thoſe of *L. Leontopetalum*, in their very peculiar ſtructure, that we venture to refer our plant to this genus. The *filaments* are extremely ſlender at their baſe; the *germen* is ovate, with a thick, nearly ſeſſile, oblique *ſtigma*.

Leontice is alſo a plant mentioned by the ancient Greeks, and called by them *cacalia*.

Dioſcorides tells us it had theſe names in common, and that it was of great virtue in curing diſeaſes of the *aſpera arteria*, or wind-pipe.

This medicinal plant of the Greeks was very different from that we now call cacalia. Some have deſcribed it to have flowers like the oak, others like the olive-tree, but the old manuſcripts of Dioſcorides all ſay, the flowers were like thoſe of bryony. Hence it could by no means be the cacalia of the moderns; nor is it eaſy to ſay, from ſuch ſhort and uncertain accounts, what it was. See the preceding article.

LEONTINI, or Leontium, in *Ancient Geography*, a town of Sicily, called alſo, as Diodorus informs us, *Xuthia*, a name given probably to the ſmall diſtrict in which it is ſituated. It was ſituated, according to Herodotus's account of it, between two rivers, which, after their junction, ran into the ſouthern part of the gulf of Catana. One to the S. was called "Liſſus," now Liſſo, and the other to the N. "Terias," called St. Leonard's ſtream. The town was built, at the ſame time with Catania, by the Chalcidians, under the conduct of Theocles, the Athenian, in the 1ſt year of the 13th Olympiad, as we are informed by Thucydides; in whoſe time it was defended by two ſtrong citadels, one called the citadel of Phocea, the other the citadel of Bricinnia. The adjacent territory was ſo fruitful, that it yielded, according to Pliny, crops of corn an hundred fold, and Cicero cal's it the grand magazine of Sicily. Its wines were the moſt delicious of the whole iſland, but the inhabitants perverted the benefit into an occaſion of intemperance, ſo that it became a proverbial ſaying, "the people of Leontini are always at their cups." Leontium had its tyrants as well as Syracuſe, and between theſe two cities there ſubſiſted a conſtant rivalſhip and enmity. This was the birthplace of the celebrated rhetorician Gorgias, whoſe eloquence aſtoniſhed even the Athenians, and who perſuaded them to undertake the unfortunate expedition under Nicias. Leontium at length fell under the power of Syracuſe, Dionyſius the tyrant having removed the inhabitants thither. The ſituation of the caſtle, and the fertility of the country, rendered Leontium at all times a place of importance to the different nations which poſſeſſed Sicily. The earthquake of 1693 completed its deſtruction, and reduced it to its preſent ſtate of wretchedneſs. The ancient city, built on four hills, preſents to the obſerver nothing but a ſpot of ground torn by four ravines, which lay open a few wretched grottos, the ſole remains of its former greatneſs. The caſtle ſtood on a detached rock, oppoſite to the city, which was originally hewn out of it, and has been ſucceſſively built and rebuilt according to the ſtyle of different ages, and the prevailing modes of beſieging and defending places. The rich country of Leontium, ſo luxuriant in corn, is now called the plain of Catania; it is 12 miles wide by 20 in length, and was formerly the country of the Læſtrigons, divided and bathed by the "Simaethus," the largeſt river in Sicily, which rolls along in its ſtream a quantity of black and yellow amber, which is ſought for where it diſgorges itſelf into the ſea, and is waſhed up at Catania.

LEONTIUM, in *Biography*, an Athenian courtezan, at one time noted for the licentiouſneſs of her life, and afterwards diſtinguiſhed by her application to the ſtudy of the Epicurean philoſophy. It has been aſſerted, that ſhe did not deſiſt from her intrigues after ſhe was an attendant on Epicurus, but proſtituted herſelf to the diſciples of his ſchool, and even to the philoſopher himſelf. She became the wife of Metrodorus, one of the principal diſciples of Epicurus, and had a ſon by him, whom Epicurus commended to the notice and regard of his executors. Leontium applied with great diligence to the ſtudy of philoſophy, and wrote, in defence of the Epicurean doctrines, againſt Theophraſtus, one of the principal of the Peripatetic ſect. The book is acknowledged by Cicero to have been written in a polite and elegant ſtyle. Bayle. Moreri.

LEONTIUS, ſurnamed the *Scholaſtic*, who flouriſhed in the ſixth century, was a native of Conſtantinople, was educated an advocate and afterwards became a monk. He lived till about the cloſe of the century. The principal work of Leontius is "A Treatiſe on the Sects of Heretics," divided into ten diſcourſes. It was publiſhed in Greek and Latin at Baſil, in 1578. He was alſo author of various treatiſes againſt the Eutychians, Neſtorians, and Appollinariſts; a diſcourſe on the feſtival celebrated between Eaſter and Whitſunday; and there are "Orations" and "Homilies" aſcribed to him in the Bodleian and Vienna libraries. Moreri.

LEONTODERON, in *Natural Hiſtory*, a name given by ſeveral authors to a ſpecies of agate, of a plain yellowiſh colour, without variegations.

LEONTODON, in *Botany*, derived from λεων, λεοντος, *a lion*, and ὀδους, *a tooth*, and ſo called from a ſimilarity in the ſhape of its jagged leaves to the teeth of a lion. Linnæus beſtowed this name upon the genus in juſt preference to the compound one of *Dens Leonis* given by Tournefort. The Engliſh name *Dandelion*, which is a corruption of *Dent de Lion*, is expreſſive of the ſame idea, and might poſſibly have given riſe to its botanical appellation. Dr. Smith has deſcribed the leaves of *Leontodon Taraxacum*, in his Introduction to Botany, p. 157, as runcinate or lion-toothed, cut into ſeveral tranverſe, acute ſegments, pointing backwards. A ſtriking character of this ſort, which, at firſt ſight, ſuggeſts a name, borrowed from ſome familiar or popular reſemblance, is always deſirable, and is ſufficiently apparent in this genus.—Linn. Gen. 402. Schreb. 529. Willd. Sp. Pl. v. 3. 1544. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. v. 2. 822. Ait. Hort. Kew. v. 3. 120. Gærtn. t. 158. (Dens Leonis; Tournef. t. 266. Taraxacum; Juſſ. 169. Lamarck. Illuſtr. t. 653.)—Claſs and order, *Syngeneſia Polygamia Æqualis*. Nat. Ord. *Compoſitæ Semifloſculoſæ*, Linn. *Cichoraceæ*, Juſſ.

Gen. Ch. *Common calyx* imbricated, oblong; its interior ſcales linear, parallel, equal; outer ſcales fewer in number, often reflexed at the baſe. *Cor.* compound, imbricated, uniform; the florets hermaphrodite, numerous, equal, each of one petal, ligulate, linear, abrupt, with five teeth. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen nearly ovate; ſtyle thread-ſhaped, as long as the florets; ſtigmas two, revolute. *Peric.* none, except the oblong, ſtraight, at length reflexed, calyx. *Seeds* ſolitary, oblong, rough; down capillary, ſtipitate. *Recept.* naked, dotted.

Eſſ. Ch. Receptacle naked. Calyx double, imbricated with rather lax ſcales. Down ſtalked, hairy.

1. L. *Taraxacum*. Common Dandelion. Linn. Sp. Pl.

1122. Engl. Bot. t. 510. Curt. Lond. faſc. 1. t. 58. —Outer ſcales of the calyx reflexed. Leaves lion-toothed, ſmooth. Perhaps the moſt common of all plants, in meadows, paſtures, on rubbiſh and on all cultivated land, flowering from April to July. This troubleſome though handſome *weed*, has a deep and branching perennial *root*. *Leaves* radical, runcinate, toothed, of a bright green colour, ſmooth. *Flower-ſtalks* ſimple, longer than the leaves, hollow, brittle, milky and ſingle-flowered. *Flower* terminal, large, golden-coloured, cloſing in the evening. *Styles* hairy. *Seeds* obovate, furrowed, bearing on a long footſtalk a tuft of ſimple, radiated down. The diuretic qualities of this plant, which cauſed it to be called *Piſſenlit* in French, procured it a ſimilarly expreſſive name in this country, by which it is well known to the vulgar. The whole herb is milky and bitter, but like Lettuce or Celery becomes ſweet by culture or blanching. Curtis remarks that the French are very partial to this ſpecies in their ſalads. It is eſpecially uſed by the poorer ſort of people, becauſe it is ſo common and ſo eaſily prepared.

2. L. *paluſtris*. Marſh Dandelion. Sm. Fl. Brit. 823. Lyons Faſc. 48. Engl. Bot. t. 553. (L. lividus; Willd. n. 3.)—Outer ſcales of the calyx ſhorter, upright, ovate. Leaves ſinuated and toothed, nearly ſmooth. Found generally on moors and marſhes. At Hinton Moor, in Cambridgeſhire, by the Rev Mr. Relhan, and at Heydon, Norfolk, by the Rev. Mr. Bryant. It flowers in June and July. *Root* perennial, ſpindle-ſhaped. *Leaves* not quite ſo diſtinctly lion-toothed as in *Taraxacum*, ſometimes inclined to be hairy. *Flower-ſtalks* about as long as the leaves, ſometimes decumbent. *Calyx* imbricated on all ſides; its ſcales gradually ſmaller outwards, ovate, acute, all erect. *Florets* golden-coloured, the outer ones purpliſh at their back. *Seeds* and *Down* very ſimilar to the former ſpecies. Indeed this was conſidered merely as a variety of that, till Dr. Smith eſtabliſhed the preſent plant in his Engliſh Botany. The whole herbage is more delicate and ſlender than that of the common Dandelion.

3. *L. ſerotinus*. Late-flowering Dandelion. Waldſt. and Kitaib. Pl. Rar. Hung. v. 2. 119. t. 114. *Willd.*—Outer calyx ſpreading. Stalk ſingle-flowered. Leaves runcinate rough, their teeth rounded and notched. A native of hills in Hungary.—*Flower-ſtalk* generally ſmooth, ſometimes downy. The ſpecies is ſufficiently marked as being diſtinct from *L. Taraxacum*, to which it is nearly allied in habit, from having the ſcales of its *calyx* ſpreading and ſticking out in all directions; its *leaves* are alſo rough, their lobes rounded and toothed.

4. *L. lævigatus*. Smooth Dandelion. Willd. n. 4.—Outer calyx erect, cloſe-preſſed; ſcales ovate. Stalk ſingle-flowered. Leaves deeply runcinate, toothed, ſmooth. A native of Spain. *Radical leaves* deeply runcinate, almoſt pinnatifid, very ſmooth and thin; teeth triangular, notched. Flower-ſtalks ſmooth, aſcending. Scales of the *outer calyx* ovate, cloſely-preſſed. It differs abundantly from *L. paluſtris* in having its leaves more ſlender, and deeply cut, with triangular notches.

5. *L. obovatus*. Obovate Dandelion. Willd. n. 5.—Outer calyx ſpreading; ſcales ovate. Stalks ſingle-flowered. Leaves obovate, rather obtuſe, toothed. Found, like the laſt, in Spain. *Leaves* obovate, generally very obtuſe, ſometimes rather acute, toothed at the margin, ſmooth; their footſtalks and mid-rib ſometimes fringed. *Calyx* furniſhed with external, acute, ſpreading ſcales. This is decidedly diſtinguiſhed from all the other ſpecies by the ſhape of its leaves.

This genus is much more ample as it ſtands in Linnæus. We have adopted all the ſpecies retained by Willdenow, who has removed the reſt to different genera, as follows. *Leontodon bulboſus*, and *aureus*, are referred to *Hieracium*: *L. haſtilis*, *tuberoſus*, *autumnalis*, *alpinus* and *hiſpidus* to *Apargia* of Schreber: *L. hirtus* to *Thrincia* of Roth., and he has followed Swartz in calling *L. tomentoſus*, *Tuſſilago albicans*. We do not ſcruple following Willdenow in reforming the genus of *Leontodon*, eſpecially as we have the authority of Jacquin and Smith for having done ſo in *Tragopogon*.

Leontodon *Taraxacum*, or *Common Dandelion*, in the *Materia Medica*, &c. The young leaves of this plant in a blanched ſtate have the taſte of endive, and make an excellent addition to thoſe plants eaten early in the ſpring as ſalads. At Gottingen the roots are roaſted and ſubſtituted for coffee by the poorer inhabitants; who find that an infuſion prepared in this way can hardly be diſtinguiſhed from that of the coffee-berry. Dandelion is generally conſidered by medical writers as the moſt active and efficacious of the lacteſcent plants; the expreſſed juice is ſomewhat acrid, the root ſtill more bitter, and poſſeſſing more medicinal power than any other part of the plant. Taraxacum has been long in repute as a mild detergent and aperient, and its diuretic effects may be inferred from the vulgar name it bears in moſt of the European languages, "quaſi lectiminga et urinaria herba dicitur." Bergius recommends its uſe in obſtructions of the liver, hypochondriaſis, and jaundice. We have various proofs of the good effects of the Taraxacum related by different authors, in jaundice, dropſy, pulmonic tubercles, and ſome cutaneous diſorders. The leaves, roots, flower-ſtalks, and juice of dandelion have all been ſeparately employed for medical purpoſes, and ſeem to differ rather in degree of ſtrength than in any eſſential property; therefore the expreſſed juice, or a ſtrong decoction of the roots, has been moſt commonly preſcribed, from one ounce to four, two or three times a day. The plant ſhould be always uſed freſh; for even extracts prepared from it appear to loſe much of their power by keeping. Woodv. Med. Bot.

LEONTODONTOIDES, in *Botany*. See Hyoseris.

LEONTOPETALO Affinis. See Leontice.

LEONTOPETALOIDES, the name of a genus of plants deſcribed by Dr. Amman, being a ſpecies of the *leontice* of Linnæus; which ſee. See alſo Tacca.

LEONTOPETALON, from λεων, λεοντος, *a lion*, and πεταλον, *a leaf*. Lion's-leaf. Tourn. Cor. 49. t. 484. See Leontice.

LEONTOPODIUM, from λεων, *a lion*, and πες, ποδος, *the foot*, has been applied as a name to ſeveral plants, whoſe thick and ſoft hairineſs, enveloping their flowers or ſtalks, as the claws of a lion are enveloped, ſeems to have given riſe to the idea. Among theſe are *Myoſotis ſcorpioides*; ſeveral ſpecies of *Gnaphalium*, eſpecially the elegant *Filago Leontopodium* of Linnæus, now reſtored by Willdenow, very juſtly, to *Gnaphalium*, where Linnæus at firſt placed it; *Alchemilla vulgaris*, called *Leontopodium* by Brunſelſius, v. 2. 53; and *Plantago cretica*, the *Leontopodium* of Cluſius. What Dioſcorides, the father of the name, intended by his Λεοντοποδιον, is very difficult to be gueſſed. Dr. Sibthorp thought it might be *Micropus erectus*, which is very common in Cyprus and ſeveral of the Greek iſlands; but it hardly anſwers to the deſcription.

LEONTOPOLIS, or Leonton, in *Ancient Geography*, a town of Egypt, and capital of a nome, which took the name of "Leontopolites nomos." Ptolemy.

LEONURUS, from λεων, *a lion*, and ȣρα, *a tail;* a name given by Tournefort to ſome Linnæan ſpecies of *Phlomis*, (ſee Leonotis,) but applied by Linnæus to the *Cardiaca* of Tournefort, for which it is now retained. Motherwort.—Linn. Gen. 295. Schreb. 391. Willd. Sp. Pl. v. 3. 114. Mart. Mill. Dict. v 3. Ait. Hort. Kew. ed. 2. v. 3. 405. Sm. Fl. Brit. 637. Brown. Prod. Nov. Holl. v. 1. 504. Juſſ. 114. Lamarck. Illuſtr. t. 509. (Cardiaca; Tourn. t. 87.)—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior. of one leaf, tubular, with five angles, and five awl-ſhaped, ſpinous teeth, permanent. *Cor.* of one petal, ringent; tube narrow; limb gaping; throat long; upper lip longeſt, ſemicylindrical, concave, gibbous, ſhaggy, rounded and obtuſe at the top, undivided; lower reflexed, in three deep ſegments, not quite equal. *Stam.* Filaments four, concealed under the upper lip, two of them ſhorter than the others; anthers oblong, incumbent, their lobes parallel, and near to each other, beſprinkled with minute, globular, ſhining, elevated granulations. *Piſt.* Germen ſuperior, four-cleft; ſtyle thread-ſhaped, the length and ſituation of the ſtamens; ſtigma in two equal acute ſegments *Peric.* none, the permanent calyx containing the ſeeds in its cavity. *Seeds* four, oblong, convex on one ſide, angular at the other.

Eſſ. Ch. Calyx with five teeth, pentagonal. Upper lip of the corolla concave, hairy, undivided; lower in three deep, rather unequal, ſegments. Anthers with parallel lobes. Stigma equally divided.

1. L. *criſpus.* Cut-leaved Motherwort. Murray in Linn. Syſt. Veg. ed. 14. 538 Nov. Comm. Goett. v. 8. 44. t. 4—Leaves with three or five lobes, deeply toothed, rugged and wavy. Corolla longer than the calyx.—Native of Siberia. Said to have been cultivated in the Oxford garden in 1658. It has all the appearance of being a luxuriant or monſtrous variety of the following.

2. L. *Cardiaca.* Common Motherwort. Linn. Sp. Pl 817. Engl. Bot. t. 286. Fl. Dan. t. 727. (Cardiaca; Ger em. 705. Camer. Epit. 864. Rivin. Monop. Irr. t. 20. f 1.)—Upper leaves lanceolate; three-lobed or undivided. Corolla longer than the calyx; the middle lobe of its under lip acute—Native of waſte ground in the more northern parts of Europe, not frequent in England. It loves a gravelly or calcareous ſoil, and is perennial, flowering in July and Auguſt. The *herb* is bitter, with a pungent unpleaſant ſmell. *Stem* a yard high, purpliſh, ſquare, regularly beſet with numerous, oppoſite, ſtalked, roughiſh, dark-green *leaves;* of which the lower are broadeſt, three-lobed, and more or leſs deeply cut; the upper gradually narrower and leſs divided, till they become lanceolate, acute, and quite entire. *Flowers* numerous, in denſe whorls. *Bracteas* awl-ſhaped, pungent. *Calyx-teeth* ſpreading, rigid, nearly equal, broad at the baſe. *Corolla* purple, variegated; its upper lip elegantly villous with white hairs. The *anthers* are marked with ſhining points, but that is not peculiar to the genus.

3. L. *Marrubiaſtrum.* Small-flowered Motherwort. Linn. Sp. Pl 817. Ehrh Pl. Exſicc. n. 157. Jacq. Auſtr. t. 405.—Leaves ovato-lanceolate, ſtrongly ſerrated. Corolla ſcarcely longer than the calyx; the middle lobe of its under lip rounded, obtuſe—Native of Bohemia, Germany, Tartary and Siberia. The *leaves* vary in breadth, and are either ſtrongly ſerrated or entire, but never cut or jagged like the preceding. The *calyx-teeth* alſo are narrower and longer; and the *corolla* totally different, ſcarcely exceeding the length of the calyx, but ſlightly downy, and the middle lobe of its under lip almoſt heart-ſhaped, or at leaſt dilated and very blunt. The *root* moreover is ſaid to be only annual, or biennial. The plant has little to excite notice, and is only kept in curious gardens.

4. L. *ſupinus.* Decumbent Motherwort. Willd. n. 5.—"Leaves moſtly five-lobed; the lobes obtuſe, toothed at the ſummit. Calyx ſeſſile. Stems aſcending."—Native of Siberia, communicated to profeſſor Willdenow by his friend Stephan. "*Root* perennial. *Stems* ſeveral, half a foot high, aſcending, branched, ſquare, downy. *Leaves* oppoſite, half an inch long, with three or five lobes, which are oblong, ſomewhat wedge-ſhaped and obtuſe, furniſhed at the extremity with three or five obtuſe teeth; downy on both ſides, eſpecially the under. *Footſtalks* the length of the leaves. *Whorls* of four to ſix flowers, ſeſſile. *Bracteas* briſtle-ſhaped, pointed, downy, ſhorter than the calyx. *Calyx* downy, its ſegments ovate, ſpinous. *Corolla* white, rather longer than the calyx, its lip three-lobed, obtuſe." Such is Willdenow's deſcription. made from the dried plant, which in almoſt every minute particular accords ſo well with our *Lamium palmatum*, (ſee Lamium,) that we ſhould conclude them to be the ſame, were it not for the *bracteas*, of which our plant is certainly deſtitute.

5. L. *tataricus.* Tartarian Motherwort. Linn. Sp. Pl. 818. (Cardiaca foliis tenuiùs et profundiùs inciſis glabra; Mill Ic. v. 1. 53. t. 80.)—Leaves in three deep diviſions; their lobes jagged. Upper lip of the corolla flattened, upright, reflexed.—Native of Tartary. It differs from the following merely in the *flower* being ſmaller, with a more rounded upper lip, whoſe extremity is reflexed. Gmelin, who gathered both, thought them varieties, and we find no difference to be depended on.

6. L. *ſibiricus.* Siberian Motherwort. Linn. Sp. Pl. 818. Sm. Exot. Bot. t. 94. (Ballote inodora, foliis coronopi; Amm. Ruth. 48. t. 8.)—Leaves in three deep diviſions; their lobes jagged, bluntiſh. Upper lip of the corolla ſtraight.—Native of Siberia, China, and the Eaſt Indies, a hardy annual in our gardens. *Stem* two or three feet high, branched. *Leaves* deeply cut in a three-fold manner, into various deep diviſions, moſtly narrow and bluntiſh, more or leſs downy. *Flowers* crimſon, in denſe *whorls*, with awl-ſhaped *bracteas*. *Calyx* ſilky. *Corolla* twice as long as the calyx; its upper lip concave, but ſtraight; lower in three lobes, the middle one dilated, heart-ſhaped. Mr. Sowerby found a double row of crimſon glands in the mouth of the tube. The *calyx* is often ſpinous, but not always ſo.

For the *L. Galeobdolon* of Willdenow; ſee Galeobdolon.

LEOPARD, in *Zoology*, the Engliſh name of the long-tailed *felis*, or Felis *pardus* of Linnæus; which ſee.

Leopard's *Bane*, in *Botany*. See Doronicum.

LEOPOLD I., in *Biography*, emperor of Germany, ſon of Ferdinand III. was born in 1640. He was elected king of Bohemia in 1654, and of Hungary in 1655, and he ſucceeded to the imperial crown in July 1658. His reign was fruitful of important events. A war with the Turks, which broke out in 1661, was brought to a concluſion in 1664, in conſequence of a victory obtained over the grand viſier, at St. Gothard, in Hungary. This was ſucceeded by a revolt of the Hungarians, excited by thoſe infringements of their privileges which have been continually renewed under the princes of the houſe of Auſtria. The execution of the leaders in 1671, for a time, quelled the diſorders, without removing the cauſes of diſcontent. In 1672 Leopold joined in a league with other powers to protect the Dutch againſt Lewis XIV.; at this criſis the Hungarian malecontents took the opportunity of ſhaking off the Auſtrian yoke and aſſerting their original independence. Headed by count Tekeli, and ſupported by the Turks, they again roſe in arms, and obtained various ſucceſſes againſt the Imperialiſts. In 1682 a new war broke out between the empire and France; and about the ſame time the breach of a truce by the Hungarian revolters, and the irruption of a vaſt Turkiſh army, reduced Leopold to the greateſt danger. His general, the duke of Lorraine, was obliged to retire under the walls of Vienna, and the grand vizier laid ſiege to that capital, while the emperor with his court withdrew to Lintz. A ſeries of ſucceſſes afterwards attended the imperial arms in Hungary, and all that had been loſt was gradually recovered. The rebels were tried, the nobleſt blood was ſhed without mercy or remorſe, and the Hungarians were ſo far humiliated, that an aſſembly of the ſtates, in 1687, declared the kingdom hereditary in the houſe of Auſtria, and elected for their king the archduke Joſeph, then only nine years of age. Three years afterwards, Leopold procured the election of his ſon Joſeph to the ſucceſſion of the empire, as king of the Romans. The war with France was carried on with various ſucceſs, till the general peace, concluded at Ryſwick, in 1697. In 1699 a long truce was agreed on between the German and Turkiſh empires, on terms favourable to Leopold, whoſe arms had obtained great glory under the illuſtrious prince Eugene. The war, on account of the Spaniſh ſucceſſion, plunged Europe again in blood. Leopold gained over the elector of Brandenburgh to the party of the allies, by conſenting to recognize him as king of Pruſſia. The events of the war were at firſt unfavourable to the emperor, but the deciſive battle of Blenheim or Hochſtet, in 1704, changed the face of affairs. Leopold did not long enjoy the brighter proſpect which was opening upon him: he died in the following May, at the age of ſixty-five, after a reign of forty-ſix years, leaving the power of his houſe much augmented in his hands. "His original education," ſays the hiſtorian, "which was that of an eccleſiaſtic, had coincided with his natural diſpoſition, in producing a cold formality of character; and the narrowneſs of his ideas threw him into the power of favourites, whom his jealouſy of authority led him frequently to change. The great objects of his policy were, however, purſued with a ſteadineſs which enſured their final ſucceſs." Modern Univer. Hiſt.

Leopold II., emperor of Germany, born in 1747, ſon of the emperor Francis I. and the empreſs-queen Maria Thereſa, was created grand duke of Tuſcany about the year 1765, and during a reign of twenty-five years, diſplayed a conſtant regard and attention to the happineſs and proſperity of his people. He carried into effect a number of improvements relative to all the branches of adminiſtration, which rendered that portion of Italy peculiarly flouriſhing. He diminiſhed the taxes, and yet augmented the revenue; introduced an exact police; encouraged the arts, manufactures, and agriculture; freed induſtry from the fetters of numerous feſtivals, meliorated the condition of the public hoſpitals and priſons, and promulgated an entire new code of laws, characterized as well by their humanity as their ſimplicity. In the preface to this code he ſays, "We have conſidered the examination and reform of the criminal laws as one of our principal duties;" and after much experience he ſays with true patriotic exultation; "With the utmoſt ſatisfaction to our paternal feelings we have at length perceived, that the mitigation of puniſhments, joined to a moſt ſcrupulous attention to prevent crimes, and alſo a great diſpatch in the trials, together with the ſuddenneſs of puniſhment to real delinquents, has, inſtead of increaſing the number of crimes, conſiderably diminiſhed that of the ſmaller ones, and rendered thoſe of an atrocious nature very rare;" ſo rare, indeed, that during ten years not a ſingle execution took place in his dominions. Leopold protected the lower ranks from the oppreſſion of the higher, and his palace was ever acceſſible to the meaneſt ſupplicant. Though the father of his people, he was alſo their maſter, and would admit of no oppoſition to his will; though ſincerely deſirous of doing good, he was cold and ſaturnine. In 1790 the imperial crown, and the ſucceſſion to the Auſtrian dominions, devolved to him on the death of his brother Joſeph. The reſult of that unfortunate prince's ſchemes had been an abſolute revolt of the Low Countries, the diſaffection of Hungary, and the jealouſy of all the ſurrounding ſtates. Leopold, by employing the arts of conciliation, in conjunction with firmneſs and prudence, was able in a ſhort time to recover the Low Countries, to quell the oppoſition of the Hungarian malecontents, to ſtrengthen his houſe by ſplendid alliances, and to eſtabliſh peace with the Ottoman Porte He reſtored a good underſtanding between the courts of Vienna and Berlin, and concurred with England in checking the ambitious projects of Ruſſia. Soon after the commencement of the French revolution, Leopold formed, at the congreſs of Pilnitz, a coalition with Pruſſia, for the avowed purpoſe of giving a government to France, and the ſubſequent invaſion of that country by the united forces of the two powers is to be regarded as a conſequence of this alliance. Leopold did not live long enough to witneſs the commencement of hoſtilities: He died in the month of March 1792, at the age of forty-four, leaving behind him a numerous progeny, of whom his eldeſt ſon Francis II. ſucceeded to the vacant throne. Univer. Hiſt. New Ann. Regiſt. Edict of the grand duke of Tuſcany, printed by the celebrated Mr. John Howard.

Leopold was paſſionately fond of Italian poetry and muſic, and is ſaid by Quadrio (Storia d'Ogni Poeſia, vol. i.) not only to have been the conſtant patron of both, but to have compoſed maſſes and motets for his own chapel, and to have written, and ſet to muſic, himſelf, many beautiful canzonets and madrigals. This prince, early in his reign, retained in his ſervice the Italian lyric poet Minato, and Antonio Draghi, to write and ſet operas for the imperial court at Vienna.

LEOPOLDSTADT, in *Geography*, one of the ſuburbs of Vienna, large and populous; ſituated on the N. ſide of the Danube, and communicating with the city by a bridge. —Alſo, a fortified town of Hungary, on the river Waag; 56 miles E. of Vienna. N. lat. 48° 28′. E. long. 17° 54′.

LEOSTENIUS Sinus, in *Ancient Geography*, a gulf of Thrace, upon the Thracian Boſphorus, towards the northern part of the Hermæan promontory.

LEOTAUD, Vincent, in *Biography*, a French jeſuit, and able mathematician, was born at Laval-Louyſe, in the dioceſe of Embrun, and died in the year 1672. He publiſhed a work on the quadrature of the circle; "Arithmetical Inſtitutions, in four books;" a treatiſe "On Cyclometry;" a work "On Magnetology," and a work "On the Primum Mobile."

LEOTIA, in *Botany*, perhaps ſo called from λεως, or λαος, *the people, or vulgar*; yet it does not appear to be either a common genus of fungi, nor vulgarly uſed as food, like many others. Its aſpect indeed is ordinary enough, being that of a ſmall Agaric without gills. Perſoon. Syn. Fung. 611. Obſ. Mycolog. v. 2. 21. t. 5. f. 1. t. 6. f 1, 2.—Claſs and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi.*

Eſſ. Ch. Head roundiſh, reflexed at the margin and cloſely embracing the ſtalk, bearing ſeeds in its expoſed ſurface.

The ſpecies enumerated by Perſoon are nine, four of which have a ſmooth conical or ovate head, three an orbicular one, and the other two are eſteemed doubtful.

Among the firſt is *L. Mitrula*, the *Elvela cucullata* of Batſch, f. 132, and probably *Clavaria ferruginea* of Sowerby's Fungi, t. 84; found in autumn growing copiouſly on decayed leaves of Scotch fir. The *ſtalk* is near an inch high. *Head* conical or ovate, of a pale cinnamon colour; white and ſpongy within.

In the ſecond ſection is *L. lubrica*, (Helvella gelatinoſa; Bulliard 296. t. 473. f. 2.); not unfrequent, after much rain, in beech woods. It is of a light greeniſh buff colour, and tender ſubſtance. *Stalk* two or three inches high, hollow, tumid in the lower part; and the cavity is continued into the *head*, which is rounded, depreſſed, undulated, and obſcurely lobed, about an inch in diameter, compoſed as it were of two coats, with a hollow ſpace between.

Helvella Relhani, Sowerby t. 11, is one of the doubtful ſpecies.

LEOVILLE, in *Geography*, a town of France, in the department of the Lower Charente; eight miles N. of Montlieu.

LEOWITZ, Cyprian, in *Biography*, a celebrated aſtronomer in the ſixteenth century, was born in Bohemia, and was appointed mathematician to Otho Henry, elector palatine. He acquired a high reputation by his aſtronomical productions, of which the principal were "Ephemerides ab anno 1556, ad Ann. 1606;" "Expedita Ratio conſtituendi Thematis cœleſtis;" "Loca ſtellarum fixarum ab anno Dom. 1549, uſque in Ann. 2029;" and "De Eclipſibus Liber." His celebrity occaſioned Tycho Brahe to pay him a viſit in the year 1569, when they had ſeveral converſations on their favourite ſubjects. Notwithſtanding the great learning of Leowitz, he was weak enough to become the dupe of judicial aſtrology. He died in Swabia in 1574. He had predicted that the world would come to an end in 1584, and of this prophecy many prieſts and preachers took advantage as the important period approached, and enriched themſelves at the expence of the fears of their people. Bayle. Moreri.

LEPA, in our *Old Writers*, a meaſure which contained the third part of two buſhels. Whence we derive a *ſeed leap*.

LEPANTO, in *Geography*, a ſea-port town of European Turkey, in the province of Livadia, ſituated in a bay formerly called the "gulf of Corinth," now the "gulf of Lepanto." This town is fortified and defended by a caſtle on an eminence. N. lat. 38° 37′. E. long. 22° 0′.

LEPAS, in *Conchology*, a genus of the multivalve order, the animal of which, according to the Linnæan ſyſtem, is a triton, the ſhell affixed at the baſe, and conſiſting of many unequal erect valves. This genus, as defined by Linnæus and Gmelin, comprehends two very diſtinct genera, the union of which, under one title, is liable to much objection; though, for the ſake of uniformity, we are not inclined in this article to ſeparate them. One of theſe natural tribes, for example, has the ſhell of a conic form more or leſs tubular, the baſe firmly affixed upon rocks or other extraneous ſubſtances, without any tendinous tube; the ſhell is compoſed of ſix valves; and the truncated opening above is cloſed by a four-valved operculum. In the other genus the ſhell, inſtead of being conic, is broad, flattiſh and wedge-formed, and in many ſpecies reſembling, in ſome degree, the ſpear or head of an arrow; it is beſides compoſed, in general, of a much greater number of plates or valves, the aperture of which is lateral inſtead of being at the ſummit, and has no operculum; and laſtly, the ſhell is not affixed by its teſtaceous baſe, but is placed at the extremity of a tendinous tube, the baſe of which unites it to the rocks or other ſubſtances to which, for convenience and ſecurity, the animal connects itſelf. The very obvious diſſimilarity that prevails between theſe two genera attracted the particular attention of early writers, even before the time of our own countrymen Liſter and Petiver, the term Balanus being adopted for the former, and Concha anatifera for the latter, and by theſe names the two tribes of ſhells are recognized in the writings of Geſner, Aldrovandus, and others. Linnæus, notwithſtanding theſe authorities, however, conſolidated them together. Da Coſta was the firſt among the Engliſh authors who again ſeparated them; he aſſigned to the firſt the original name of balanus, or acorn ſhell, at the ſame time that he retained the former under the name of lepas, or in Engliſh bernacle, a term preferable, no doubt, to that of Concha anatifera, which applied to a ſingle ſpecies rather than the whole genus. The obſervations of Da Coſta, as they militate in various reſpects againſt the conchological writings of Linnæus, have never perhaps been regarded in this country with ſufficient attention, nor with ordinary liberality; he is not, we admit, on every occaſion lucid, neither as a ſyſtematiſt does he deſerve mention; yet, upon the whole, his remarks are often judicious, and almoſt conſtantly correct, and his ſtrictures on the genus lepas, as propoſed by Linnæus, are in particular ſatisfactory: he has reſtored both genera to their proper ſtation. Among the collectors of ſhells in Britain, from the time of Da Coſta to the preſent, the names of balanus and lepas have been almoſt conſtantly adopted, but the ſeparation of them is aſcribed to Dr. Solander, and the diſcrimination of earlier writers ceaſes to be remembered. In England, as before obſerved, the Linnæan term of lepas has been retained for one of the two genera; the continental writers, on the contrary, though they adopt this genus in the ſame form, reject the word lepas, and ſubſtitute that of anatifa in its place; the French call it anatife, and under the latter term it is diſtinguiſhed by their beſt writers. Having pointed out the leading character of the two genera into which the lepas of Linnæus and Gmelin is divided, it only remains to enumerate the ſpecies deſcribed by thoſe and ſucceeding writers to the preſent time.

Species.

BALANUS. Shell conic, grooved; operculum, or lid acuminated. Linn. Fn. Suec. O. Fabr. *Balanus majuſculus valvis porcatis* (*porcatus*), Da Coſta. *Ridged acorn ſhell*, Donov. Brit. Shells.

Frequent on the Britiſh and other European ſhores, adhering in vaſt numbers to rocks, ſhells and ſtones; the colour generally whitiſh or greyiſh, and the form rather variable.

BALANOIDES. Shell conic, truncated, and ſmooth; operculum obtuſe. Linn. *Balanus parvus vulgaris*, Petiv. *Balanus cinereus*, &c. Liſt. *Common acorn ſhell*, Donov. Brit. Shells.

Found, like the former, in great abundance on the ſhores of Europe, and alſo thoſe of the American and Indian ſeas. When affixed on an uneven ſurface, the baſe of this ſhell ſometimes extends down into a pretty long rugged tubular ſtalk or root. This variety is noted by Pennant, and an extraordinary, but mutilated ſpecimen, is ſhewn in one of the plates of Brit. Zool. Another occurs in Brit. Shells. Donov. The colour is commonly greyiſh; the tips of the valves, as in the laſt-mentioned variety, greeniſh.

INTERTEXTA. Somewhat depreſſed; and ribbed obliquely. Donov. Brit. Shells. *Lepas ſtriata*, Penn.

"This rare ſpecies is the lepas intertexta of the Portland muſeum, and was fiſhed up at Weymouth, adhering to a valve of the oſtrea ſubrufus, &c." Brit. Shells.

COSTATA. Somewhat conic and ſulcated, the ridges equidiſtant and divergent from the aperture; operculum ſharp-pointed. Donov. Brit. Shells.

A new ſpecies found adhering to pieces of broken rocks on the coaſt of Pembrokeſhire.

Conoides. Shell conic, ſmooth, valves pointed at the tip, aperture very ſmall. Donov. Brit. Shells.

A new ſpecies deſcribed as above, the ſpecimen was found by Mr. Bryer, of Weymouth, affixed to a ſhell of the lepas anatifera.

Tintinnabulum. Shell conic, or bell-ſhaped, obtuſe, rugoſe, and fixed. *Lepas tintinnabulum*, Linn. *Balanus major*, Liſter. *Balanus major, the conic centre ſhell*, Grew. *Balanus maximus*, Petiver. *Balanus ore hiante magnus*, Borlaſe. *Gland de mer clochette*, Davila. *B. tintinnabulum, bell acorn ſhell*, Donov. Brit. Shells.

Found adhering in large cluſters to the bottoms of ſhips in moſt ſeas. A ſuppoſed variety of a dirty whitiſh colour is mentioned by Chemnitz as a northern kind.

Tulipa. Shell ſubcubic, and ſmooth; operculum acute and tranſverſely ſtriated. Müll. Zool. Dan.

Inhabits the North ſeas.

Borealis. Shell erect, ſubconic, aperture quadrangular, operculum acute and tranſverſely ſtriated. Donov. Brit. Shells.

A new ſpecies, recorded as above ſtated. "A few ſmall cluſters, with ſome detached ſpecimens of this curious ſpecies of balanus, were diſcovered about the year 1800, attached to the bottom of the Warſpight ſhip of war, when taken into dock to be repaired, after lying in the harbour of Portſmouth for a great length of time. Mr. J. Hay of Portſmouth ſoon after found two or three ſhells of the ſame kind, by dredging in Portſmouth harbour. The ſpecies appears to be very rare; we have one ſpecimen attached to the valve of an oſtrea rufus brought from Newfoundland." Vide Brit. Shells.

Diadema. Shell ſubrotund, ſix-lobed and furrowed. Gmel. *Balanus polythalamius*, Walch. *Diadem acorn ſhell*, Donov. Brit. Shells.

A curious and rare ſpecies, about the ſize of a walnut, or ſometimes larger; colour whitiſh. Inhabits the European and Indian ſeas.

Balænaris. Shell ſomewhat conic; lobes ſix elevated wrinkled and four-parted; the operculum membranaceous and bidentated. Müll. Chemnitz, &c. *Whale acorn ſhell*, Donov.

Found adhering to the fins and pectoral wrinkles of the whale (Balæna boops); its ſize reſembles the laſt, but its form is very much depreſſed, colour the ſame as in B. diadema, as are alſo the furrows of the lobes. This is erroneouſly deſcribed by ſome authors as the B. diadema of Da Coſta; we poſſeſs the example deſcribed by Da Coſta under this name, and can in confidence affirm it to be the former ſpecies. See Brit. Shells.

Palmipes. Shell erect, conic; operculum acute and tranſverſely ſtriated. Olaff.

Size of a pea, and ſmooth. Inhabits the ocean.

Galeata. Shell helmet-form, with a lateral aperture. Schroet.

Diſcovered adhering to the gorgonia verrucoſa, and ventilabrum; ſhell boat-ſhaped and ſmooth; aperture rhombic.

Mitella. Shell compreſſed, erect, and irregularly ſtriated. Linn. *Balanus Rondeletii*, Geſn. *Balanus chinenſis ſtriatus*, Petiv.

Native of the Indian ſeas.

Testudinaria. Shell plano-convex; rays ſix excavated and ſtriated. Linn.

Inhabits the depths of the ocean, and is uſually found adhering to other ſhells; the form reſembles a globe cut off in the middle.

Scalpellum. Shell compreſſed, thirteen-valved, rather ſmooth, and ſeated on a ſcaly peduncle. Linn. Ellis. *Scaly lepas*, Donov. Brit. Shells.

A moſt curious and very elegant ſpecies, reſembling in ſome meaſure the following kind, but rather ſmaller. Gmelin deſcribes it as a native of the Norway ſeas, on the authority of a ſpecimen met with by Dr. Pontoppidan, the biſhop of North Bergen, and which is deſcribed by Mr. J. Ellis in the Philoſophical Tranſactions, A.D. 1758. He found it ſticking on the Norway ſea-fan, and, from the peculiarity of its ſtructure, was induced to call it the Norway ſea-fan penknife. "This very rare ſhell is introduced into the Britiſh Fauna, on the authority of an example found attached to ſome ſea-weeds, dredged up on the coaſt of Weymouth, which, after paſſing through the collections of the late ducheſs of Portland and Dr. Fordyce, is at preſent in our poſſeſſion." Vide Brit. Shells.

Anatifera. Shell compreſſed, five-valved, ſmooth, and ſeated on a pedicle. Linn. *Concha anatifera*, Merret. *Balanus compreſſus, flat centre ſhell*, Grew. *Barnacle*, Gerard. *Lepas anatifera, anatiferous acorn ſhell*, Donov. Brit. Shells.

Found in moſt ſeas, and is uſually found affixed in cluſters to the bottoms of ſhips, and pieces of decayed timbers floating in the water. The colour whitiſh, with a fine poliſh beneath the thin epidermis, and tinged with reddiſh or blueiſh-violet; the ſtems of the fineſt red.

The tentacula of theſe animals are long and pectinated like a feather, for which they were in fact miſtaken in the ſixteenth century; and hence aroſe the whimſical belief that the barnacle ſhell was the *parent* of the barnacle gooſe! Nor was this the vulgar opinion only: it was ſanctioned by the grave details of learned naturaliſts of that time, and particularly by Gerard, whoſe obſervations are generally noticed by authors, in deſcribing this ſingular marine production. See Barnacle *Gooſe*. See alſo Gerard's Herbal, p. 1587.

There are ſeveral ſuppoſed varieties of lepas anatifera, in one of which the peduncle is black.

Anserifera. Shell compreſſed, five-valved, ſtriated, and ſeated on a peduncle. Gmel. Donov. Brit. Shells.

"A native of the American and Atlantic ſeas, and is chiefly diſtinguiſhed from lepas anatifera by having the valves ſtriated with elevated lines; the valves in the former being perfectly ſmooth. Lepas anſerifera has been heretofore conſidered as a native of the American and Atlantic ſeas; but that it inhabits likewiſe the Engliſh coaſt is certain, the ſhell with the living animal having been dredged up at Weymouth." Brit. Shells.

Dilata. Shell compreſſed, five-valved, and thin; dorſal valve dilated at the baſe with an acute angle, and ſeated on a peduncle. Donov. Brit. Shells. *Lepas faſcicularis*, Ellis Zoophytes. *Lepas ſigillatum*, Muſ. Portl.?

The firſt and only account we have of this kind of lepas, except that inſerted in "Britiſh Shells," is that given by the late Mr. Ellis, from whom we merely learn that it is from St. George's Channel. The ſpecimen appears to have been ſent by Mr. Ellis to the late ducheſs of Portland, from whence it paſſed through the hands of the late Dr. Fordyce, and at his death came into our poſſeſſion, under the title of lepas ſigillatum of Solander. Unlike lepas anatifera, or anſerifera, (though it is larger than either,) the valves of this ſhell are uncommonly thin and brittle, in a certain degree corneous, with the largeſt lateral valve rather crumpled in the uſual courſe of the ſtriæ, and marked tranſverſely with obſolete rays. The ſhell is likewiſe covered with a fine pale brown ſkin, or epidermis. The acute prominent dilation at the baſe of the valve on the back is very ſingular. We muſt be excuſed for having expatiated with more than uſual minuteneſs on local particulars, in deſcribing the laſt-mentioned ſpecies; as it is principally, and in ſome inſtances entirely, on the authority of the individual examples mentioned, that the ſpecies are recorded, and their exiſtence aſcertained.

Aurita. Shell membranaceous, ventricoſe, ſeated on a tube, eared; mouth eight-valved, and dentated. Seba, &c. *Lepas nuda comoſa aurita*, Ellis.

Inhabits the North ſeas. Tube long.

Psittacus. Shell falcated behind, ſix-valved, and wrinkled. Molina.

Native of Chili. Length an inch; the larger valves reſembling the bill of a parrot.

Minor. Shell reddiſh, ſix-valved, unequal; operculum pointed. Chemn.

An Indian ſpecies. Shell marked with tranſverſe curved lines, dotted with white.

Verruca. Shell hemiſpherical, ſerrated, ſix-valved; the four outer valves and the operculum plaited. Spengler.

Native of the North ſeas.

Angustata. Shell elongated, ſmooth, ſix-valved; the aperture narrow; operculum very minute. Chemn.

Country unknown.

Porosa. Shell granulated, ſtriated, conic, and tubular; the operculum obtuſe. Schroet.

Inhabits India. When living, the ſhell is green, becoming black after death. A ſuppoſed variety of a larger ſize, and broader in proportion, is deſcribed by Klein under the name of balanus major latus.

Elongata. Shell cylindrical, ſnowy, pellucid, ſix-valved, and cleft above; lid obtuſe, grooved, and tranſverſely ſtriated. Chemn.

A ſmall and very rare ſpecies, found in the Iceland ſeas.

Patellaris. Shell ſix-valved; externally violet variegated with white, and marked with fine longitudinal ſtriæ; within falcated; valves denticulated at the margin. Spengler.

Native of Coromandel. A rare ſpecies; teeth of the valves inſerted in each other alternately.

Spinosa. Shell conic, with twelve triangular valves, ſix of them more depreſſed, leſs, and whitiſh, with tranſverſe ſtriæ; ſix purple, and longitudinally ſtriated, and all armed with tubular recurved ſpines. Gmel.

Inhabits India.

Violacea. Shell thick, glabrous, ſix-valved, and white, with rays of violet. Chemn.

Native of India. The ſhell ſlightly grooved within.

Pollicipes. Shell compreſſed, erect, many-valved, ſmooth, and ſeated on a ſhort, hard, ſcaly, coriaceous peduncle. Gmel.

Found in the Mediterranean. The four larger valves turned towards each other like the beak of a bird; leſſer ones more than twenty.

Cylindrica. Cylindrical, ſlightly curved, with a very large oblique orifice; operculum horned. Gmel. *Balanus maxillaris*, Gronov. *Lepas ſeſſilis capenſis*, *&c.*, Ellis.

Native of Africa under the torrid zone.

Crispata. Shell oval-truncated and conic, with ſix blueiſh valves ſhaded with white, and ſix elevated reddiſh ones ſpinous and perpendicularly ſtriated. Schroet.

Country unknown.

Cariosa. Shell ſolid, white, depreſſed with carious grooves; within unequally ſmooth. Pallas.

Native of the ſeas about the Kurile iſles.

Stræmia. Conic-convex, with four ſerrated ſtriated valves; operculum two-valved. Müll.

Inhabits the Daniſh ſea.

LEPASTRUM, derived from the Greek λεπις, *a ſcale* or *plate*, and αςηρ, *a ſtar*, in *Natural Hiſtory*, the name of a genus of foſſils, of the claſs of the ſelenitæ, compoſed of filaments arranged into broad plates, and thoſe diſpoſed in the form of a radiated ſtar.

Of this genus there are two known ſpecies: the one a bright browniſh-white kind, with thinner flakes; the other a white dull-looking kind, with thick flakes. They are both found on the ſhores of Sheppey Iſland in Kent, and form themſelves in the cavities of the ſeptariæ, called by authors ludus Helmontii; and the ſeptariæ, with theſe affixed to them, have been accounted a ſeparate ſpecies of that body, and called the *ſtarred waxed vein*, or ludus Helmontii ſtellatus.

LEPE, in *Geography*, a town of Spain, in the province of Seville, celebrated for its grapes, figs, and wine; 10 miles E. of Ayamonte.

LEPECHINIA, in *Botany*, was named by Profeſſor Willdenow, in his *Hortus Berolinenſis*, as a tribute of reſpect to the labours of John Lepechin, Fellow of the Academy of Sciences at St. Peterſburg, who publiſhed various tracts upon natural hiſtory in the Tranſactions of that Society. Many of theſe were botanical monographs; ſuch as, 1. A deſcription of *Iris Güldenſtædtiana*. 2. *Nova ſpecies Menthæ deſcripta*. 3. *Quatuor Fucorum ſpecies deſcriptæ*. 4. Reflections on the neceſſity of ſtudying the virtues of indigenous plants. He appears to have been an able chemiſt as well as naturaliſt, and to have travelled through various provinces of the Ruſſian empire in the years 1768 and 1769. We are unable to diſcover either the time of his birth or of his death, though from the date of his Travels he muſt have lived about the middle of the laſt century. Willd. Hort. Berol. 21. Ait. Hort. Kew. ed. 2. v. 3. 390.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ.

Eſſ. Ch. Calyx two-lipped. Upper lip of the corolla cloven, lower one deeply divided into three nearly equal ſegments. Stamens ſpreading.

1. L. *ſpicata*. Ait. Hort. Kew. ed. 2. v. 3. 390.—“Spikes of flowers on bracteated footſtalks. Leaves ovate, crenate, truncated at the baſe.”—The native country of this hardy, perennial plant is unknown. The ſpecies in queſtion was introduced into the Royal Gardens at Kew in the year 1800, by Mr. John Hunneman, who received it from his friend Willdenow in Germany. By the above ſpecific character we preſume there are other ſpecies.

LEPEIGA, in *Geography*, a town of Hindooſtan, in the circar of Gangpour; 30 miles S.S.W. of Gangpour.

LEPEL, a town of Ruſſian Lithuania; 55 miles S.E. of Polotſk.

LEPERS. See Elephantiasis and Leprosy.

Lepers, *Iſle of*, in *Geography*, one of the New Hebrides, ſituated between Eſpirito Santo and Aurora iſland, eight leagues from the former, and three from the latter, in S. lat. 15 22′, and nearly under the ſame meridian as the ſouth-eaſt end of Mallicolio. It is of an egg-like figure, very high, and 18 or 20 leagues in circuit. In the north-eaſt part there is anchorage half a mile from the land. It derived its name from Bougainville, who viſited it in 1768, and found the inhabitants in general devoured with the leproſy. He deſcribes the inhabitants as being of two colours, black and mulatto. Their lips are thick, their hair frizzled, and that of ſome is a kind of yellow wool: they are ſmall, ugly, and ill made. Few women were ſeen, but they were no leſs diſguſting than the men. They were naked, hardly covering their waiſts with a mat. They carry their children on their backs in a kind of ſcarf; they wear ornaments in their noſtrils; and have no beads.

LEPIDIUM, in *Botany*, is the Λεπιδιον of Theophraſtus and other ancient writers, and is ſaid by Profeſſor Martyn to be derived from λεπις, *a ſcale,* no doubt from the ſcaly appearance of its pods after their ſeed is diſcharged, but that is ſo uſual a circumſtance with plants of this tribe, that we are rather inclined with Ambroſinus to conſider the word *Lepidium* as derived from λεπίζειν, *to be hot*, or *pungent*, becauſe other plants which have agreed with this genus in its quality of pungency, but in no other way whatever, have been diſtinguiſhed by the ſame appellation, and hence its Engliſh name, Pepper-wort. Linn. Gen. 333. Schreb. 437. Willd. Sp. Pl. v. 3. 431. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 681. Ait. Hort. Kew. v. 2. 373. Juſſ. 241. Lamarck. Illuſtr. t. 556. Gærtn. t. 141. Tournef. t. 103. (Naſturtium; Tournef. t. 102.)—Claſs and order, *Tetradynamia Siliculoſa*. Nat. Ord. *Siliquoſæ*, Linn. *Cruciferæ*, Juſſ.

Gen. Ch. *Cal.* Perianth of four, ovate, concave, deciduous leaves. *Cor.* cruciform, of four equal obovate petals, twice as long as the calyx, with narrow claws. *Stam.* Filaments moſtly ſix, awl-ſhaped, the length of the calyx, the two ſhorter ones oppoſite; anthers ſimple. *Piſt.* Germen ſuperior, cordate; ſtyle ſimple, as long as the ſtamens; ſtigma obtuſe. *Peric.* Pouch heart-ſhaped, emarginate, compreſſed, acute at the margin, two-celled; valves boat-ſhaped, keeled; partition contrary, lanceolate. *Seeds* few, ovate, pointed, narrower at the baſe, pendulous.

Eſſ. Ch. Pouch notched, elliptical, with few ſeeds; valves keeled, contrary to the partition.

Obſ. It is in ſome caſes difficult to draw the line between the pouch of this and *Thlaſpi*, even Gærtner conſiders them as of the ſame figure. He would retain in *Lepidium*, which he wiſhes to call *Naſturtium*, thoſe which have ſolitary ſeeds, referring the others to *Thlaſpi*. The regular corolla diſtinguiſhes this genus from *Iberis*, with which it is otherwiſe moſt cloſely allied. The number of ſtamens is few, in ſome ſpecies is fewer than ſix.

The ſpecies of *Lepidium*, in the fourteenth edition of Linnæus's *Syſtema Vegetabilium*, are twenty; Willdenow has twenty-nine. Of theſe *L. didymum* belongs to the genus *Coronopus*, Fl. Brit. Three of the remainder are natives of England.

L. *petræum*. Mountain Pepper-wort. Linn. Sp. Pl. 899. Engl. Bot. t. 111. Jacq. Auſtr. t. 131.—Leaves pinnated, entire. Petals not longer than the calyx, ſlightly notched.—This rare Engliſh plant is found on St. Vincent's rocks near Briſtol Hot-wells, which has been its habitat ever ſince the time of Ray. It is occaſionally found in other places that are open and expoſed, in the ſouth of England, flowering in the early ſpring. *Root* biennial, fibrous. *Stems* two or three inches high, ſpreading, leafy, ſomewhat downy. *Leaves* alternate, unequally pinnatifid, of many pairs of ſmooth oppoſite ſegments, which are elliptical or ſpatulate, entire. *Corymbs* of many ſmall, white, hexandrous flowers. *Pouch* elliptic-oblong, compreſſed, ſmooth. *Seeds* roundiſh, two in each cell.

L. *latifolium*. Broad-leaved Pepper-wort. Linn. Sp. Pl. 899. Engl. Bot. t. 182.—Leaves ovato-lanceolate, undivided, ſerrated.—This is alſo a ſcarce plant, found in moiſt ſaltiſh marſhes, and on maritime cliffs, as at Sheringham, by Cromer, in Norfolk, flowering in July.—*Root* perennial, branched, very long. *Stems* three feet high, erect, leafy, round, ſmooth, panicled, many-flowered. *Leaves* alternate, lanceolate or ſomewhat ovate, attenuated at the baſe, ſerrated more particularly in the middle. *Flowers* hexandrous, ſmall, white. *Pouch* elliptical, with a ſeſſile ſtigma. The whole plant is biting and diſagreeable. An infuſion of it is ſaid by Dr. Withering to be emetic.

L. *ruderale*. Narrow-leaved Pepper-wort. Linn. Sp. Pl. 900. Engl. Bot. t. 1595.—Flowers with two ſtamens, without petals. Lower leaves pinnatifid, toothed; upper ones linear, entire.—A native of muddy and calcareous ſoils, which it prefers to ſand, in the neighbourhood of the ſea. It keeps flowering from June to Auguſt. *Root* biennial, branched *Stem* a foot high, erect, branched, leafy, wavy, round, hoary. *Leaves* fleſhy, ſmooth. *Flowers* ſmall, apetalous, diandrous; the cluſters when in fruit becoming very long. *Pouch* elliptic or roundiſh, emarginate, ſmooth. *Seeds* generally ſolitary, pendulous, obovate. Dr. Smith mentions in his *Flora* that he never found any petals to this ſpecies, nor more than two ſtamens, though Withering deſcribes the petals as "ſometimes wanting," and that the ſtamens are either two or four.

As to the foreign ſpecies, we ſhall ſay a few words upon ſuch as are more eſpecially intereſting.

L. *perfoliatum*. Various-leaved Pepper-wort. Linn. Sp. Pl. 897. Jacq. Auſtr. t. 346.—Lower leaves much divided in a pinnate manner; upper ones heart-ſhaped, embracing the ſtem, entire.—A native of Auſtria and the Levant. It flowers in July. *Root* annual. *Stem* a foot high, ſmooth, tinged with purple, dividing into various ſlender branches, at the end of which are *corymbs* of ſmall and compreſſed flowers in long looſe ſpikes. *Calyx-leaves* yellowiſh-green. *Pouches* orbicular, ſmooth, having a ſingle, bay-coloured ſeed in each cell.

L. *veſicarium*. Bladdery Pepper-wort. Linn. Sp. Pl. 898. (L. orientale; Tourn. Cor. 15. Buxb. cent. v. 1. 17. t. 26.)—Leaves pinnate; ſegments linear. Stems inflated at their joints.—A native of Iberia, and the dry plains of Media, where, according to Buxbaum, it flowers in July and Auguſt. Dr. Smith has perhaps the only ſpecimen of this ſpecies to be ſeen in this country, which was given him by the celebrated M. Le Monnier from his garden at Verſailles in the year 1786. *Stem* two or three feet high, remarkably inflated at the joints. *Leaves* pinnate, with long, narrow leaflets. *Flowers* ſmall, white. *Pouch* very ſimilar to that of *L. ruderale.*

L. *alpinum*. Alpine Pepper-wort. Linn. Sp. Pl. 898. Jacq. Fl. Auſtr. t. 137.—Leaves pinnate, entire, ſmooth. Flower-ſtalk naked, aſcending. Petals larger than the calyx. Pouches lanceolate, pointed.—A native of the German, Swiſs, and Italian Alps, where it may be ſeen in flower from May to Auguſt. This pretty little perennial has a ſlender *root*. *Stems* very ſhort, clothed with alternate leaves. *Flower-ſtalks* an inch or two in length, bearing a corymboſe cluſter. *Leaves* thick, dark-green. *Flowers* milk-white; their petals roundiſh and entire. *Pouch* ovate or lanceolate, compreſſed, with the ſtyle at the end. The whole plant is ſmooth, and has the flavour of Creſs.

L. *ſativum*. Garden or Common Creſs. Linn. Sp. Pl. 899. (Naſturtium hortenſe; Dod. Pempt. 711.)—Flowers tetradynamous. Leaves oblong, much cut and jagged.—The habitat of this plant ſo commonly cultivated was unknown, till Dr. Sibthorp diſcovered it in Greece. *Root* annual, white, ſpindle-ſhaped. *Stem* upright, ſmooth, from one to two feet in height, branched at the top. Stems and branches terminated by a ſpike of flowers. *Lower* *leaflets* much reſembling thoſe of Parſley; upper ones linear, or lanceolate. *Flowers* ſmall, white. *Calyx* very ſmall, greeniſh. *Pouch* roundiſh; valves winged. *Seeds* brown, ſolitary, taſting like Muſtard. This is undoubtedly the Καρδαμον of Dioſcorides, and is in univerſal requeſt for ſalads in the winter and ſpring. There are two varieties frequently to be met with, one of them having broad, the other curled leaves. It is ſaid to act as a diuretic and antiſcorbutic when taken largely.

L. *oleraceum.* Notch-leaved Pepper-wort. Willd. n. 16. Forſt. Eſcul. 69. (L. bidentatum; Montin in Nov. Act. Nat. Cur. 6. 324. t. 5. a.)—Leaves elliptic-oblong, acute, ſerrated. Flowers tetrandrous.—A native of the ſandy ſhores of New Zealand. *Root* perennial. *Stem* herbaceous, from one to three feet in height. *Leaves* ſcattered, alternate; the upper ones ſmaller, ſerrated only at the tip. *Flowers* white. *Pouches* ovate, or heart-ſhaped, compreſſed, containing an ovate, acute, reddiſh-yellow *ſeed* in each cell. Forſter ſays that this plant, together with *Apium* or Smallage, and *Tetragonia halimifolia*, was of conſiderable ſervice to the ſhip's crews under Captain Cook, when they lay in Charlotte Sound.

L. *virginicum*, a native of the Caribbee Iſlands, is eaten by the natives in ſalads, like our Garden Creſs.

L. *piſcidium*, found in the South Sea iſlands, is made uſe of by the inhabitants for catching fiſh by inebriating them. It reſembles *L. oleraceum*, and is eſculent like that ſpecies.

Lepidium, in *Gardening*, compriſes a plant of the herbaceous annual kind, of which the ſpecies cultivated is the garden or common creſs (L. ſativum). But there are other ſpecies which may be cultivated for variety.

It has ſeveral varieties, as with broad leaves, with curled leaves, and the common ſort with the leaves multifid.

Method of Culture.—Theſe herbaceous plants are raiſed by ſowing the ſeed as wanted for uſe, at different times of the year, as once a week or fortnight, where a conſtant ſucceſſion of ſmall herbs in their young growth is wanted for ſalads, when only a few days or a week or two old; or, where a conſtant ſupply of thoſe ſmall herbs is required in their young ſeedling growth, ſome ſeed, as juſt noticed, ſhould be ſown in ſucceſſion every week or fortnight at furtheſt, all ſpring, ſummer, and autumn; and once a fortnight in the winter ſeaſon.

The order of ſowing them in the different ſeaſons is, in a warm ſouth border, or other ſimilar ſituation, or under a frame, &c. in the early ſpring months; and as the warm ſeaſon advances, in any open compartment, all in as light earth as the garden affords; but in ſummer, or hot dry weather, in ſomewhat ſhady borders, or in a free ſituation, ſhaded with mats from the ſcorching ſun, and daily watered; and in winter, in the warmeſt ſituation, or in ſhallow frames defended with lights, and under hand-glaſſes; but in froſty or other very cold weather, in that ſeaſon, on moderate hot-beds; and hot-bed ſowings are alſo requiſite during the colder part of the ſpring, or at any time in cold ſeaſons, where a ſupply of theſe and other ſmall ſalad herbs are required to be raiſed as quickly as poſſible. The method of ſowing the ſeed, in all the caſes, is very thick, as the plants are moſtly uſed in ſmall young growth, and generally in ſmall, flat, ſhallow drills, about three inches aſunder, ſo thick as almoſt to cover the earth, being lightly earthed over a quarter of an inch thick, or leſs; or on the plain ſurface, firſt raking it ſmooth, then ſowing the ſeed thick as above, ſmoothing it down with the back of the ſpade, and either with the ſpade ſpreading ſome fine earth lightly over it as thinly as poſſible, or covering it by ſifting earth over it evenly a ſmall depth, juſt to cover all the ſeed properly. This ſort of ſalad herb ſhould always be cultivated ſo as to grow as rapidly as poſſible, being cut while perfectly young, and in a criſp ſtate. See *Small Salad* Herbs.

LEPIDOCARPODENDRON, in *Botany*, from λεπις, λεπιδος, *a ſcale*, καρπος, *fruit*, and δενδρον, *a tree*; a name given by Boerhaave in his Hort. Lugd. Bat. ed 2. v. 2. 183, to the *Proteæ* with hemiſpherical heads of flowers, conſpicuous for the ample and beautiful ſcales of their calyx, of which Linnæus compoſed his genus *Leucadendron*, in Gen. Pl. 46, but which he ſubſequently united to *Protea*. See Leucadendron.

LEPIDOIDES, Λεπιδοειδης, formed of λεπις, *ſcale*, and ειδος, *form*, *figure*, or Lepidoeides, in *Anatomy*, a name of the ſquamous or ſcaly ſuture of the cranium.

LEPIDOLITE, Wern., Jam. *Lepidolithe*, Haüy. *Lilalite* of ſome other mineralogiſts.

The colour of this mineral is generally pale peach-bloſſom red, or roſe red, with an admixture of grey; but it alſo occurs of a pale violet and light cochineal red; ſometimes the greyiſh-red variety paſſes into blueiſh and greeniſh; and a variety has been obſerved, in which the green approaches ſiſkin green.

Occurs only maſſive; but its fragments are ſaid ſometimes to ſhew a tendency to adopting a priſmatic form.

Its internal luſtre is gliſtening, paſſing into ſhining: it appears ſometimes between reſinous and vitreous.

Fracture uneven, preſenting fine-grained and ſcaly diſtinct concretions; fragments generally indeterminately angular, with pretty ſharp edges, which are faintly tranſlucent.

It is moderately hard, paſſing into ſoft; brittle; though not eaſily frangible.

Specific gravity, 2,854, Haüy; 2,816, Klaproth; 2,350, Gerhard.

Before the blowpipe the lepidolite, after a ſlight degree of intumeſcence, melts into a milk-white ſemi-tranſparent pearl. With borax it fuſes more readily into a tranſparent colourleſs pearl.

Klaproth was the firſt who analyſed this mineral. Among the reſults of his analyſis was a deficiency of 6½ *per cent.*, which a ſubſequent chemical examination, (made by the ſame chemiſt, with a view to aſcertain the preſence of potaſh, which he had a ſhort time before diſcovered in the leucite) proved to be occaſioned by the loſs of the ſame alkali, till then unſuſpected to enter the compoſition of mineral ſubſtances. Vauquelin afterwards found the ſame alkali, but in far greater proportion.

Silica - -	54.50	54.0
Alumine -	38.25	20.0
Oxyd of iron -	0.75	1.0
Oxyd of mangancſe		3.0
Potaſh -	4.0	18.0
Fluate of lime -		4.0
Loſs, partly water	2.50	
	100	100
	Klaproth Beitr. ij.	Vauquelin J. d. M. N° 51.

The fluate of lime, in Vauquelin's analyſis, is probably owing to particles of fluor ſpar that were adhering to the ſpecimen examined by that chemiſt.

Lepidolite is found (excluſively, as it is ſuppoſed) on mount Radiſco, near Rozena in Moravia, in a kind of gneiſs, which is ſaid to paſs into granite on one ſide, and into mica ſlate on the other. The accompanying minerals, with which it is alſo mixed, are quartz, feldſpar, fluor ſpar, ſhorl-beryl, apatite, and common ſhorl.

Fichtel makes mention of a maſs mixed of browniſh-violet grains of quartz, whitiſh ſhining feldſpar, and light and dark coloured lepidolite, which, (if the laſt-mentioned ſubſtance be conſidered as a ſubſtitute for mica, with which it is indeed nearly allied,) conſtitutes a particular kind of granite hitherto unnoticed.

Beyer has deſcribed a variety of lepidolite from Sudermanland, in Sweden; but ſome writers have doubted this to be real lepidolite.

The lepidolite was, by its diſcoverers and other mineralogiſts, referred to zeolite: it had alſo been miſtaken for a variety of foliated gypſum. Klaproth, who determined its real nature, ſubſtituted for the taſteleſs name of *lilalite*, that of *lepidolite*, derived from its ſcaly ſtructure.

What has been deſcribed as cryſtallized lepidolite, is the red variety of ſhorl-beryl, or picnite, which is likewiſe found at Rozena in Moravia, in a quartzy matrix.

LEPIDOPTERA, from λεπις, *a ſcale*, and ϖτερον, *wing*, in the *Linnæan Syſtem*, an order of inſects, with four wings, imbricated with ſcales: in the mouth is contained a ſpiral tongue, and the body is hairy. This order comprehends three genera, *viz*. the papilio or butterfly, the ſphinx, and the phalæna or moth; and each genus includes a number of ſpecies.

LEPIDOSARCOMA, from λεπις, *a ſcale*, and σαρξ, *fleſh*. Severinus, a ſurgical author, implies by this term a ſarcomatous and ſcaly tumour in the mouth.

LEPIDOSPERMA, in *Botany*, ſo called by Labillardiere, from λεπις, λεπιδος, *a ſcale*, and σπερμα, *the ſeed*, becauſe of the ſix permanent ſcales which inveſt the baſe of that part. Labillard. Nov. Holl. v. 1. 14. t. 11—17. Brown. Prodr. Nov. Holl. v. 1. 233.—Claſs and order, *Triandria Monogynia*. Nat. Ord. *Calamariæ*, Linn. *Cyperoideæ*, Juſſ. *Cyperaceæ*, Brown.

Gen. Ch. *Cal.* Spikelet imbricated every way, of one or two flowers, and one ſeed; ſcales ſeveral, ovate, concave, acute, for the moſt part empty. *Cor.* none, except we ſo call the ſix flat, membranous, thickiſh ſcales, united at their baſe, which inveſt the bottom of the germen. *Stam.* Filaments three, capillary, projecting; anthers terminal, oblong, acute, pendulous. *Piſt.* Germen ſuperior, very ſmall; ſtyle cylindrical, erect, as long as the ſtamens, deciduous; ſtigmas three, equal, recurved, ſlender, downy, acute. *Peric.* none. *Nut* roundiſh, obtuſe, hard, not burſting, accompanied by the above-mentioned ſix ſcales, of one cell, with a ſingle roundiſh kernel.

Eſſ. Ch. Spikelet of one or two flowers, and one ſeed. Glumes chaffy, imbricated every way, moſt of them barren. Six flat combined permanent ſcales at the baſe of the germen. Style deciduous. Nut ſolitary, bald, obtuſe.

This genus is allied to the *Cladium* of Browne's Jamaica, (confounded with *Schoenus* by Linnæus), but is diſtinguiſhed by the ſix ſcales that accompany the germen. From the *Scleria* of Bergius it differs in the number of its glumes, and in having always androgynous ſpikelets, of which the upper flower is only male. Labillardiere deſcribes and figures ſeven ſpecies; Mr. Brown defines 19, all from the colder parts of New Holland, or from Van Diemen's land. They are harſh rigid ruſhy plants, one or two feet high, with ſtrong perennial *roots*, ſimple leafleſs *ſtems*, encompaſſed at the bottom with ſeveral long, narrow, moſtly equitant, *leaves*, which are more or leſs compreſſed and acute, their edges either ſmooth or minutely ſerrated. The *panicle* or *ſpike* is terminal, moſtly branched or divided.

Examples of this genus are

L. *gladiata*. Labill. Nov. Holl. v. 1. 15. t. 12.—Panicle denſe, repeatedly compound. Stem compreſſed with an elevated rib at each ſide; its edges ſmooth, like thoſe of the leaves. Glumes rather ſharp.—Gathered by Mr. Brown at Port Jackſon, as well as in Van Diemen's land, and the ſouth part of New Holland. The *ſtem* is ſtout and rigid, from eighteen to twenty-four inches high. *Leaves* half an inch broad, ſmooth. *Panicle* upright, large, of numerous acute, oblong, ſcaly ſpikelets.

L. *tetragona*. Labill. Nov. Holl. v. 1. 17. t. 17.—Panicle denſe, ſomewhat compound. Leaves quadrangular. Stem bluntly angular.—Gathered by the author cited, in Van Diemen's land. The ſquare *leaves* are very remarkable. It is a much ſmaller plant than the foregoing. The ſcales of each *ſpikelet* are from four to ſix only. The *nut* is elevated on a more conſpicuous ſpongy baſe than in moſt of the other ſpecies.

Nothing can give a more unfavourable idea of the fertility, comfort, or beauty of a country, than the prevalence of ſuch plants as theſe; ſlight examples of which may be ſeen in our *Schoenus nigricans*, *Nardus ſtricta*, and a few others, found on the moſt dreary and barren inland ſands. Such of them as inhabit the ſea-ſhore, anſwer the moſt valuable purpoſe poſſible, in forming a natural barrier againſt the encroachments of the ocean. See Elymus.

LEPIDOTES, in *Natural Hiſtory*, the name of a ſtone bearing a reſemblance to the ſcales of fiſhes. The word has been uſed by ſome, as the name of thoſe ſtones which are compoſed of ſmall flakes, or ſcales of talc, and by others to expreſs the ſtones containing fiſh, or the impreſſions of fiſh, found in many parts of Germany.

LEPIDUS, M. Æmilius, in *Biography*, a Roman triumvir, was deſcended from one of the moſt illuſtrious families in Rome, and roſe to the higheſt employments of the ſtate. On the death of Cæſar, Lepidus, who was zealouſly attached to his intereſts, thought it prudent to conceal himſelf. He afterwards joined Antony in driving away the conſpirators, and obtained the dignity of chief pontiff, through the influence of that leader. Afterwards, when Antony was treated as a public enemy, Lepidus commanded an army of ſeven legions in Tranſalpine Gaul. Here Antony arrived in a very diſtreſſed ſituation, and conjured his friend to join his forces to thoſe which he commanded. Lepidus refuſed, but aſſured him he would not act with hoſtility againſt him. Antony knowing in what eſtimation he was held by the army, ruſhed into the camp of Lepidus, where he was ſaluted with the loudeſt acclamations. Lepidus was now, in his turn, glad to ſupplicate the aid of his competitor. Antony treated him with apparent reſpect, left him the nominal command, while he himſelf exerciſed all the real authority. By this conduct, Lepidus loſt the confidence of the ſenate; and in a ſhort time he was declared a public enemy, and Octavianus and Decimus Brutus were ſent out againſt him and Antony. In dividing the Roman world between three maſters, Lepidus was allowed a place, principally by way of a connecting medium between the other two. He poſſeſſed a conſiderable family-intereſt, and was not deſtitute of military abilities; but he had neither capacity nor temper to take a leading part in political concerns. In the formation of the triumvirate, it was agreed, that while Antony and Octavianus ſhould carry on war againſt Brutus and Caſſius, Lepidus ſhould remain at Rome with four legions, and maintain their authority in the capital. At the bloody proſcription, and while the butchery was ſtill raging, Lepidus had the unfeeling vanity to inſult the public diſtreſs by a triumph, on account of ſome inconſiderable victories formerly obtained by him over the revolted

Spaniards. He was conſul a ſecond time, B. C. 42, with Manutius Plancus. The part of the empire which was allotted to Lepidus, after the TRIUMVIRATE (which ſee) was fully eſtabliſhed, was Africa. In the war with Sextus Pompey, Lepidus brought a large force to Sicily, with which he joined Octavianus; and he ſhared in the victory obtained againſt that great general. The confidence he felt at being at the head of a large army, induced him to treat his colleague with haughtineſs and neglect; but he had ſoon the mortification to ſee himſelf deſerted by all his troops, who joined Octavianus. He now ſupplicated his life of his rival, which being granted him, he retired into a kind of exile at Circeii, a ſmall town in Latium, where he paſſed the remainder of his days in obſcurity. Plutarch. Univer. Hiſt.

LEPINE, FRANCESCA MARGARITA DI. See MARGARITA.

LEPIOTA, in *Botany*, from λεπις, *a thin membranous layer*, or *cuticle*, the firſt ſection of the great genus *Agaricus* in Perſoon's *Synopſis Methodica Fungorum;* the character of which is to have the gills dry and membranous, as the name expreſſes, not clouded nor ſooty, and the ſtalk encompaſſed with a ring. It includes twenty-nine ſpecies, of which *Agaricus procerus* is the firſt and moſt remarkable.

LEPISMA, in *Entomology*, a genus of aptera. Gmelin, after the Linnæan manner, defines it as having four feelers, two of which are ſetaceous, and two capitated; the lip membranaceous, roundiſh, and emarginated; antennæ ſetaceous; body imbricated with ſcales; tail ending in ſetaceous briſtles; legs ſix, and formed for running. The character of lepiſmæ, as thus expreſſed, combines the more eſſential character of Fabricius with that of Linnæus. Lamarck and others propoſe ſome further alteration; and, laſtly, Latreille, in whoſe arrangement they form the firſt family (lepiſmenæ) of the order thyſanoura, divides them into two diſtinct genera: lepiſma and machilis. The true lepiſma, according to the new definition, has the antennæ inſerted between the eyes, the body flat, and the tail ending in three equal briſtles. This genus walks and runs. In the genus machilis, (which moves by ſkipping,) the antennæ are ſeated under the eyes, the body convex, and the middle briſtle of the tail larger than thoſe at the ſides. The three firſt ſpecies are deſcribed by Linnæus; the other by Fabricius, and by Müller the author of Zool. Dan. All the ſpecies, except the firſt, are natives of Europe. In their various ſtates of growth they prey on decayed wood, and moiſt or rotten ſubſtances; and are moſt commonly found in damp cellars, neglected water-courſes, lead gutters, and ſimilar ſituations. The larvæ, like the pupa and perfect ſtate, are furniſhed with ſix feet, and are remarkable for their activity and ſwiftneſs.

Species.

SACCHARINUM. Scaly, ſilvery; tail triple. Fabr. *Lepiſma vulgaris*, Scop. *Forbicina*, Aldrov. *Forbicina plana*, Geoffr. *Lepiſma ſaccharinum*, Donov. Brit. Inſ.

Originally a native of America, from whence it has been introduced and naturalized in Europe. The body is oblong and tapering; antennæ as long as the body; tail terminating in three briſtles, and two pair of ſmaller ones beneath. It ſecretes itſelf among old furniture, and runs, when diſturbed, with great agility: is often found among ſugar.

POLYPODA. Skipping; tail triple; ſegments of the abdomen villous each ſide beneath. Fabr. *Lepiſma ſcutata, cauda triplici*, Linn. Donov. Brit. Inſ.

Inhabits among ſtones and rubbiſh on ſandy ſea-ſhores, and poſſeſſes the faculty of leaping to a prodigious height, by means of the ſprings under the tail; antennæ as long as the body.

TERRESTRIS. Naked; tail triple. Linn. Fn. Suec.

Gmelin mentions the cloſe affinity this indiſtinct ſpecies bears to the podura tribe, to which it may perhaps belong. It is entirely white and cylindrical, with obtuſe antennæ half the length of the antennæ.

LINEATA. Tail triple; body brown, with two white fillets. Fabr.

Inhabits old walls in Helvetia. Antennæ as long as the body, which latter is brown above, with cinereous ſpecks; legs ſhort; thighs compreſſed.

VILLOSA. Brown, with a triple villous tail. Fabr.

Native of China. The head villous-whitiſh; body beneath whitiſh; middle ſpine of the tail longer; legs ſhort and white.

COLLARIS. Black, with a ſnowy band on the neck and end of the abdomen; tail triple and villous. Fabr.

An inhabitant of the South American iſlands. Antennæ as long as the body, and brown, with the baſe pale; head whitiſh; beneath the tail two ſhort briſtles; legs pale.

POLYPUS. Scutate; tail triple. Müll.

Native of Denmark.

MINUTUS. Yellow; tail of three briſtles. Müll.

Inhabits ſame country as the latter. Appendages of the tail ſometimes wanting.

LEPITA, in *Hindoo Mythology*, a name of Saraſwati, ſpouſe of Brahma, and goddeſs of literature, harmony, rhetoric, and the fine arts. See SARASWATI.

LEPIUM, one of Hill's names for a variety of gypſum.

LEPOIS, NICHOLAS, in *Biography*, a phyſician of celebrity in the ſixteenth century, was born at Nancy, in 1527. He ſtudied medicine at Paris under Sylvius, together with his elder brother, Anthony Lepois, who was afterwards firſt phyſician to Charles III. duke of Lorraine. In this office Nicholas ſucceeded his brother in 1578. He ſpent his whole time in ſick-chambers, or in his cloſet, peruſing the ancient authors from Hippocrates downwards. He drew up the reſult of his reading, corrected and corroborated by his perſonal obſervation, in an aphoriſtic form, chiefly with the view of being ſerviceable to his ſons, Chriſtian and Charles, whom he deſtined for the medical profeſſion; but his friend the celebrated Foëſius, and ſeveral other perſons, having ſeen his MS. prevailed upon him to publiſh it. It was firſt printed at Franckfort, in 1580, in folio, under the title of "De cognoſcendis et curandis pæcipué internis humani- corporis morbis, Libri tres, ex clariſſimorum medicorum, tum veterum, tum recentiorum, monumentis non ita pridem collecti." Boerhaave had ſo high an opinion of this author, that he edited this work, adding a preface to it, at Leyden, 1736, in two volumes 4to. Eloy Dict.

LEPOIS, CHARLES, more generally known by his Latin name, *Carolus Piſo*, was ſon of the preceding, and born at Nancy in 1563. He was ſent at the age of thirteen to the college of Navarre, at Paris, where he remained five years, and diſtinguiſhed himſelf by his rapid advancement in the knowledge of the languages, belles lettres, and philoſophy. He received the degree of Maſter of Arts in the univerſity of Paris in 1581, and immediately commenced his career in the ſchools of medicine. After four years, ſpent in the faculty at Paris, he went to Padua in 1585, and viſited the other ſchools and the learned men of Italy before he quitted that country. He returned to Paris in the beginning of 1588, and took his bachelor's degree in medicine, and two years afterwards became a licentiate; but he left Paris without having taken the degree of doctor, from inability to defray the expences of that ceremony, in conſequence of the ſmall income left him by his father. He therefore returned to his native city, where duke Charles III. of Lorraine appointed him his conſulting phyſician, and retained him near his perſon both at home and in his travels. Duke Henry II. likewiſe held him in the ſame eſtimation; and, among many other marks of his eſteem for Lepois, he inſtituted a faculty of medicine at Pont-à-Mouſſon, and nominated him dean and firſt profeſſor. In order to undertake theſe offices, he repaired to Paris, where he received the degree of M.D., which gave him the power of conferring the ſame degree upon others, and commenced the duties of his profeſſorſhip in November 1598. He had now an opportunity of diſplaying the ſtores of knowledge, which his acquaintance with the Greek and Latin, Arabic, Hebrew, Italian, and Spaniſh languages had enabled him to obtain; he was indefatigable in his obſervation of diſeaſes, and omitted no opportunity of examining by diſſection the bodies of thoſe who died; from which he juſtly anticipated the moſt important improvements would accrue to medicine. His reputation was elevated to the higheſt degree, ſo that he was the phyſician of all the honourable perſons in Lorraine. His zeal in the practice of his profeſſion continued unabated, and ultimately occaſioned his death at the age of ſeventy; for he died of the plague at Nancy, whither he had gone to adminiſter relief to thoſe afflicted by the peſtilence, in the year 1633. He left the following works, which have tranſmitted his reputation to poſterity; particularly the firſt, entitled "Selectiorum Obſervationum et Conſiliorum de præteritis hactenus morbis, effectibuſque præter naturam ab aquâ, ſeu ſeroſâ colluvie et deluvie ortis, Liber ſingularis," Pont-à-Mouſſon, 1618, in 4to. This work paſſed through ſeveral ſubſequent editions, one of which, (that of Leyden 1733,) was publiſhed, with a preface, by the celebrated Boerhaave. A ſelection from, or an abridgment of it was alſo printed in 1639, with the title of "Piſo enucleatus," in 12mo. His other works were, "Phyſicum Cometæ Speculum," Ponte at Moationem, 1619, in 8vo.; and "Diſcours de la Nature, Cauſes, et Remedes, tant curatifs que preſervatiſs, des Maladies populaires, accompagnées de Dyſenterie et autres Flux de Ventre," ibid. 1623, in 12mo. He tranſlated from the Spaniſh into Latin, "Ludovici Mercati Inſtitutiones ad uſum et examen eorum qui artem luxatoriam exercent," Franekfort, 1625, in folio. He likewiſe publiſhed the following eulogy of his firſt patron, "Caroli III., Sereniſſimi, Potentiſſimique Ducis Lotharingiæ, &c., Macariſmos, ſeu felicitatis et virtutum egregio Principe dignarum coronæ," 1690. Eloy Dict. Hiſt. de la Med.

LEPOMERO, in *Geography*, a town of New Mexico, in the province of Hiagui; 130 miles E.N.E. of Riochico.

LEPORARIA Aquila, a name given by ſome authors to the *melanaëtos*, or black eagle, from his deſtroying great numbers of hares. See Falco *melaronotus*.

LEPORINUM Labium, in *Surgery*. See Hare-lip.

Leporinum *Roſtrum*, a term ſometimes applied to the portion of fleſh frequently obſervable between the margins of the fiſſure in caſes of hare-lip. See Hare-lip.

Leporinum *Genus*, in *Zoology*, the name of a genus of animals, ſo called from their general reſemblance to the hare in ſhape, and other particulars: the characters by which they are diſtinguiſhed from other quadrupeds are theſe; they have feet divided into claws; they feed on vegetables; and they have two very long teeth in the fore-part of their mouths. Ray's Syn. Quad. p. 204.

LEPORINUS Oculus, in *Surgery*. See Lagophthalmia.

LEPOTI, in *Geography*, a town of the principality of Georgia, in the province of Kaket; 22 miles S.E. of Kaket.

LEPPOWIRTA, a town of Sweden, in the government of Kuopio; 24 miles S. of Kuopio.

LEPRA, λέπρα, *quaſi* λεπρὰ, *ſquamoſa*, from λεπὶς, *a ſcale;* whence our Engliſh term *Leproſy;* which ſee.

Lepra *Lankeng*, in *Geography*, a town of Thibet; 68 miles S.E. of Toudſong.

LEPRAS, in *Ichthyology*, the name of a ſea-fiſh of the turdus, or wraſſe kind, remarkable for the great variety and beauty of its colouring. It is ſeldom caught of more than five or ſix inches in length, and is conſiderably broad and flat. It ſometimes grows to a foot long, but that only in the ocean, never in the Mediterranean ſea, where it is uſually caught; and even there very rarely. It is ſpotted all over like the body of a leopard. It is one of the moſt beautiful fiſh of the Mediterranean, but is not much eſteemed at table, being of an inſipid and watery taſte.

LEPREUM, Lepreos, or *Leprium*, in *Ancient Geography*, a town of Triphylia, near the confluence of the rivers Jardanus and Alcidon, N.W. of Chaa. It is ſaid to have been founded by a perſon of the name of Lepreos, a famous wreſtler, who contended with Hercules, by whom he was vanquiſhed and killed. In the time of Pauſanias, the inhabitants of Lepreum aſſumed the appellation of Arcadians. In this town was a temple of Ceres, conſtructed of bricks, and near it was the fountain called Arené.

LEPRIA, an iſland on the coaſt of Ionia, mentioned by Pliny.

LEPROSO Amovendo, in *Law*, an ancient writ that lay to remove a *leper*, or *lazar*, who thruſt himſelf into the company of his neighbours in any pariſh, either in the church or at other public meetings, to their annoyance. The writ lies againſt thoſe lepers that appear outwardly to be ſuch, by ſores on their bodies, ſmell, &c. and not againſt others: and if a man be a leper, and keep within his houſe, ſo as not to converſe with his neighbours, he ſhall not be removed.

LEPROSY, in *Medicine*, a denomination which has been given to a variety of chronic diſeaſes, chiefly affecting the ſkin; but which has not been excluſively appropriated to thoſe that are characterized by the formation of ſcales, as the origin of the term imports. Even the Greek writers themſelves, and more eſpecially the later ones, have not adhered uniformly to the proper import of the appellation; but the confuſion which has prevailed in ſubſequent periods of medical hiſtory, in regard to the application of this term, almoſt bids defiance to the induſtry and diſcrimination of the inquirer. This is partly to be aſcribed to the difficulty of conveying accurate notions of cutaneous appearances by verbal deſcriptions, partly to the extreme variety in which thoſe appearances preſent themſelves, and partly to the neglect of minute obſervation, where diſtinctions can only be detected by a careful and practiſed eye. Thus the latter Greek phyſicians applied the term *lepra* in a more extended ſenſe than their predeceſſors, and rendered future diſcrimination more difficult. But this difficulty was exceedingly multiplied by the tranſlators of the works of the Arabian phyſicians into Latin, after the revival of learning. The Arabians appear to have diſtinguiſhed the lepra and elephantiaſis of the Greeks, by appropriate terms in their own language: but the tranſlators rendered the word which denoted the latter (*viz. juzam*, and *baras* or *albaras*) by the Greek term lepra; and the Arabic words (albohak and alkouba) which ſeem to have ſignified the ſame with the lepra, alphos, and pſora of the Greeks, they tranſlated by the terms *impetigo* and *morphœa* reſpectively. (See Willan on Cutan. Diſeaſes, 2d edit. p. 112. 117. and 126.) This produced the double confuſion of applying the ſame appellation to a variety of diſeaſes, and of denoting each diſeaſe by a variety of names; inſomuch that almoſt every ſevere chronic affection of the ſkin at length acquired the denomination of leproſy, which became rather the name of a claſs of diſeaſes, than a ſpecific term. This confuſion was ſtill farther increaſed, during the middle ages; when innumerable hoſpitals and places of reſort, together with the means of ſubſiſtence, were provided for thoſe who were afflicted by this prevalent malady; and when the epithet of *leprous* was a ſufficient claim upon the charity of the Chriſtian world. For every ſpecies of diſeaſe affecting the ſkin was repreſented as *leproſy*; and multitudes of idle and filthy perſons obtained a ſubſiſtence by ranking themſelves in that claſs.

The ſame term, *leproſy*, has, moreover, been applied by the tranſlators of the ſacred writings, to a variety of cutaneous diſeaſes, reſpecting the nature of which there has been ſome difference of opinion; ſome referring it to the ſcaly lepra of the Greeks, and others conſidering it as a variety of the elephantiaſis of the ſame people; we mean the leuce, vitiligo, or albaras alba.

In order to arrive at a tolerably clear notion of the ſeveral varieties of ſignification, which have been given to the term, we muſt, therefore, conſider it under four different heads; namely, the leproſy of the Arabians, of the Greeks, and of the Jews, and the leproſy of the middle ages.

Leprosy *of the Arabians*, or *Lepra Arabum*, is the ſame with the *Elephantiaſis* of the Greeks. See Elephantiasis.

Under that head, we have deſcribed at length the ſymptoms of this formidable diſeaſe, as detailed by Aretæus and the other Greek phyſicians; as well as the appearances, which it has been ſaid to aſſume in the Weſt Indies, in Arabia, and in other ſouthern climates, in modern times. We muſt here, however, obſerve, that the appellation of *Arabian leproſy* has originated in error; and that the imputation of having miſapplied the Greek term (lepra), which has been generally caſt upon the Arabian phyſicians, appears to be altogether incorrect. This imputation aroſe from the miſinterpretation of their tranſlators, as above ſtated: and as the works of the Arabians were known only to European phyſicians, through the medium of theſe tranſlations, into Latin, it was naturally inferred that the original writers had committed the error. Avicenna deſcribes the elephantiaſis under the title of *juzam*, or *alſuzam*, (the appellation which is ſtill given to the diſeaſe in Arabia, according to Niebuhr,) and likewiſe diſtinctly treats of the *albers* or *albaras*, and the *albehek* or *albokek* (morphæa of the tranſlators). He carefully diſtinguiſhes, however, the albaras from the albohek, the former of which has ſeveral ſymptoms in common with the confirmed elephantiaſis (aljuzam), and is ſaid often to terminate in it. Theſe ſymptoms are, a loſs of ſenſibility in the parts affected; a change of colour in the hairs, which become white; and ultimately a loſs of the hair; and a change in the colour and texture of the ſkin, and of the muſcular fleſh under it, which becomes white and bloodleſs, like that of oyſters, and finally periſhes and falls off. Theſe ſymptoms have, in conſequence of the miſtakes of the tranſlators of the Arabians, been transferred to the proper ſcaly lepra, and are conjoined, in the ordinary deſcriptions of the latter, with the ſymptoms properly belonging to it alone. But it ſeems obvious that the Arabian terms albohek and albaras are of nearly the ſame import as the Greek terms alphos and leuce, which both Hippocrates and Celſus have carefully diſtinguiſhed; conſidering the former as a mere blemiſh of the ſkin, but the latter as a formidable and almoſt incurable diſeaſe. See Leuce. See alſo Hippoc. lib. περι παθων. Celſus, lib. v. cap. 28, and Willan on Cutaneous Diſeaſes, ord. ii. *genus* 1.

Leprosy *of the Greeks*, or *Lepra Græcorum*, is principally characterized, as the term imports, by the formation of *ſcales* on the ſurface of the ſkin, which conſiſt of morbid laminæ of the cuticle, hard, thickened, opaque, and of a whitiſh colour, and appear in patches of different ſizes, having always nearly a circular figure.

Such is the deſcription of the diſeaſe which has been left us by the Greek writers, and which is given as the character of the *lepra* by the beſt writer on the ſubject in our own time; we mean Dr. Willan. Hippocrates has not left any circumſtantial detail of the ſymptoms of lepra, but ſpeaks of it, together with the *alphos*, *pſora*, *lichenes*, &c. as an external blemiſh, rather than a diſeaſe. The later Greek writers, however, although brief in their deſcription of *lepra*, have pointed out the diſtinctions between it and thoſe ſimilar affections, with which it was conjoined by their predeceſſors. Aëtius ſtates, that it differs from the *leuce* (vitiligo, or white elephantiaſis) in not penetrating deeper than the ſkin, and leaving the ſubjacent fleſh ſound; from the *alphos*, which, though ſcaly, is more ſuperficial; and from the *pſora*, in having large ſcales, like thoſe of fiſh; whereas, in the latter, only ſcurf, or branny exfoliations, appear. (Aët. Tetrabib. iv. ſermo i. cap. 134.) It muſt be here obſerved that the *pſora*, ſimply, ſignifies a ſlight, ſcaly diſeaſe; and not the *ſcabies*, or itch, which is deſignated, together with the moiſt-tetter, by the epithet *ulcerating pſora*, ψωρα ἑλκωδης. (Aët. loc. cit. cap. 126, 127, and 130. Galen, Introd. Paul. lib. iv. cap. 2.) Paulus Ægineta, in a chapter "On Lepra and Pſora," obſerves, that "both theſe diſeaſes are characterized by roughneſs and itching, and a ſeparation of a melancholic humour; but *lepra* affects the ſkin deeply, in circular patches, at the ſame time throwing off ſcales like thoſe of large fiſhes; whereas *pſora* is more ſuperficial, variouſly figured, and throws off little bran-like ſubſtances." (Lib. iii. cap. 2.) Actuarius has given the ſame account of theſe diſeaſes. (De Meth. Med. lib. ii. cap. 11.) This ſcaly *pſora* will be afterwards conſidered, under the appellation of Psoriasis, which Dr. Willan has appropriated to it, in order to avoid the confuſion which would enſue in retaining the term *pſora*, which has been applied by many of the moderns excluſively to *ſcabies*, or itch.

Three varieties of the ſcaly lepra are obſerved in this country, according to Dr. Willan, which he has denominated Lepra *vulgaris*, L. *alphoides*, and L. *nigricans*.

1. The *lepra vulgaris* firſt ſhews itſelf in ſmall, reddiſh, and ſhining elevations of the cuticle, on the tops of which thin white ſcales are ſeen within twenty-four hours from their appearance. After three or four days, the ſmall elevations are flattened, and at the ſame time dilated, by an extenſion of their baſes, to the ſize of a ſilver penny. Theſe patches continue to enlarge gradually, until they become nearly of the ſize of a crown piece; they always retain a circular or oval form, are covered with dry ſcales, and ſurrounded by a red border. The ſcales often accumulate on them, ſo as to form a thick prominent cruſt, which is quickly reproduced, whether it fall off ſpontaneouſly, or have been forcibly detached. On its removal, the ſurface appears, through a magnifier, to be porous and irregular, or wrinkled; but the furrows do not coincide with the lines of the contiguous ſound cuticle. The eruption is not attended with any pain or uneaſineſs, excepting a ſlight degree of itching, felt when the patient becomes warm in bed, and a ſenſation of tingling

upon any ſudden change in the temperature of the atmoſphere.

This ſpecies of *lepra* often appears firſt at the elbow, or on the fore-arm, but more generally about the knee; in the latter caſe, the primary patch forms immediately below the patella. Within a few weeks, ſeveral other ſcaly circles appear along the fore parts of the leg and thigh, increaſing by degrees until they come nearly into contact. The diſeaſe is then often ſtationary for a conſiderable length of time: if it does advance farther, its progreſs is towards the hips and loins, afterwards to the ſides, back, and ſhoulders, and about the ſame time to the arms and hands. In a great number of caſes, the hairy ſcalp is the part laſt affected: although the circles formed on it remain for ſome time diſtinct, yet they finally unite, and cover the whole ſurface on which the hair grows with a ſcaly incruſtation, producing, eſpecially in hot weather, a troubleſome itching. In ſome inſtances, the nails, both of the fingers and toes, are thickened, and deeply indented longitudinally; either the whole, or ſome part of each nail is harder, and more prominent than uſual.

When the *lepra* extends to all the parts above-mentioned, it becomes highly diſguſting in its appearance, and not only inconvenient, from the ſtiffneſs and torpor which it occaſions in the limbs, but painful where the ſkin is red and tender, as it ſometimes becomes, in the flexures of the joints. The diſeaſe, however, is ſeldom diſpoſed to terminate ſpontaneouſly: it continues nearly in the ſame ſtate for many weeks, or months, ſometimes for ſeveral years, or even during the remainder of life, yet without being apparently connected with any diſorder of the conſtitution. An appropriate courſe of medicine, with a regular diet, acts very ſlowly on the lepra, but will at length accompliſh its cure; and it then proceeds to a termination in the following manner. Firſt, the incruſtation ſeparates from about the centres of the patches, and is no longer reproduced. The ſcales being farther and farther removed, a circle of red ſhining cuticle, deeply indented, appears within the original patch, which ſtill retains a broad hard ſcaly ring, or border: this border continues till the cuticle within it aſſumes the uſual colour and texture. It then gradually ſoftens, and the cuticular lines being extended over it, every veſtige of the diſeaſe is eraſed.

It may be obſerved, with reſpect to the ſcaly *lepra*, that the patches are generally ſituated where the bone is neareſt to the ſurface, as along the ſkin, about the elbow, and upon the *ulna* in the fore-arm; along the ſpine, *os ilium*, and ſhoulder-blade; and on the ſcalp. They rarely appear on the calf of the leg, on the fleſhy part of the arm and thigh, or within the flexures of the joints. The diſeaſe almoſt conſtantly affects both ſides, appearing at each elbow, or at each knee about the ſame time, and extending from thence along the limbs in a ſimilar manner. But although freſh patches ariſe, from time to time, in different ſituations, there is no ceſſation of the complaint in the parts firſt affected, as happens in ſome cutaneous diſeaſes; but when it is about to terminate, all the patches aſſume a favourable appearance at the ſame time, thoſe neareſt the extremities going off ſomewhat later than the reſt. When the extremities, back, loins, and head, are all at the ſame time covered with dry cruſts, it might be expected that the obſtruction of the perſpiration on ſo large a ſurface would produce diſagreeable conſequences; which, however, is not found to be the caſe.

The *cauſes* of the common lepra are not ſatisfactorily aſcertained. Some writers maintain that the diſeaſe is both contagious and hereditary; but its contagious nature has probably been aſſumed from the erroneous notion of the affinity between the *lepra vulgaris*, and the *elephantiaſis*. Dr. Willan (to whoſe accurate obſervations we are indebted for the deſcription of lepra), affirms, juſtly, that it is not a contagious diſeaſe. He admits, however, that an hereditary prediſpoſition to it is occaſionally tranſmitted from the parent to the offſpring. A ſlow pulſe, or a languid circulation of the blood, and, what muſt generally be connected with it, a harſh, dry, impermeable ſtate of the ſkin and cuticle, appear to conſtitute a fundamental part of the pre-diſpoſition. The morbid effects of ſuch a ſtate of the integuments are moſt likely to be felt in the decline of life: accordingly, the diſeaſe is of more frequent occurrence, and proves more inveterate after the age of forty, than at any earlier period; an obſervation made long ago by Hippocrates and Galen. Willan. loc. cit.

Among the exciting cauſes of this form of the *lepra*, particular kinds of diet, as dried meats, fiſh, oatmeal, and ſome incongruous mixtures of food, are uſually mentioned, but not on ſufficient authority: at leaſt the diſorder is very frequent in this metropolis and its environs, where the articles of diet juſt mentioned are little uſed. Nor does it appear that the general opinion, that *lepra* is more prevalent in fiſhing-towns on the ſea-coaſt, than in other ſituations, reſts upon any better foundation. Expoſure to cold and moiſture, and the accumulation of ſordes on the ſkin, are the only exciting cauſes of this variety of *lepra* which Dr. Willan has been able to point out. From the laſt-mentioned cauſe, he ſays, it frequently ariſes in bakers, bricklayers, labourers, coal-heavers, duſt-men, laboratory-men, and others who work among dry powdery ſubſtances; for theſe perſons are not able to attend very carefully to perſonal cleanlineſs, from the want of public baths, and an imperfect ſupply of water in their own houſes. For our own parts, however, we have ſeen the diſeaſe moſt frequently in females, where the laſt-mentioned circumſtances had not operated.

2. Lepra *alphoides*. In this form of *lepra*, the ſcaly patches are ſmaller than in the lepra *vulgaris*, and have their central parts a little depreſſed. The eruption uſually begins about the elbow, with diſtinct, hard, protuberances, not much larger than pimples, and of a dull red colour. Theſe, in a ſhort time, dilate to nearly the ſize of a ſilver penny: two or three days afterwards the central part of them ſuffers a depreſſion, within which minute white ſcales may be obſerved. The ſurrounding border, however, ſtill continues to be raiſed, but it retains the ſame ſize, and the ſame red colour as at firſt. All the fore-arm, and in many caſes the back of the hand, is ſpotted with ſimilar patches, which ſeldom become confluent; but there is ſometimes a white incruſtation round the point of the elbow. This eruption appears in the ſame manner upon the joint of the knee, but without ſpreading far along the thigh or leg. It rarely, if ever, appears on the trunk of the body, or on the face.

This is a diſeaſe of long duration, and not leſs difficult to cure than the foregoing ſpecies of lepra: even when the ſcaly patches have been removed by a perſeverance in the uſe of ſuitable applications, the cuticle remains for a long time red, tender, and brittle; but the ſmall hairs of the ſkin are not deſtroyed, nor altered in their colour and texture, as ſome authors have ſtated, and as occurs in the *leuce*. This form of the diſeaſe ſeems to have been ranked by the ancients under the head of *white alphos*, which Galen affirms is a ſlighter affection, and leſs rough than the common *lepra*. Celſus, indeed, has claſſed it (under the generic term *vitiligo*) with the *leucè*; but he points out with care the diſtinction between the ſlight *alphos* and the incurable *leucè*.

The exciting cauſes of this form of the diſeaſe are probably the ſame as thoſe of the preceding ſpecies. It chiefly affects women and children: and is not unfrequently ſeen, according to Dr. Willan, in thoſe who are employed to dreſs flax, hair, or feathers.

3. The lepra *nigricans* does not differ much from the lepra *vulgaris*, with reſpect to its form or diſtribution; but chiefly in the colour of the patches, which are dark and livid. They appear firſt on the legs and fore-arms, extending afterwards to the thighs, loins, neck, back, and hands: their central part is not depreſſed, as in the *alphoides*. They are ſomewhat ſmaller than the patches of the L. *vulgaris*, and have a livid or purpliſh border. The ſkin, likewiſe, appears of a livid colour through the ſcaly incruſtations, which are ſeldom very thick. It is further to be obſerved, that the ſcales are more eaſily detached than in the other forms of lepra, and that the ſurface remains longer excoriated, diſcharging lymph, often with an intermixture of blood, till a new incruſtation forms, which is hard, brittle, and irregular. This complaint is particularly troubleſome when it covers the ſcalp.

The *lepra nigricans* affects ſoldiers, ſailors, ſculler-men, ſtage-coachmen, butchers, brewers'-labourers, and others, whoſe occupations are attended with much fatigue, and expoſe them to cold and damp, and to a precarious or improper mode of diet. Women, habituated to poor living, and conſtant hard labour, are alſo liable to this diſeaſe. It was probably compriſed under the denominations of *black alphos* (Μελας), by the Greeks, and of *black albohak* by the Arabians (or black *morphæa* of their tranſlators.) On comparing their accounts, however, it will be found that ſome of them repreſent the black alphos as ſmooth and ſhining, like the leucè; while others aſſert that it is rough and ſcaly. By this inaccuracy reſpecting the *black* as well as the *white* alphos, they have led ſucceeding writers to conjoin the lepra and elephantiaſis, diſeaſes generically different.

Treatment of Lepra Græcorum.—In the treatment of lepra, the Greek phyſicians always premiſed bleeding and ſtrong purgative medicines; but they ſeem to have depended chiefly on external applications, ſuch as alum, ſulphur, nitre, lupines, cabbage-leaves, elm-bark, the dung of goats, mice, and foxes, human urine, and the gall of bears. They likewiſe uſed ſeveral vegetable and mineral ſubſtances, which had a corroſive or veſicating quality; as hellebore, colophonia, the roots of white lily, onion, bryony, aſphodel, ranunculus, and anemone, the ſeeds of muſtard, and horſe-radiſh, quicklime, vitriol, &c. Remedies of this kind, or even bliſters, are, however, found to have only a temporary effect, their operation being ſoon ſucceeded by a re-production of the ſcaly cruſts. Liniments, compoſed of tar, or of ſome mercurial preparations, have been much employed, both in ancient and modern practice, with ſomewhat more beneficial effect.

Of all the *external remedies*, however, which can be employed in the two firſt ſpecies of lepra, frequent *bathing* or *waſhing* is the moſt advantageous. Dr. Willis was averſe to warm-bathing, or the external uſe of any mineral water, from ſome theoretical notions, and cenſures eſpecially the Bath waters, as having converted many caſes of ſlight eruption into a confirmed leproſy. (De Medicam. Operat. ſect. iii. c. 7.) It is pretty well aſcertained, however, from experience, that not only the waters of Bath, but alſo the ſulphureous waters of Harrowgate, Croft, Moffat, &c. uſed both externally and internally, prove very beneficial in many caſes of the lepra. Where the ſkin is not very irritable, much advantage may be alſo derived from baths prepared with a ſolution of alkalized ſulphur, and muriate of ſoda; and when the ſurface is very tender, ſimple ablution with warm water, or bran and water, has the effect of abating the tingling or itching of the ſkin, of encouraging the removal of the ſcales, and of rendering the ſkin ſofter and more pliable. Similar effects are produced by the uſe of the Bath waters, according to Dr. Falconer. (See Memoirs of the Med. Society of London, vol. iv.) "The method in general purſued," this reſpectable phyſician ſtates, "is to order the patients to bathe twice or thrice a week, according to their age, ſtrength, and other circumſtances. This courſe is accompanied with a direction to drink the waters, which, at a medium, are taken in the quantity of about a pint daily, and are thought thus to ſecond the good effects of the bath, by promoting an eaſy and gentle perſpiration. If the amendment appears to proceed according to expectation, no other medicines are given, but occaſionally ſuch as are opening, if the body be coſtive." Dr. Falconer alſo ſtates, that the whole number of perſons admitted into the Bath hoſpital for this diſeaſe in the ſpace of four years, from June 12th, 1775, was 83; of whom were diſcharged 52 "cleanſed," and 24 "much better."

Bathing in *ſea-water*, Dr. Willan obſerves, is a certain auxiliary in the cure of lepra. "It is uſual, and ſeems proper, firſt to uſe a bath of warm ſea-water, till the ſkin be ſoftened, and the ſcaly incruſtations removed; after which a cure is ſoon obtained, eſpecially in young perſons, by bathing in the open ſea. As the diſeaſe is apt to recur in winter, or in ſpring, the ſame plan may be requiſite for ſeveral ſucceſſive ſummers; but I have known it, by perſeverance, finally eradicate the complaint. A ſimple warm-bath," the ſame phyſician obſerves, "with moderate friction, likewiſe contributes to remove the ſcales, and to produce a ſoft red ſkin, which, in time, regains the uſual colour and texture. This plan is ſufficient in the ſlighter caſes of lepra, without the uſe of internal remedies. If the diſeaſe affects the extremities only, bathing the whole body is not neceſſary; it may be enough to apply ſteam, or warm-water, frequently to the diſordered parts." Loc. cit.

Of the mercurial preparations employed externally, we learn from the ſame author, the muriate, (or ſublimate,) and the unguentum hydrargyri nitrati, ſeem moſt efficacious in reſtoring the cuticle, after the leprous cruſts are removed. He does not, however, think the latter preferable to the tar-ointment, which Dr. Willis and others have recommended. This ointment ſhould be well rubbed upon the parts affected every night, and carefully waſhed off, the following morning, with warm-water, or with a ſlight alkaline lotion. We may add, that in ſlight or incipient caſes, where there is much dryneſs and an inirritable ſtate of ſkin, the ſcales may be often removed by a ſpirituous lotion; and that the thick cruſts which ſometimes form upon the patches, may be ſoftened and removed by ſtrong alkaline applications. The uſe of the decoctions of *ſolanum dulcamara*, or herb bitter-ſweet, or of elm-bark, by way of lotion, has alſo been found of conſiderable ſervice in ſeveral inſtances.

Many *internal remedies* have been employed and recommended for the cure of lepra, the efficacy of which has not been ſtrongly eſtabliſhed by ſubſequent experience. Reſpecting theſe, Dr. Willan remarks, that antimonials, ſulphur, and nitre, have not alone any conſiderable efficacy; that decoctions of emollient herbs, of guaiacum-wood, ſarſaparilla, mezereon, or of elm-bark, which have been recommended as ſpecifics, by no means deſerve that character; that calomel, *hydrargyrus calcinatus*, *pilulæ hydrargyri*, or mercurial frictions, applied ſo as to produce ſalivation, do not remove the diſeaſe; and that the nitrous and muriatic acids, lately recommended in obſtinate cutaneous eruptions, though ſucceſsful in ſome caſes of lepra, have been given in other caſes, for three or four ſucceſſive months, without any manifeſt advantage. The tincture of *cantharides* has often been preſcribed for the *lepra Græcorum*, as on the authority of Dr. Mead; but that phyſician recommended it only in caſes of elephantiaſis, or *lepra Arabum*; and it has been found totally uſeleſs in the ſcaly lepra. See Falconer, loc. cit. Willan, loc. cit.

The following ſubſtances may be mentioned, however, as having evinced conſiderable efficacy, when taken internally, in many caſes of lepra. The corroſive *muriate of mercury*, diſſolved in ſpirit, and taken in ſmall doſes for a length of time, has ſometimes proved uſeful; eſpecially when its operation was aſſiſted by ſome antimonial, given at the ſame time, with any of the decoctions above-mentioned. The cauſtic potaſs in ſolution, or *aqua kali puri* of the late diſpenſatories, given in the doſe of twenty or thirty drops, thrice a day, in a cupful of any mild fluid, has alſo manifeſted ſome influence over the diſeaſe. But the preparations of *arſenic* have been employed with more conſiderable ſucceſs, in obſtinate caſes of lepra, both in form recommended by the late Dr. Fowler, and in that of Dr. De Valangin. The doſes of the ſolution preſcribed by Dr. Fowler are larger than are neceſſary. Five or ſix drops taken three times a day will be generally ſufficient for an adult. We have ſeen ſeveral caſes in which the diſeaſe yielded readily to this remedy. See Dr. Willan's Treatiſe, 2d edit. p. 137, where is alſo an intereſting communication on the ſubject, from Dr. Girdleſtone, of Yarmouth.

Among the vegetable remedies, the tincture of *black* hellebore has been occaſionally preſcribed by Dr. Willan, its doſe being regulated ſo as not to diſorder the bowels, and he is of opinion that it has ſome efficacy; but not more than the mineral remedies already mentioned. The decoction of the twigs and leaves of the *ſolanum dulcamara* (Linn.), has alſo been found beneficial in the ſcaly lepra, when taken internally, as well as when applied externally as a waſh. Out of twenty-three caſes, in which it was employed by Dr. Crichton, two only reſiſted its action; all the others were cured. The decoction is now ordered in the pharmacopeia of the College, an ounce of the plant to be boiled in a pint and a half of water down to a pint. Of this decoction Dr. Crichton preſcribed two ounces, at firſt, to be taken every morning, noon, and evening, but the quantity was afterwards increaſed, until the pint was conſumed every day; at the ſame time, the patient was ordered to waſh the ſkin with a ſtronger decoction of the ſame plant, which conſiderably accelerated the cure. The remedy ſeldom begins to exhibit any evident good effects for the firſt eight days.

The remedies above-mentioned are applicable only to the two firſt ſpecies of lepra; none of them being particularly ſerviceable in the lepra *nigricans*. This form of the diſeaſe requires, in the firſt place, a regular and nutritive plan of diet, with moderate exerciſe: it may be afterwards wholly removed by the uſe of cinchona, and the mineral acids, ſea-bathing, &c. Willan, loc. cit.

It muſt be obſerved, before we conclude, that, in the venereal diſeaſe, circular patches ſometimes appear, which reſemble thoſe of the lepra *nigricans* in ſize and colour, but which are not incruſted. The dryneſs and harſhneſs of the ſkin, ſo remarkable in the lepra *vulgaris* and *alphoides*, do not occur in the venereal lepra; its patches, when ſomewhat advanced, being as ſoft and pliable as other parts of the ſkin. Theſe patches are generally diſtinct, and at a diſtance from each other; they ſeldom exceed the ſize of a ſhilling; yet it is probable, Dr. Willan remarks, that they might acquire a greater magnitude, if the progreſs of the diſeaſe were not early arreſted by the uſe of mercury. As the diſeaſe yields to the influence of this remedy, a circular red ſpot appears for ſome time in the place of each declining patch, and a minute ſhallow depreſſion, like a cicatrix, is left at the centre; but no permanent diſcolouration of the ſkin remains, as in ſome other caſes. If no medicines were employed, theſe, like other ſyphilitic eruptions, would at length terminate in ulcerated blotches.

LEPROSY *of the Jews*. The nature of this diſeaſe, which appears from the writings of the Hebrew legiſlator to have prevailed extenſively among that people, after they quitted Egypt under his guidance, has been the ſubject of much diſcuſſion, and of conſiderable difference of opinion. Some writers have referred it to one of the ſpecies of leproſy above-mentioned, and ſome to the other; and ſome again have conſidered it as a diſeaſe peculiar to the Hebrew people, differing from every malady with which other nations have been afflicted, and ſent by Providence upon them, as a ſupernatural puniſhment. Many of the ancient hiſtorians aſſert, that the Hebrews were expelled the Egyptian territories, in conſequence of the general or even univerſal prevalence of the leproſy among them. Manethon, an Egyptian, who wrote a hiſtory of the religion of his anceſtors, makes this aſſertion; and a ſimilar account is given by Lyſimachus, Plutarch, Juſtin, Tacitus, and others. The learned Jewiſh writer, Joſephus, however, treats theſe accounts as altogether fabulous; and ſtates ſome ſubſtantial arguments in proof of their abſurdity and falſehood. (See Joſeph. Antiq. Judaic. lib. iii. and contra Apion, lib. i.) The concurrent teſtimony of the hiſtorians, phyſicians, and poets of antiquity, indeed, goes to prove, that the inhabitants of Egypt, for many ages, were ſubject to elephantiaſis, and that, in fact, the diſeaſe originated on the borders of the Nile; and modern obſervation has aſcertained its more recent prevalence in the ſame countries. This circumſtance ſeems to have led ſome writers to conclude, that the Hebrew leproſy was the elephantiaſis, or lepra Arabum, as it has been called. But a conſideration of the ſymptoms, enumerated by the divine lawgiver, ſanctions the concluſion, which the majority of writers have drawn upon the ſubject, that it was neither the elephantiaſis, in its ordinary tubercular form, on the one hand, nor the ſcaly lepra of the Greeks (which, however, it more nearly reſembled in its external appearance) on the other; but that it was the *leucè* of the Greek writers, the *vitiligo* of Celſus, and the *white albaras* of Avicenna, and the other Arabian phyſicians. (See LEUCE.) See alſo Leon. Fuchſii, Paradox, lib. ii. cap. 16. Greg. Horſt. Obſ. Med. lib. vii. p. 330. Th. Campanellæ, Ord. Medic. lib. vi. cap. 23. art. 5. Foreſti, Obſ. Chirurg. lib. iv. Obſ. 7. Raymond, Hiſt. de l'Elephantiaſis, p. 64. Heuſler, vom Abendländiſchen Auſſatz, p. 341.

It will be ſufficient to compare the obſervations of Avicenna, when pointing out the diſtinction between the *white albaras* and the *alguada* (*morphæa* of the tranſlators), with the marks of diſcrimination detailed in the book of Leviticus, reſpecting the *unclean* leproſy, and thoſe forms of it which were not deemed unclean, in order to be convinced that the ſame diſeaſe is, in both caſes, under the view of the writer. Avicenna ſtates that "both ſpecies of *alguada* (*viz.* *alphos* and *melas* of the Greeks) are confined to the ſkin, and merely ſuperficial; but the albaras affects both the ſkin and the fleſh, even to the bones." And again; "there is this difference between the white alguada and the white albaras, that hairs grow upon the ſkin affected with the former, and they are of a *black* or *brown* colour: but thoſe, which grow in the *albaras* are always *white*; and at the ſame time the ſkin is more depreſſed or ſunk, than the reſt of the ſurſace of the body. Some depreſſion may, perhaps, occur in the *guada*, but it is very ſlight. Moreover, a puncture of the ſkin with a needle draws blood in the *guada*; but no blood follows it in the *baras*, only a watery humidity; and this is incurable." (Avicennæ, Canon. Med. lib. iv. Fen. iii. tract. iii. cap. 9.) In the five or ſix ſpecies of leproſy deſcribed by Moſes, namely, as commencing with a ſcab or bright ſpot, a ſwelling, a rawneſs of the fleſh, a boil or ulcer, and a burning or inflammation, as well as the leproſy in the head, and that connected with baldneſs, it will be obſerved, that the two characteriſtic ſymptoms are the *whiteneſs of the hair*, and the *depreſſion of the ſkin* conjoined, as in the quotation from Avicenna. The whiteneſs of the ſurface alone, without change of colour in the hair, or any depreſſion (as it occurs in the *alphos*, *morphœa*, or *lepra Græcorum*), is expreſsly aſſerted not to conſtitute an unclean leproſy. "When a man ſhall have in the ſkin of his fleſh a riſing, a ſcab, or bright ſpot, and it be in the ſkin of his fleſh like the plague of leproſy, then ſhall he be brought unto Aaron the prieſt, or unto one of his ſons the prieſts; and the prieſt ſhall look upon the plague in the ſkin of the fleſh. And if the *hair* of the plague is *turned white*, and the plague in ſight be *deeper than the ſkin* of his fleſh, it is a plague of leproſy, and the prieſt ſhall look upon him and pronounce him unclean." But "if the bright *ſpot be white* in the ſkin of his fleſh, and in ſight be *not deeper* than the ſkin. and the *hair* thereof be *not* turned *white*; then the prieſt ſhall ſhut him up that hath the plague ſeven days," in order to aſcertain the nature of the diſeaſe by future inſpection. "And the prieſt ſhall look on him the ſeventh day; and behold, if the plague in his ſight be at a ſtay, and the plague ſpread not in the ſkin, then the prieſt ſhall ſhut him up ſeven days more; and the prieſt ſhall look on him again on the ſeventh day: and behold, if the plague be ſomewhat dark, and the plague ſpread not in the ſkin, the prieſt ſhall pronounce him *clean; it is but a ſcab;* and he ſhall waſh his clothes, and be clean." Leviticus, chap. xiii.

Nay it appears that the whiteneſs of the ſkin, even when extending over the whole body, was not conſidered as conſtituting of itſelf the true leproſy, unleſs ſome excoriation, or appearance of "raw fleſh," was conjoined with it, or the hair was changed to white, or the depreſſion of ſurface was obſerved; and even after excoriation had occurred, if it were ſcaled over, or became white, nevertheleſs the perſon was declared clean. "And if a leproſy break out abroad in the ſkin, and the leproſy cover all the ſkin of him that hath the plague from his head even to his foot, whereſoever the prieſt looketh; then the prieſt ſhall conſider; and, behold, if the leproſy have covered all his fleſh, he ſhall pronounce him clean that hath the plague: it is *all turned white: he is clean.* But when *raw fleſh* appeareth in him, he ſhall be unclean. And the prieſt ſhall ſee the raw fleſh, and pronounce him to be unclean: for the raw fleſh is unclean; it is a leproſy. Or, if the raw fleſh turn again, and be changed into white, he ſhall come unto the prieſt, and the prieſt ſhall ſee him: and, behold, if the plague be turned into white, then the prieſt ſhall pronounce him clean that hath the plague; he is clean." (Loc. cit.) And, in like manner, when the cutaneous diſeaſe originates from a "boil," or from a "hot burning," (*ibid.* vers. 18 and 24,) in either caſe, if, in the place of the boil or burning, there be "a white riſing, or a bright ſpot, white, and ſomewhat reddiſh, and it be ſhewed to the prieſt; and if, when the prieſt ſeeth it, behold, it be in ſight *lower* than the ſkin, and the *hair* thereof be turned *white*, the prieſt ſhall pronounce him unclean; it is a plague of leproſy broken out of the boil. But if the prieſt look on it, and, behold, there be *no white hairs* therein, and if it be *not lower* than the ſkin, but be *ſomewhat dark;* then the prieſt ſhall ſhut him up ſeven days, &c.;" and if, in the mean time, it remains ſtationary, "it is a burning *boil*, and the prieſt ſhall pronounce him clean."

And, farther, when the hairy ſcalp, or the beard, is affected with leproſy, "if it be in ſight *deeper* than the ſkin, and there be in it a *yellow thin* hair," the perſon is pronounced unclean; "it is a dry ſcall, even a leproſy upon the head or beard." But even if there ſhould be no depreſſion of the ſurface, yet if there be likewiſe no *black* and thick hair, (*i. e.* hair of the natural appearance,) it is ſtill to be conſidered as "the plague of the ſcall," and the perſon is to be ſhut up for ſeven days, and to be ſhaven, for the purpoſe of more accurate inveſtigation.

Laſtly, when after theſe ſucceſſive ſecluſions and examinations, at intervals of ſeven days, in any of the caſes, the unclean leproſy is confirmed; then "the leper in whom the plague is, his clothes ſhall be rent, and his head bare, and he ſhall put a covering upon his upper lip, and ſhall cry 'unclean, unclean.' All the days wherein the plague ſhall be in him, he ſhall be defiled; he is unclean: he ſhall dwell alone; without the camp ſhall his habitation be."

It is to be inferred, from the preceding quotations, that the Hebrews, during their migration from Egypt to the land of Canaan, were ſubject to a variety of diſeaſes of the ſkin and muſcular ſolids, to which the appellation of leproſy was applied, as a general term; but that the moſt incurable and loathſome ſpecies, which was called the *leproſy*, by way of eminence, was that malady, which has been ſubſequently known in the countries which they traverſed and inhabited, and on all the eaſtern ſhores of the Mediterranean, under the various denominations above mentioned, of *leuce*, *vitiligo*, *albaras alba*, and *elephantia alba* (Plin. Hiſt. Nat. lib. xxv. cap. 5). That it was not the elephantiaſis of Aretæus, in which the face was deformed with tubercles, the lips thickened, the noſe dilated, the ears enlarged and tuberous, and the countenance diſtorted, with a reddiſh brown complexion tending to black; and ultimately with an ulceration of the rugous and tuberculated parts, (ſee ELEPHANTIASIS,) is obvious from a peruſal of the foregoing deſcription. The extreme *whiteneſs*, indeed, is mentioned in various parts of ſcripture, as characteriſtic of the leproſy, and is ſeveral times compared to that of ſnow. This *colour* is the only circumſtance that is ſtated, in reſpect to the miraculous leproſy of the hand in Moſes himſelf, as well as in that of Miriam and Gehazi: (ſee Exodus, chap. iv. ver. 6, alſo 2 Kings, chap. vi. v. 27. Numbers, chap xii. v. 10.); and the bright and ſmooth ſurface and depreſſion of the ſpots alſo afford a contraſt to the prominent and rough tubercles of elephantiaſis. Nevertheleſs the leuce has ſome affinity to the elephantiaſis in the loſs of ſenſibility in the integuments and muſcles which are affected by it. It would ſeem, however, to be a legitimate inference from the ſilence of Moſes, that the tubercular elephantiaſis was either extremely rare, if not altogether unknown to the Hebrews, or that it was not deemed unclean or contagious.

It is ſcarcely neceſſary to remark to the Engliſh reader, that the word *plague*, in the preceding paſſages, obviouſly ſignifies only the ſpot or diſeaſe; and implies nothing peſtilential or infectious. The word, in the Septuagint, is ἁφὴ, *ictus*, *plaga*, (a *ſtroke*); the latter of which is uſed in the Vulgate.

It is by no means clear, indeed, that this form of leproſy was actually contagious, or was even deemed contagious; although ſo much care was enjoined by the law in the examination of the ſymptoms, and the expulſion of the diſeaſed from the camp was ſtrictly commanded, in caſe the exiſtence of the true leproſy were aſcertained. For in the firſt place, no apprehenſion of the communication of the diſeaſe by infection is any where expreſſed; the leprous perſon is ſaid to be *unclean.* But other circumſtances, where no contagion or communication of diſeaſe could be ſuſpected, were ſaid, in like manner, to render a perſon unclean; and the law enjoined, in theſe caſes alſo, a temporary ſeparation of the perſon from ſociety, and ſimilar rites, offerings, and ablutions, at the time of being declared clean before the prieſt. (Levit. chap. xv.) Thus any iſſue or diſcharge from the body, the occurrence of the catamenia in women, child-bearing, &c. all rendered a perſon *unclean*, and equally ſubject to ſeparation and the ſubſequent ceremonies. It would ſeem, therefore, that the loathſome and foul nature of the diſeaſe, which inſpired this people with a ſimilar horror and diſguſt to that which is felt towards a corpſe ("tanquam nihil à cadavere differentes;" Joſephus Antiq. Judaic. lib. iii. chap. x. ſee alſo Numbers, chap. xii. ver. 12.) was the principal reaſon for the ſeverity of the law of excluſion, which was ordained againſt lepers. For we are informed by Joſephus himſelf, that, ſo far from being ſuppoſed to be capable of infecting thoſe about them with their diſeaſe, "lepers, in many countries, not only mix in ſociety, but are even held in high eſtimation; ſo far from being baniſhed, or looked upon with contempt, they are honoured, in warlike expeditions, with military dignities, and with offices of truſt in the adminiſtration of public affairs; neither are they excluded from the places of public devotion." (Loc. cit.) The ſcriptures, indeed, furniſh us with an example of the high ſtation of a leper, in the perſon of the Syrian general, Naaman, who was in great favour with his king. And even among the Iſraelites themſelves, it would ſeem that the excluſion of the leprous was not very rigidly enforced. For we find Gehazi, the ſervant of Eliſha, ſtill in the employment of the prophet, and converſing even with the king, after the leproſy had been inflicted on him "and his ſeed for ever:" (ſee 2 Kings, chap. v and vi. and again chap. viii. v. 4.) to ſay nothing of the four lepers ſitting at the gate of Samaria, who afterwards returned to communicate the news of the deſertion of the Syrian camp. (Ibid. chap. vii.) And in after times the leprous had free acceſs to Chriſt, and joined in the crowds that followed him. (St. Matthew, chap. viii.) They were alſo inhabitants of the towns and villages; for Jeſus was "*in the houſe* of Simon the leper, *in Bethany.*" Ibid. chap. xxvi. v. 6.

Theſe facts, then, afford more than preſumptive evidence, that the Hebrew leproſy, the *leuce*, or *vitiligo alba*, was not a contagious diſeaſe, any more than the white ſcaly leproſy, which is common in our own time. And there is much reaſon for believing, that even the tuberculated leproſy, or elephantiaſis, was equally void of contagious qualities, as we ſhall preſently ſtate, notwithſtanding the ſtrong aſſertions to the contrary among the ancients. We have already obſerved, however, that the latter was conſidered as a conſequence of the white leproſy in many inſtances, or as the ſame diſeaſe, in a more ſevere degree; for the lepra was ſaid to change into elephantiaſis (Galen. de Tremor. præter Nat. cap. 13.): and this author alſo mentions two caſes, in which, on the contrary, elephantiaſis was changed into lepra by a particular mode of treatment. Galen, de Simplic. Med. Fac. lib. xi.

Little can be ſaid, that ſhall poſſeſs any intereſt, reſpecting the treatment of the *leuce*, or Jewiſh leproſy. It was generally deemed an incurable diſeaſe in ancient times, and is almoſt unknown, we believe, at preſent in Europe. It ſtill, perhaps, appears occaſionally in Iceland, and other northern regions, as a precurſor, or as a modification of the elephantiaſis, according to the obſervation of a late intelligent traveller in the iſland juſt mentioned. He ſtates, that he ſaw a woman affected with a horrible diſeaſe, which is there called *Likthrau*, by which her face was ſo corroded as to preſent a moſt diſguſting ſpectacle. "Her legs and hands," he adds, "were ſwollen to an enormous ſize, theſe latter being alſo covered with a *thick* and *almoſt white* ſkin lying in *great wrinkles.*" (Hooker's Journal of a Tour in Iceland, p. 186.) The thickened and rugous ſkin, with the ulcerations of the face, belong to elephantiaſis; while the morbid *whiteneſs* is characteriſtic of leuce. Mr. Hooker alſo expreſſes his opinion, that this diſeaſe was not contagious. No light has been thrown upon this diſeaſe by a ſtill later traveller in the ſame iſland, who has recounted the ſymptoms of elephantiaſis, as commonly given in books, and apparently added nothing from perſonal obſervation. (See Mr. Holland's Paper on the Diſeaſes of Iceland, in the ſir G. Mackenzie's "Tour" in that iſland, juſt publiſhed. Dec. 1810.) Profeſſor Henſler mentions a caſe, which he once ſaw for a few minutes, and which appears to have reſembled that mentioned by Mr. Hooker. "The whole countenance was puffed up; the cuticle was of a dirty white, or whitiſh-grey colour, dry and ſhrivelled; but ſoft to the touch, as if diſtended with a watery fluid; with fiſſures here and there, from which ſome exudation took place." The cuticle alſo exhibited ſome furfuraceous and powdery exfoliations. Henſler remarks, that the compariſon (applied by Aaron to his ſiſter Miriam, in Numbers, chap. xii. v. 12.) of ſuch a perſon to a dead and macerated *fœtus*, is a moſt happy illuſtration of the appearance. ("Let her not be as one dead, of whom the fleſh is half conſumed, when he cometh out of his mother's womb.") The phyſician who attended the patient, ſeen but once by Henſler, compared the appearance of the ſkin to that of thick, ſtiff, dried leather; it was ſo thick, that an experienced ſurgeon made ſeveral attempts to open a vein, without ſucceſs, in various parts of the body. There was great ſwelling, ſtiffneſs, and tenſion of the eyelids, with a frequent ophthalmia, and great ſenſibility to light. A thick and fœtid cruſt covered the ſcalp. She was twice ſo nearly cleared of the leproſy, ſo as to go out of doors again; the firſt time by large doſes of conium with ſublimate of mercury; the ſecond, by tincture of cantharides, after antimonials and mercurials had increaſed the ſymptoms. A third time ſhe was improving much, under the uſe of ſmall doſes of arſenic, which, however, was neceſſarily omitted, and ſhe ultimately died. (Henſler vom Abendländiſchen Auſſatz 3e Abſchnitt. § 11. p. 351.) It is worthy of remark, that the leproſy, in this caſe, ſuſpended a pulmonary conſumption, the ſymptoms of which never afterwards returned.

Of the *cauſes* of this form of leproſy, we ſhall ſay nothing, until we come to treat of the leproſy of the middle ages.

With reſpect to the *leproſy of houſes* and *of clothes*, mentioned in the Moſaic code, it is probable that the expreſſion was merely analogical, the ſpots and diſcolourations which appeared upon the walls and articles of apparel being looked upon as reſembling the leprous ſpots: while, at the ſame time, as they were moſt probably the conſequence of humidity, the appearance of them might either actually accompany, or precede and prognoſticate, diſeaſes in the inhabitants of the houſes and wearers of the garments. (Levit. chap. xiii. and xiv.) It is no where ſaid that the diſeaſe, called leproſy, is capable of being communicated to the inhabitants or wearers, in theſe caſes; but that it is unclean. The garments were ordered to be burnt, and the ſtones to be taken away, and replaced by others, or the houſe ultimately to be deſtroyed, when, after certain inſpections by the prieſt, the greeniſh or reddiſh ſpots in them continued.

LEPROSY *of the middle ages.* The hiſtory of Europe, from the ſixth to the fifteenth century, is ſcarcely leſs full of the deſcriptions of the phyſical diſtreſſes of the people, occaſioned by famine, peſtilence, and diſeaſes of the moſt loathſome and fatal kind, than of the political and moral evils which beſet them. Among the maladies of thoſe times, leproſy, under all the forms to which the term has been applied, appears to have exiſted ſo generally and unceaſingly, as to have claimed a more univerſal attention than even the plague itſelf. It was one of the firſt ſubjects, on which the active benevolence of the early Chriſtians exerted itſelf, and ultimately it abſorbed a very large proportion of the wealth of Chriſtendom, which was appropriated by the donations of the pious to the maintenance and relief of thoſe who were afflicted with it. Theſe immenſe charities, however, were at length adminiſtered under great abuſes, and afford no accurate grounds upon which to calculate the extent of the prevalence of the malady.

In inveſtigating the hiſtory of the diſeaſe in the middle ages, we ſhall probably find it ſufficiently clear that the elephantiaſis, or tubercular diſeaſe, (the *Lepra* of the tranſlators *of the Arabians,*) was the principal form againſt which the precautionary laws were framed; but that almoſt all cutaneous diſeaſes were popularly conſidered as of a leprous nature; that, in fact, many miſtakes were committed, and many wilful deceptions practiſed, by which other diſeaſes were confounded with elephantiaſis; and that its diſappearance from Europe is probably the reſult of the amelioration of the moral and phyſical condition of ſociety, which the progreſs of civilization and ſcience has brought about.

The general opinion, which was prevalent among the Greeks and Romans, that leprous diſeaſes originated in Egypt, is in ſome meaſure confirmed by the particular conſideration given to them in the firſt hiſtory of man; and the more copious and diſtinct deſcription of theſe diſeaſes, ſubſequently given by the Arabian phyſicians, as well as the accounts publiſhed by travellers in more recent times, (ſee thoſe of Proſper, Alpinus, Tournefort, Niebuhr, Bruce, &c.) who witneſſed their frequent occurrence in that and the neighbouring countries, have led to a common belief, that the infection was brought into Europe, in the eleventh century, by the armies that returned from the cruſade. But independently of the doubts, which may be entertained, in reſpect to the contagious nature of *elephantiaſis* and *leúce,* there is ſufficient evidence recorded, eſpecially among the tranſactions of the ſaints, in proof of the prevalence of leproſy in the weſt, at a much earlier period. Lepers are mentioned in many public acts, according to Muratori (Antiquit. Ital. Med. Ævi. t. ii. diſſ. 16.), in the ſixth century; and Gregory of Tours ſpeaks of a place, where theſe unfortunate perſons were accuſtomed to waſh themſelves, as well as of a hoſpital appropriated for them. Gregory the Great, in the ſame century, likewiſe alludes to the ſubject, and particularly mentions one leper, "quem denſis vulneribus morbus elephantinus defædaverat." In the following century, Rhotaris, king of the Lombards, publiſhed an edict againſt lepers, by which they were conſidered as dead in the law, and enjoined not to come near to ſound perſons, but to appriſe them of their approach, by making a noiſe with a wooden clapper. There was a river near Aſti, in Lombardy, famous in thoſe times for the cure of leproſy; whence, in the eighth century, the Lombards were conſidered as a filthy leprous people: and the wiſe pope Sylveſter, upon the plea of leproſy, diſſuaded the king of France from marrying a Lombard princeſs. So early as the eighth century, St. Othmar, in Germany, and St. Nicholas de Corbie, in France, inſtituted leprous houſes, which had been already numerouſly eſtabliſhed in Italy. King Pepin, in 757, and Charles the Great, in 789, iſſued ordinances, by which the marriages of lepers were diſſolved, and their aſſociation with the healthy prohibited. In the life of St. Athanaſius, in the ninth century, lepers are alſo mentioned; and indeed, in general, the acts of the ſaints, compiled by the Bollandiſts, are replete with examples of the malady, throughout Europe, in the middle ages; even in the life of St. Antoninus, ſo early as the fourth century, a caſe of leproſy, "horrendiſſima elephantiæ lepra," is mentioned. Muratori, loc. cit.: alſo Raymond, Hiſtoire de l'Elephantiaſis, p. 107: Henſler, über den Auſſatz, p. 211.

Theſe facts imply the general prevalence of leproſy in Europe, long antecedent to the Cruſades. It is clear, however, that many ſevere diſeaſes afflicted Europe to a much greater extent, and with augmented virulence, about the period when thoſe fanatical expeditions were executed, or rather from the tenth to the ſixteenth centuries, than before; and, among the reſt, the leproſy appears to have been every where prevalent. Every country abounded with its hoſpitals, eſtabliſhed for the excluſive relief of lepers, although the number of theſe inſtitutions has been probably exaggerated. Several authors have, by an error in tranſlation, quoted Matthew Paris (Hiſt. Angl. ad annum 1244) for an aſſertion, that *nineteen thouſand* lazarettos exiſted in Chriſtendom; but that author only ſtates, that the hoſpitalers were, at that period, poſſeſſed of 19,000 *manors.* "Habent *hoſpitalarii* novem decim millia *maneriorum* in Chriſtianitate." It is affirmed, however, that Lewis VIII., king of France, made bequeſts, in the year 1227, to two thouſand *leproſeries* within his own kingdom. (Raymond, loc. cit. 106. Collect. des Hiſt. de France. Du Cange, Gloſs. voc *Lazari.*) In this country, there were a great number of theſe eſtabliſhments. It is affirmed, that the city of Norwich alone contained five. (Sprengel, Geſchichte ii. Theil, p. 491; who quotes Hutchinſon, in the Polit. Mag. for Feb. 1789, p. 93.) The moſt extenſive inſtitution of this kind was in Leiceſterſhire, at a place thence called Burton-Lazars; it was founded in the reign of king Stephen, and dedicated to the Virgin and St. Lazarus, and became poſſeſſed of immenſe riches; ſo that all the inferior lazar-houſes in England were in ſome meaſure ſubject to the maſter of it, as he himſelf was to the maſter of the lazars at Jeruſalem. (See Nichols's Hiſt. of Leiceſterſhire.) In London there were ſix, according to Becket, the largeſt of which was that of St. Giles, without Temple Bar.

Moreover, the general exiſtence of leprous diſeaſes is farther evinced by the creation of an order of knighthood, which ſprung from the ſingular combination of military ardour with a zeal for the religion of peace, ſo prevalent in thoſe times. In the parable of the rich man and the poor man covered with ulcers, recorded in the New Teſtament, the latter was mentioned by the name of Lazarus; whence the devout diſpoſition of the times invented a St. Lazarus, whoſe name was given to the order of knighthood, and who was deemed the tutelary ſaint of the leper-houſes, and of each individual leper. So far, indeed, did the miſtaken piety of the age extend, that not only was every man, who returned from Paleſtine affected with foul ſores, deemed a ſaint, *Lazarus;* but was particularly recommended to the devout, as one under the ſpecial puniſhment of God, for the benefit of his ſoul. Wherefore pious perſons of the higheſt rank believed that they could bring themſelves no greater favour in the eyes of the Deity, than by their attention to theſe holy ſufferers, by waſhing, kiſſing, and even licking their wounds. Not only prieſts and archbiſhops, but even kings are recorded to have performed this nauſeous piety at certain ſeaſons. King Robert of France, and Louis IX., have been particularly mentioned as practiſing theſe ceremonies. (Du Cange. voc. *Lazari.* Joinville Hiſt. de St. Louis. Sprengel, Geſchichte, ii. 489, &c.) The knights of St. Lazarus had the double duty aſſigned them of holy warriors and attendants upon lepers; and the lazarettos were placed generally under their controul. Lepers, indeed, were admitted into the order, and the maſter of it was alſo required to be a leprous knight. (Moehſen de Medicis equeſtri dignitate ornatis, p. 56. quoted by Henſler.) The immenſe wealth, which they accumulated, became at length, however, a temptation to the rapacity of ſome ſovereigns; and Philip V., eſpecially, accuſed all the hoſpitallers in France of high treaſon, by conſpiring with the Turks and Jews, ſeized their property, and ordered them to be burnt. Sprengel, loc. cit. Mezeray Hiſt. de France, ii. p. 71.

We may obſerve, by the way, that the application of the name of Lazarus to every thing relating to leproſy, affords another proof of the very vague manner in which the ſubject has been generally conſidered. For not only was the diſeaſe of Lazarus not termed leproſy by the divine ſpeaker of the parable; but the ſtatement that his body was "covered with ſores," neither repreſents the picture of the Jewiſh leproſy, nor of the elephantiaſis, nor yet of the lepra of the Greeks. (See a learned diſſ. by Fred. Hoffman, "De Morbo Lazari," in his works, Supplem. tom. iii. p. 553.

In all the towns, where lazarettos were eſtabliſhed, medical officers were appointed by the police, to examine all perſons, who were ſuppoſed to be affected with leproſy, previous to their ſecluſion in thoſe receptacles; indeed, where no ſuch eſtabliſhments exiſted, huts were erected a little way out of the towns (where alſo the hoſpitals were generally placed) for each individual leper. The rules and edicts, with regard to the conduct of the lepers, were, as far as the circumſtances admitted of it, nearly copied from the Moſaic laws. It is obvious, however, from the writings of thoſe phyſicians, who held the office of examiners after the revival of learning, and indeed it was avowed by them, that the *tubercular* leproſy, or elephantiaſis, was the diſeaſe, to the detection of which their inquiries were particularly directed. The earlieſt writers, who appeared in the dawn of modern learning, (and ſeveral of whom added original obſervation to what they borrowed from Avicenna, and the other Arabians,) deſcribed the elephantiaſis under the appellation of lepra. (See the works of Guid. de Cauliaco; Gul. de Saliceto, and the Compendium Medicinæ of our learned and able countryman, Gilbertus, who lived about the reign of Edward I., and has left a deſcription of leproſy, ſo full and minute, as to evince a conſiderable ſhare of perſonal obſervation, notwithſtanding the charge of plagiariſm from the monk, Theodorick, which Dr. Friend enforces againſt him.) Greg. Horſt, who was one of the appointed examiners at Ulm, in Bavaria, at the end of the ſixteenth century, has left us the particulars of the examination, uſually practiſed by himſelf and his colleagues, when ſummoned by the magiſtrates for that purpoſe. After the preliminary queſtions relative to the age and family of the perſon brought before them, they examined him reſpecting the exiſtence of the diſeaſe in his parents and progenitors; his habits of life and his aſſociates, with a view to the probability of contagion; his peculiar temperament, and previous ſtate of health, and particularly as to the ſuppreſſion of cuſtomary evacuations; and then as to the climate, ſoil, habitation, and diet, to which he had previouſly been accuſtomed. They then queſtioned him, *ſeriatim*, as to the ſtate of all the functions, mental and corporeal: and laſtly, denudatis partibus omnibus, they examined the whole body, with a view to aſcertain the preſence or abſence of the following external ſymptoms. Firſt they inſpected the head, to ſee whether the hair was beginning to fall off; whether that of the beard was becoming ſofter and thinner; and that of the eye-brows and eye-laſhes was diſappearing; and whether, when the hairs were pulled up by the roots, a part of the ſkin was brought away with them; whether the eyes were round and grim, the ears acuminated, the lips thick, the noſe tumefied externally, the noſtrils internally ſtuffed and ulcerated, the face unequally ſwelled with tubercles, and of a livid red hue? Whether the veins under the tongue were enlarged with tubercles, as if varicoſe? Whether the ſkin was unctuous, ſo that water ran off it, or there were under it tubercles nearly without ſenſibility, eſpecially behind the ears, and on the extremities? Whether the ſkin was rough, like that of an unfeathered gooſe, or affected with horrid fiſſures, and *rugæ*, reſembling the hide of an elephant, or covered with warts, like the *grandines* of ſwine, or affected with *morphæa*, *impetigo*, or a dry and incurable *ſcabies?* Whether there were any nodes about the joints? Whether the muſcles of the extremities, eſpecially about the thumbs, were emaciated? Whether the nails were incurvated? Whether the ſkin was ſenſible to the puncture of the ſurgeon's needle? Whether there were offenſive ulcers, with a bad habit of body, eſpecially ulcerations and fiſſures in the fingers and toes? and whether the voice was hoarſe and obtuſe? They then drew ſome blood, for the purpoſe of examining it. "Theſe ſymptoms being preſent," ſays the author, "we deem the diſeaſe elephantiaſis, and decree that the patient, inaſmuch as he is affected with an incurable and contagious leproſy, is to be ſeparated from all communion with the healthy." Gregor. Horſtii Obſ. Med. lib. vii. Obſ. xviii. Epiſt. J. H. Hopfnero.

It is obvious, however, from the acknowledgment of Horſt himſelf, as well as from the concurring obſervations of ſeveral phyſicians before his time, that the elephantiaſis was by no means the only diſeaſe of the kind admitted into the lazarettos. He goes on to obſerve, that where the tubercles of the face, the thick lips, acuminated ears, flattened noſe, round eyes, (the eſſential ſymptoms of elephantiaſis,) are abſent; yet where the patients are affected only with a dry and foul ſcabies, with puſtular eruptions, fiſſures, and branny exfoliations, which conſtitute the *pſora* of the Greeks; or even with great itching, emaciation, ulceration, and exfoliations of thicker ſcales, affecting alſo the head and face, which are the *lepra* of the Greeks; nevertheleſs they are ſent to the lazarettos, if they are poor, for the means of ſubſiſtence. "Hence it happens," he adds, "that here, and elſewhere, *very few* inſtances of real elephantiaſis are found in the lazarettos, whilſt *many* are there, affected only with an obſtinate *pſora* or *lepra Græcorum*." We have alſo the direct teſtimony of an able obſerver, Van Foreeſt, (better known by his Latin appellation, Foreſtus,) who practiſed at Alcmaer and Delft, in the middle of the ſixteenth century, and who has alſo left an account of the mode of examination of lepers, adopted by himſelf, that a very ſmall proportion of the perſons, who wandered about the Low Countries, as lepers and beggars, were true lepers; but were merely affected with ſcabies, or ſome external defœdation of the ſkin. "Nay," he ſays, "*not one in ten* of them is truly a leper, or afflicted with the legitimate elephantiaſis." And he adds the authority of a phyſician at the Hague, who had, with him, lamented the careleſſneſs or ignorance of the public examiner at Harlem, by whom a great number, (quem plurimi,) who were the ſubjects of ſome ordinary cutaneous eruption, were declared leprous. (See Foreſti, Obſerv. Chirurg. lib. iv. Obſ. vii. Schol.) But, above all, Riedlin, who was phyſician to the leper-houſe at Augſburg, affirms that, out of *fifty-nine* caſes, he ſaw but one which was elephantiaſis, and that in a ſlight degree; all the reſt were inſtances of the *pſora* and *lepra* of the Greeks. (See Shroeck, Miſc. Ann. 1689, p. 61, and Henſler, loc. cit.) It is probable, moreover, that in addition to all the ordinary cutaneous diſeaſes, which were thus denominated leproſy, the *ſcurvy* itſelf (we mean the true *ſcorbutus*, which was formerly ſo well known in our fleets, and which appears to have been not unfrequent in the middle ages, during periods of ſcarcity and famine) was confounded with the ſame diſeaſe. This idea was thrown out by Hoffmann. "Quando mecum perpendo hodierni veri ſcorbuti ſymptomata, vix mihi temperare poſſum, quin, iis cum adflictionibus elephantiacorum collatis, ſcorbutum leviorem elephantiaſeos eſſe ſpeciem aſſeram; at inde miram morborum pro diverſâ regionum ac aeris conſtitutione mutatione conſiderem. Sed tranſeat hæc conjectura, digna quæ penitius inveſtigetur." (De Morbo Lazari, § v.) Prof. Sprengel alſo ſuſpects that thoſe forms of leproſy, which have been called *mal de la roſa* in Aſturia, and *pellagra* in Lombardy, were ſcorbutic (Geſchichte der Arzneykund, ii. 486.): and many analogies between the two diſeaſes are pointed out by Raymond. Hiſt. de l'Elephant. p. 118, et ſeq.

Theſe leprous complaints began to decline in number and violence, in Italy, about the end of the fifteenth century, and in France and Europe, in general, in the ſixteenth. In the middle of the fifteenth century, indeed, the tubercular diſeaſe, elephantiaſis, was almoſt unknown in Italy. For Ant. Beniveni, who died very old at the beginning of the ſixteenth, obſerves, that he once ſaw at Florence a ſtranger affected with elephantiaſis; a diſeaſe, he ſays, almoſt never ſeen (in his time) in Italy, and almoſt unknown to phyſicians. At the beginning of the ſixteenth century, Alex. Benedetti and Joh. de Vego omit the tubercular leproſy from the liſt of diſeaſes, mentioning it only curſorily, and not from experience; but the latter ſpeaks fully of morphæa, impetigo, baras, alopecia, mal morto, and other diſeaſes that have been claſſed with leproſy. (Henſler, loc. cit.) About the middle of the ſixteenth century, Francis I. ordered the number of lepers in each lazaretto, or maladrerie, to be reported, and after appropriating a ſufficient ſum for their ſupport, ordered the remainder of their revenues to be given to the grand almoner, for general uſe. In the ſeventeenth century, leper-houſes were ſtill continued, (though ſimilar meaſures had been generally adopted ſince the decline of the diſeaſe throughout Europe,) and were greatly abuſed by the admiſſion of beggars, and idle vagrants of all deſcriptions, who employed every ſpecies of trick to imitate leproſy, or to produce appearances of cutaneous diſeaſe. The elephantiaſis itſelf, however, ſtill occaſionally appeared, of which ſeveral recorded caſes are referred to by Henſler. Some writers, indeed, have ſuppoſed, that the changes, which took place from the cloſe of the fifteenth century downwards, were rather changes of names than an actual diſappearance or diminution of leproſy; and that the *venereal diſeaſe*, which was firſt noticed at that period, was in fact the *leproſy* with a new appellation. Indeed, ſome authors actually denominated the *morbus Gallicus*, or ſyphilis, a leproſy; as Campanella, who treats of it among other leprous diſeaſes, under the title of *lepra Gallica*. (See his Med. Prædict. lib. vi. cap. 23.) But although the ſecondary ſymptoms of ſyphilis might be miſtaken for leproſy, or called leprous, in common with other ulcerations and cutaneous affections, in a conſiderable number of inſtances, and for ſome time; yet, as the learned and able Aſtruc, after Leonicenus and others, has ſhewn, there were ſo many points of obvious and decided difference, in the ſymptoms and progreſs of the two diſeaſes, as rendered ſuch a confuſion to any great extent improbable. (See Aſtruc. de Morb. Vener. vol. i. lib. i.) Nevertheleſs, when we reflect upon the unvarying adherence to ancient authority, which characterized the profeſſion for centuries after the revival of learning; and when we conſider, that the meaſles and ſmall-pox, for inſtance, were deemed the ſame diſeaſe, including alſo ſcarlet fever, ſo late as the time of Diemerbroeck (ſee his Tractat. de Variolis et Morbillis, cap. 13.); we ſhall readily conceive, how ſlow the early phyſicians would be in acknowledging a new diſeaſe, which had not been mentioned by the Arabians, and with what facility they might confound it with the old, under a denomination ſo vaguely interpreted, as that of leproſy.

At all events, we are entitled to infer, from the preceding view of the ſubject, that, during the middle ages, moſt erroneous notions prevailed reſpecting the leproſy; and that the terrors of the ancients, reſpecting the contagious and unclean nature of *leuce* and *elephantiaſis*, were transferred almoſt indiſcriminately to every chronic cutaneous diſeaſe, whether ſcaly, ſcabby, puſtular, or ulcerous, contagious or non-contagious, which then occurred. And as we are now well acquainted with the latter claſſes of diſeaſe, (although, from cauſes to be mentioned immediately, they may be much leſs frequent than formerly), as we know that all the forms of ſcaly diſeaſe, ſuch as the modifications of lepra, pſoriaſis, ichthyoſis, and pityriaſis, to uſe Dr. Willan's nomenclature, as well as the running tetters, or impetigines, the veſicular eruptions, herpes, miliaria, and pompholyx, and the lichenes, prurigo, &c. among the papulous affections, are all void of any infectious quality; we muſt be ſatisfied, on the one hand, how miſtaken was the charity, which erected thouſands of hoſpitals, and appropriated immenſe treaſures, for the maintenance of thoſe who were affected by theſe diſorders, and for the fancied ſecurity of the healthy; while, on the other, we ſee the cruelty and abſurdity of the regulations and ceremonies, which were inſtituted in regard to ſuch patients, ſomewhat after the manner of thoſe enjoined in the thirteenth chapter of Leviticus, for the Jewiſh lepers. In fact, a perſon affected with the real or ſuppoſed leproſy, was treated like a dead body: funeral obſequies were performed, and maſſes ſaid for the benefit of his ſoul. The whole is thus deſcribed by a French writer.

"A prieſt, clothed in a ſurplice and ſtole, repaired with the croſs to the leper, who was prepared for the ceremony. The holy miniſter began by exhorting him to bear patiently, and in a ſpirit of reſignation and penitence, the incurable affliction with which God had ſtricken him; he then beſprinkled the ſufferer with holy water, and conducted him to the church. Here the leper put off his ordinary clothes; and, having put on a black habit prepared for the purpoſe, fell on his knees before the altar, between two treſtles, and heard maſs; after which he was again ſprinkled with holy water. This ceremony, it will be remarked, differed very little from that which is uſually performed at funerals. While the leper was conducted to the church, the ſame verſes were ſung as at burials, and after the maſs, which was alſo the ſame as that which was performed for the dead, the *Libera* was ſung, and the leper was then conducted to the houſe deſtined for him. When he had arrived, the prieſt again exhorted and conſoled him, and threw a ſhovel-ful of earth on his feet. The hut (where there was no lazaretto) was ſmall, and was furniſhed with a bed and bedding, a veſſel for water, a cheſt, a table, a chair, a lamp, a towel, and other neceſſaries. He was preſented with a cowl, two ſhirts, a tunic, and a robe called *houſſe*, a little caſk, a funnel, a rattle (des eliquettes), a knife, a ſtick, and a girdle of copper.

“ Before the prieſt quitted him, he interdicted him from appearing in public without his leper's habit and naked feet; from going into churches, mills, or where bread was cooking; from waſhing his hands and clothes, &c. in the wells and brooks; from touching any commodities that he deſired to purchaſe at market, except with a ſtick, in order to point out the article wanted; and from entering houſes, or taverns, for the purpoſe of purchaſing wine, as he had only the privilege of remaining at the door, of aſking for what he required, and receiving it in his little caſk. He was farther enjoined not to draw water, but with a proper veſſel; never to reply to the queſtions of any one who met him on the road, unleſs he was to *leeward*, in order that the inquirer might not be infected by his breath, and the contagious odour exhaling from his body; never to place himſelf in narrow roads; never to touch children, nor to give them any thing which he had touched; never to appear in public meetings; and never to eat or drink with any but lepers. In ſhort, theſe wretched people were regarded as dead among the living: their children were not baptized at the fonts; and the water employed at their baptiſm was thrown into lonely places. When a leper was ſick, the prieſt adminiſtered the ſacrament to him, and extreme unction; and when he died he was buried in his hovel, or in the place of interment appropriated for the leprous.” See Ogée, Abregé de l'Hiſt. de Bretagne, prefixed to the Diction. de Bretagne.

In moſt places theſe miſerable outcaſts were allowed to enter the towns, near which their hovels or lazarettos ſtood, at certain times of the year, eſpecially about Eaſter and Chriſtmas. The following law exiſted at Marſeilles. “ Præſenti conſtitutione firmamus deinceps obſervandum, quod nulli Leproſi ſeu Mezelli, *divites vel pauperes*, poſſint vel debeant ſtare infra Maſſiliam, nec converſari deinceps, niſi tantum per xv dies ante paſcha, et per viii dies ante Natale Domini, &c.” (Stat. Maſſil. lib. v. cap. 15.) When they walked, or came into a town, they made a noiſe with their rattles, to warn paſſengers of their preſence. In ſhort, their ſituation was truly melancholy. The ties of marriage were diſſolved, where one of the parties only was affected; but they were allowed to marry when they could find a leprous companion. They were, indeed, allowed the uſufruct of property; but they could neither transfer nor inherit it: they were deemed to have ſuffered a civil death, and to be “ hors de la loi mondaine” See Henſler, loc. cit. § 4. Sprengel, loc. cit. p. 491-2. Raymond, p. 112.

Yet not only were theſe laws executed againſt multitudes who were affected with cutaneous diſeaſes, neither properly leprous nor contagious; but it is even very queſtionable whether the true tubercular elephantiaſis itſelf, any more than the leſs formidable *baras alba*, or *leuce*, were actually contagious. We have already ſtated the reaſons which tend to diſprove the infectious nature of the latter. (See Leprosy *of the Jews*.) The evidence againſt the probability of contagion, in the caſe of elephantiaſis, reſts partly upon the facts, which are caſually mentioned, in more ancient times; and partly upon thoſe which have been more carefully and correctly aſcertained nearer to our own. The obſervations of Aretæus, which have been echoed by almoſt all ſucceeding writers, are given with an appearance of terror, excited rather by an acquieſcence in the popular belief, than from any actual knowledge of the fact. When we deſcend to the early ages of Chriſtianity, we find theſe terrors perpetuated by the laws reſpecting lepers, which were at once the effect and the cauſe of a continuation of the popular opinions; but at the ſame time, we find kings and biſhops mixing familiarly and frequently with theſe very objects of legal proſcription, and condeſcending to offices which require the cloſeſt contact with their perſons, not only without any expreſſions of apprehenſion, but without any one recorded inſtance of the diſeaſe being ſo communicated: we find, too, that for a term of ſeveral days, during certain faſts and feſtivals, theſe infected people are actually allowed to mix in the towns; facts which ſtand in direct contradiction to the traditional prejudices and laws upon the ſubject.

Deſcending, ſtill farther, to the period when learning and obſervation had again enlightened the minds of men, we find theſe very prejudices and laws extending equally to a numerous tribe of cutaneous diſorders which we know are not contagious, as to the elephantiaſis; an error which muſt render the accuracy of the opinion, as to the contagious quality of the latter, exceedingly queſtionable. At the ſame time we diſcover the contention between obſervation and pre-conceived opinion in the minds of the learned, which almoſts breaks forth in the admiſſion of the truth. Thus Fernel, who adopted the common notion of its contagious quality, admits, nevertheleſs, that from all the obſervations he has been able to make, he has never diſcovered a caſe which proved its exiſtence (De Morb. Occult. lib. i. cap. xii.); and Foreſtus, Fabricius, Plater, &c. who ſtill held the popular opinion, expreſſing their aſtoniſhment at ſeeing the daily commerce between the leprous and healthy, even in married perſons, without any communication of the diſeaſe; ſo that they are compelled to aſcribe its origin to certain qualities of the air and the diet.

When we come to the evidence of our own times, we have ſtill more convincing teſtimony of the non-contagious nature of the tubercular leproſy. Dr. Thomas Heberden, ſtill retaining ſomewhat of the prejudices of education, when ſpeaking of the caſes of the diſeaſe which he ſaw at Madeira, ſays, “ Notwithſtanding the juſt abhorrence which every one entertains of this loathſome diſeaſe, it certainly is not *ſo* contagious as is commonly imagined;” and then he relates his obſervations, which prove that it is *not* at all contagious. “ For I have never *heard* of any one,” he adds, “ who has contracted the diſtemper by contact of a leper; and, on the contrary, I not only am a daily *witneſs* of communication between lepers and other people, without the leaſt ill conſequences, but *know* ſeveral inſtances where a leprous huſband, married to a ſound wife, has cohabited with her for a long ſeries of years, and had ſeveral children by her, without her having contracted the leaſt ſymptom of the diſorder, although the children have inherited it; and *vice verſâ* between a leprous wife and ſound huſband.” (See Med. Tranſ. of the Coll. of Phyſ. vol. i. p. 32.) Still more recently, Dr. Adams has inveſtigated the nature of elephantiaſis, in the ſame iſland, where there is ſtill a lazaretto, near Funchal; and his obſervations not only confirm thoſe of Dr. Heberden, as to the non-contagious nature of the diſeaſe; but they alſo ſhew that other miſtakes, which originated probably in the terrors of the imagination, when the diſeaſe had acquired the appellation of *Satyriaſis* (from the acuminated ears, flattened noſe, and rugous front); namely, that ſo far from being poſſeſſed with a *libido inexplebilis*, the pro-creative appetite and power are gradually deſtroyed, if the diſeaſe ariſe in the age of manhood, and never developed if it commence before that of puberty. See Adams on Morbid Poiſons, 2d edit. chap. 18.

It is true, that about the middle of the 18th century, Dr. Hillary had deſcribed the elephantiaſis as occurring in the Weſt Indies, with all the characteriſtics attributed to it by the ancients. But the deſcription of that learned phyſician is but too obviouſly a tranſcript of the account given by Aretæus, uncorrected by his perſonal obſervation. (See his Obſ. on the Diſ. of Barbadoes.) In this the learned writer affords but one example, among a long ſeries of medical ſcholars, in whom authority but too often dimmed the eye of obſervation, or diſtorted its views.

If the leproſy of the middle ages, then, were not contagious, whence did it originate and ſpread ſo widely? Probably the hint thrown out by Foreſtus, Plater, and others, and more fully developed in the excellent treatiſe of Raymond, already often quoted, may afford an adequate explanation of the fact; to wit, that the uncultivated and marſhy condition of the ſoil; the conſequent humid and miaſmatous condition of the atmoſphere; the ſalt, putrid, indigeſtible aliment, and the frequent ſcarcity even of that which the phyſical and political diſorders of the times produced; the inſalubrious condition of the towns and habitations, both in reſpect to bad ſituation, want of cleanlineſs, and other pernicious circumſtances; in ſhort, theſe combined evils, which appear to have exiſted in thoſe times and countries where the leprous, among other frequent and diſtreſſing maladies, prevailed. were, in all probability, the ſources from which theſe cachectic diſeaſes ſprung.

It has been ſatisfactorily ſhewn, from a review of the domeſtic hiſtory of the times, in which frequent and fatal epidemics have raged, how much theſe were connected with the circumſtances juſt enumerated (ſee EPIDEMIC, and HEALTH); and it is intereſting to trace the diminution, and ultimately the total diſappearances of theſe peſtilences, in proportion to the amelioration of thoſe phyſical and moral evils; and to diſcover, that while the happineſs and comforts of man are extended by the advancement of civilization, the worſt diſeaſes that haraſs and ſhorten life are at the ſame time nearly extinguiſhed. (See the excellent Obſ. on the Increaſe and Decreaſe of different Diſeaſes, by Dr. Heberden; alſo, Ann. Med. Regiſter and Review.) If we turn from the febrile plagues to the more chronic maladies which are the ſubject of the preſent article, we find that they have generally gone hand in hand. (See SCURVY, IGNIS *Sacer*, ERGOT, &c.) The hiſtory of the *ſcurvy*, in particular, affords an analogical illuſtration of the influence of the circumſtances alluded to, in producing many of the loathſome ſymptoms enumerated among thoſe of leproſy; eſpecially the defædations of the ſkin, the ſwellings of the limbs, the ulcerations, fungous excreſcences, fœtid diſcharges, gangrenes, and loſs of joints and limbs;—appearances as hideous as any of thoſe aſcribed to leproſy. Now, this diſeaſe has been baniſhed from our fleets within the laſt half century, ſolely by the ſubſtitution of wholeſome and digeſtible aliment, and by the adoption of ventilation and internal cleanlineſs; it has, in like manner, been ſubdued in Germany, and thoſe parts of the north of Europe, where it prevailed fatally in the time of the Romans, in proportion as agriculture and the arts have changed the face of that once marſhy and uncultivated region, and obtained a regular ſupply of nutritious and wholeſome food.

If our ſpace would admit of a review of the phyſical and political circumſtances of the times, in which leprous diſeaſes have been ſo extenſively prevalent, it would be eaſy to adduce ample proof that, from the beginning of hiſtory, theſe maladies have occurred under ſuch ſtates of ſociety; and that they have commonly viſited, almoſt excluſively, thoſe claſſes of ſociety who were moſt expoſed to the influence of thoſe circumſtances; namely the poor.. Lower Egypt has, from the earlieſt antiquity, been ſubject to theſe diſeaſes, and from the extenſive inundations occaſioned by the overflowing of the Nile, can never be rendered a dry or ſalubrious country. The ancient hiſtorians concur in their deſcriptions of its heavy and miſty atmoſphere, ſurcharged with vapours. (Strabo, lib. xvii.) The inhabitants ate a glutinous ſort of bread made of the roots of the *lotus*, &c.; and uſed much fiſh in every ſtate; and having few trees, they had no wholeſome fruits to conjoin with their diet. But how much more imperfectly the Hebrews were nouriſhed in their long march through the wilderneſſes of Arabia is obvious, and indeed recorded; to which all the inſalubrious circumſtances of a camp were added. Perhaps no combination of circumſtances could be conceived more favourable, as well to the production of frequent peſtilences, as to the excitement of thoſe cachectic ſtates of the body, in which ſcorbutic and leprous affections originate, than the ſoil and marſhes of an uncultivated land, the ſordes and miaſmata of an immenſe encampment, frequent ſcarcity of proviſions, fatigue, and univerſal public anxiety and diſſatisfaction, for the quelling of which the great leader had recourſe to ſupernatural means.

It appears from the account of Proſper Alpinus, a profeſſor of Pavia, who viſited Egypt late in the ſixteenth century, that both the lepra and elephantiaſis of the Greeks were common among *the poor* at that period; and he attributes them to the cauſes above-mentioned. "They are compelled through poverty," he ſays, "to drink muddy and ſemiputrid water; they eat the fleſh of camels and beef, and fiſh ſalted and half putrid, caught in the marſhes and lakes; but they principally live upon a ſort of cheeſe, immoderately ſalted and ſemiputrid, which is ſold at a very low price:" (De Medicina Ægyptior. lib. i. cap. xiv.)—a diet very much reſembling that formerly uſed on ſhip board in long voyages; when, as we have been informed, the ſalted proviſion, which had been ſometimes two years in caſk, emitted an almoſt intolerable ſtench during its maceration, before being cooked.

Without attempting to trace the progreſs of leprous diſeaſes, in connection with the phyſical and political derangements in various countries, (a ſatisfactory ſketch of which the reader will find in Raymond's treatiſe,) we ſhall merely exemplify this view of the ſubject by a ſlight notice of the ſtate of Europe in the middle ages, when leproſy and peſtilence of every ſpecies prevailed. From the fifth century, when the empire at length fell under the repeated aſſaults of the northern invaders to the tenth, the fineſt parts of Europe lay in a ſtate of devaſtation, little cultivation was practiſed, all the arts were neglected or loſt, and clothing, habitations, and food were alike inſufficient and unwholeſome: and for three centuries more this deſolation was increaſed, if poſſible, by the inceſſant wars that were waged. There were fourteen plagues in the fourteenth century, with intervals of but ſix years between each; and frequent famines. The food conſiſted, even in England at a later period, of much ſalted proviſion, eſpecially in the winter, and of a hard and black bread, chiefly of rye, to the ſcarcity of which corn, rather than to its *ergoted* or diſeaſed condition, the ignis ſacer, malades ardens, and other ſimilar maladies, ſhould doubtleſs be attributed. So little were vegetables cultivated, indeed, or gardening underſtood, even in the ſixteenth century in this country, that, in the year 1509, queen Catharine could not procure a ſallad, till Henry ſent to the Netherlands, and engaged a gardener to come over to raiſe the proper articles here. (Northouck's Hiſt. of Lond. book. i. chap. 7.) How totally deſtitute of ſuch diet muſt the people in general have been at a much later period! See Health *of London.*

In ſhort, in whatever country an uncultivated ſoil, a marſhy ſurface, and a humid atmoſphere have been found, together with a diet generally conſiſting of a ſalted, ſemi-putrid, inſufficient, or indigeſtible aliment, and compoſed chiefly of animal fleſh or fiſh, with a ſmall proportion of nutritious vegetable matter; there, from the earlieſt times, human life has been ſhortened by the multiplication of peſtilential fevers and cachexies of a leprous and ſcorbutic nature. Therefore, as Raymond obſerves, even if the eccleſiaſtical writers of the middle ages had left us no records of the hiſtory of ſuch maladies; the hiſtory of the ſoil, of the circumſtances of the times, and of the food generally uſed, would afford an inconteſtible monument of the exiſtence of leproſy.

Of the *cure*, or of the attempts to remedy a diſeaſe which was generally admitted to be incurable, it would be futile to enter into any detail. The treatment of thoſe forms of cutaneous diſeaſe, which were claſſed with the elephantiaſis, will of courſe be deſcribed under their reſpective heads.

LEPSIA, in *Ancient Geography*, an iſland in the ſea of Rhodes, near the coaſt of Caria. Pliny.

LEPSINA, in *Geography*, a town of European Turkey, in Livadia, anciently called "Eleuſis" of which conſiderable ruins remain; 12 miles N.W. of Athens. See Eleusinia.

LEPSIS, in the *Greek Muſic*, is a name given to one of the rules of the ancient melopœia, called alſo ſometimes, *euthia;* by which the compoſer diſcerns in which of the three ſyſtems of ſounds he ſhould place his melody:—in the grave part of the ſcale, called *hypatoides*; the acute, called *netoides*, or the mean, called *meſoides.* See Melopœia and Usus.

LEPSTI, in *Geography*, a town of European Turkey, in the province of Macedonia, in the gulf of Saloniki; 12 miles S. of Jenitza.

LEPTA, in *Botany*, ſo called from λεπτος, *ſlender*, or *minute*, from the remarkable diminutiveneſs of its flowers. Loureir. Cochinch. v. 1. 82,—Claſs and order, *Tetrandria Monogynia.* Nat. Ord. *Hederaceæ*, Linn. *Vites*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, ſpreading, ſmall, divided into four ovate ſegments. *Cor.* Petals four, ſomewhat triangular, furrowed, inflexed, twice as long as the calyx. *Stam.* Filaments four, awl-ſhaped, inflexed, inſerted into the receptacle at the angle of the baſe of the petals; anthers ovate, two-celled. *Piſt.* Germen ſuperior, roundiſh, four-furrowed; ſtyle ſcarcely any; ſtigma obtuſe. *Peric.* Berry four-lobed, lobes ovate, ſlightly confluent towards the centre, ſingle-ſeeded. *Seeds* roundiſh.

Eſſ. Ch. Calyx four-cleft, inferior. Corolla of four triangular petals. Berry four-lobed, four-celled, each cell containing a ſeed.

1. *L. triphylla.* Loureir. Cochinch. A native of woods in Cochinchina, and called by the natives Cay Mat.—This *tree* is about ten feet high, and exceedingly branched. *Leaves* ternate, lanceolate, entire, waved, ſmooth. *Flowers* white, very ſmall, in compound, ſmall, axillary cluſters.

We are acquainted with this plant from Loureiro's account only, which approaches ſo nearly to many different things, that we dare not offer any conjecture reſpecting it. The habit of this genus very much reſembles that of *Ciſſus*, but the character of its fruit appears to be eſſentially different.

LEPTADENIA, from λεπτος, *ſlender* or *ſharp*, and αδην, αδενος, *a gland*, expreſſive of the contracted acute termination of the maſſes of pollen, which makes a very peculiar part of the generic character. Brown Aſclep. 23. Mem. of the Wernerian Soc. v. 1. 34.—Claſs and order, *Pentandria Digynia.* Nat. Ord. *Contortæ*, Linn. *Apocineæ*, Juſſ. *Aſclepiadeæ*, Brown.

Eſſ. Ch. Corolla ſomewhat wheel-ſhaped; tube ſhort; orifice crowned with five ſcales, ſtanding between the ſegments; limb bearded. Crown of the ſtamens wanting. Anthers unconnected, ſimple at the top. Maſſes of pollen erect, attached by their baſe, contracted and pellucid at the ſummit. Stigma pointleſs. Follicles . . . . .

Mr. Brown has examined three ſpecies, reducible to this genus, in the Bankſian herbarium, none of which are yet deſcribed, nor has he named or defined them ſpecifically. One was gathered by Forſkall. They are all natives either of the Eaſt Indies, or of Africa. They appear to be perennial, herbaceous, climbing plants, clothed with a greyiſh, impalpable, powdery down. *Leaves* flat, oppoſite. *Umbels* between the footſtalks, ſometimes cymoſe. *Stigma* minute.

LEPTANTHUS. See Heteranthera.

LEPTASPIS, from λεπτος, *ſlender*, and ασπις, *a ſhield*, a genus of graſſes, ſeparated from *Pharus* by Mr. Brown in his Prodr. Nov. Holl. v. 1. 211, on account of the peculiar ovate concave outer valve of the corolla; but its habit and infloreſcence are ſo like *Pharus latifolia*, that the author himſelf candidly expreſſes his doubts of the propriety of this meaſure. One ſpecies was found by ſir Joſeph Banks in the tropical part of New Holland; another comes from the Molucca iſles.

LEPTAUREA. See Zoegia.

LEPTIS Magna, in *Ancient Geography*, a town of Africa, on the ſea-coaſt, in the Syrtic region, at the S.E. extremity of that which was particularly denominated Tripolis; not far to the E. of the river Cinyphis. It was alſo called Neapolis. Leptis was a Roman colony, and in proceſs of time became epiſcopal. See Lempta.

Leptis *Parva*, *Lempta*, a town of Africa, on the ſea-coaſt, S.E. of Adrymetum, about a mile in compaſs. Some ruins of the ancient town remain. See Lempta.

LEPTOCARPUS, in *Botany*, from λεπτος, *ſlender* or *ſharp*, and καρπος, *fruit*, the minute ſeed or nut being pointed with the permanent baſe of the ſtyle. Brown. Prodr. Nov. Holl. v. 1. 250.—Claſs and order, *Dioecia Triandria.* Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Reſtiaceæ*, Brown.

Gen. Ch. Male, *Cal.* of ſeveral coriaceous, keeled ſcales, either faſciculated or imbricated, each one or two-flowered. *Cor.* Petals ſix, membranous; the three inner ones thinner and narrower. *Stam.* Filaments three, flattiſh; anthers ſimple, peltate.

Female, on a ſeparate plant, *Cal.* and *Cor.* as in the male. *Piſt.* Germen ſuperior, roundiſh; ſtyle ſolitary, thread-ſhaped; ſtigmas two or three, oblong, downy, acute. *Peric.* Nut ſmall, roundiſh, not burſting, tipped with the baſe of the ſtyle, with one cell and one kernel.

Eſſ. Ch. Male, Calyx-ſcales cluſtered or imbricated. Petals ſix. Anthers ſimple, peltate.

Female, Cal. and Cor. as in the male. Style one. Stigmas two or three. Nut cruſtaceous, ſingle-ſeeded, crowned with the baſe of the ſtyle.

A genus of hard ruſhy plants, of nearly the ſame deſcription as *Lepidoſperma*; ſee the concluſion of that article; but more akin to the Linnæan *Reſtio*, from which it differs in having a ſimple ſingle-ſeeded nut, inſtead of a capſule with two or three cells and as many valves. The ſtems are generally quite ſimple, leafleſs, but clothed with ſheaths ſplit at one ſide. Flowers either in tufts, or in ſpike-like catkins. Mr. Brown thinks thoſe which come under the firſt deſcription may hereafter be ſeparated from the latter. Examples of *Leptocarpus*, are *Reſtio diſtachyos* of Rottboll's Icones 8. t. 3. f. 5, and *Schoenodum tenax* of Labillardiere, Nov. Holl. v. 2. t. 229, the female plant.—Seven ſpecies are defined as natives of New Holland, and there are ſuppoſed to be ſeveral at the Cape of Good Hope, beſides the above *Reſtio*, and *R. imbricatus* of Thunberg.

LEPTOCEPHALUS, in *Ichthyology*. See MORRIS.

LEPTODECARHOMBIS, a name given by Dr. Hill to ſome priſmatic varieties of ſelenite. Sec GYPSUM.

LEPTOMERIA, in *Botany*, named by Mr. R. Brown in alluſion to its ſlender habit; from λεπτος, *ſlender*, and μερις, *a portion* or *ſhare*. Brown Prodr. Nov. Holl. v. 1. 353.—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Calyciflorae*, Linn. *Elæagni*, Juſſ. *Santalaceæ*, Brown.

Gen. Ch. *Cal.* Perianth ſuperior, of one leaf, in four or five deep, widely ſpreading, permanent ſegments, internally coloured. *Cor.* Petals none. Nectary glandular, crowning the germen, in four or five lobes. *Stam.* Filaments four or five, awl-ſhaped, ſhorter than the calyx, inſerted into the baſe of each ſegment; anthers roundiſh. *Piſt.* Germen inferior, ovate; ſtyle very ſhort; ſtigma depreſſed, of from two to five rays. *Peric.* Drupa ovate, more or leſs juicy, crowned with the calyx. *Seed* ſolitary.

Eſſ. Ch. Calyx of one leaf, wheel-ſhaped, ſuperior, bearing the ſtamens. Nectary glandular, crowning the germen, four or five-lobed. Stigma divided. Drupa of one ſeed.

Eight ſpecies are defined by Mr. Brown, as natives of New Holland. They are ſlender branched ſhrubs, with ſcattered minute *leaves*, or none at all. *Flowers* minute, white, reddiſh or green; generally ſpiked, with a ſmall deciduous *bractea* to each; ſometimes axillary, without bracteas. The genus is akin to thoſe ſpecies of *Theſium* which grow at the Cape of Good Hope, but differs in its glandular nectary, which is either of one piece, lobed, crowning the germen, or compoſed of glands, each of which ſtands at the baſe of one of the ſegments of the calyx. Three of the ſpecies have a ſtarry five-rayed acute ſtigma, and five-cleft, ſpiked, bracteated flowers; among which is *L. Billardieri*, (Theſium drupaceum; Labill. Nov. Holl. v. 1. 68. t. 93.) from Van Diemen's land, a ſlender much-branched ſhrub, ſix feet high. One, *L. acerba*, found at Port Jackſon, has a two-lobed obtuſe ſtigma, four-cleft flowers, and no leaves. The remaining four have a drier drupa, a notched blunt ſtigma, and five-cleft flowers, and all grow on the ſouth coaſt of New Holland.

LEPTOS LIBANOTIS, in the *Materia Medica of the Ancients*, a name given by ſome of the Greek writers to the ſmall frankincenſe, that is, ſuch as came to their hands in ſmall flakes, broken from the larger maſſes in the gathering or packing up. This was alſo called *manna thuris*, the manna of frankincenſe, the word *manna* being of old uſed to expreſs any thing formed of granules, or ſmall pieces. The ancients eſteemed this *leptos libanotis*, or *manna thuris*, when pure, beyond any other kind, for they always valued that frankincenſe moſt, which was drieſt and moſt brittle; and ſuch only as was ſo, could break off in theſe ſmall flakes. The medicine, however, ſoon became ſubject to adulteration, and loſt its credit; for the duſt of the frankincenſe being allowed to be put up among this *manna thuris*, Dioſcorides tells us, that in his time people, greedy of gain, had found the way to adulterate it, by adding, inſtead of this genuine duſt, the ſifted powder of the reſin of the pine-tree. See FRANKINCENSE.

LEPTOSPERMUM, in *Botany*, ſo named by Forſter, from λεπτος, *ſlender*, and σπερμα, *ſeed*, becauſe the numerous ſeeds are remarkably ſmall and ſlender. Forſt. Gen. 36. t. 36. f. *f—l*. Smith Tr. of Linn. Soc. v. 3. 260. Willd. Sp. Pl. v. 2. 948. Ait. Hort. Kew. ed. 2. v. 3. 181. Juſſ. 323. Lamarck. Dict. v. 3. 465. Illuſtr. t. 423. Gærtn. t. 35.—Claſs and order, *Icoſandria Monogynia*. Nat. Ord. *Heſperideæ*, Linn. *Myrti*, Juſſ.

Gen. Ch. *Cal.* Perianth half-ſuperior, in five deep, ovate-oblong, or roundiſh, often coloured ſegments. *Cor.* Petals five, with claws, roundiſh, equal, twice the ſize of the calyx, and much longer than the ſtamens. *Stam.* Filaments numerous, inſerted into the calyx, awl-ſhaped, incurved, ſhorter than the corolla; anthers ſmall, roundiſh, two-lobed. *Piſt.* Germen half-inferior, turbinate; ſtyle ſimple, columnar, erect, about the length of the ſtamens; ſtigma capitate, umbilicated, undivided. *Peric.* Capſule roundiſh, coated in the lower part, of three, four, or five cells, and as many valves, burſting at the upper part, the partitions from the middle of each valve, oppoſite to each calyx-tooth. *Seeds* numerous, linear, ſomewhat angular, tapering at each end, very ſmall, inſerted into the central column.

Eſſ. Ch. Calyx five-cleft, half-ſuperior. Petals five, longer than the ſtamens, furniſhed with claws. Stigma capitate. Capſule of three to five cells. Seeds angular.

Obſ. *L. ambiguum* only has the ſtamens longer than the corolla.

This genus of New Holland ſhrubs was confounded by Dr. Solander with *Philadelphus*, and by Gærtner, Forſter, and others with *Metroſideros* and *Melaleuca*. The former is diſtinguiſhed from it by having the ſtyle deeply four-cleft, with ſimple ſtigmas, the petals broad at the baſe and ſeſſile, leaves oppoſite and deciduous, and the habit indeed altogether unlike; *Metroſideros* differs in its ſimple ſtigma, extremely long thread-ſhaped ſtamens, and more dilated habit, in which characters *Melaleuca* accords with the latter, with a few exceptions as to habit in the foliage of ſome ſpecies, but differs from it and from *Leptoſpermum* in the polyadelphous ſtamens.—The ſpecies of the genus before us are rigid, branched ſhrubs, of rather humble, ſometimes proſtrate, growth, aromatic when bruiſed; their *leaves* alternate, ſmall, entire, evergreen; *flowers* numerous, uſually ſolitary, white, often with a purple tinge about their organs of impregnation. The following are all at preſent known to us.

1. L. *ſcoparium*. New Zeeland Tea, or common South-ſea Myrtle. Andr. Repoſ. t. 622. (L. ſquarroſum; Gærtn. v. 1. 174. t. 35. Melaleuca ſcoparia; Linn. Suppl. 343. Forſt. Prodr. 37. Pl. Eſc. 78. Schrad. Sert. Hannov. 25. t. 15. Philadelphus ſcoparius; Soland. in Ait. Hort. Kew. ed. 1. v. 2. 156. Tea plant; Cook's Second Voyage, v. 1. 100. t. 22.)—Leaves ovate, ſharp-pointed, obſcurely three-ribbed. Calyx ſmooth; its teeth membranous and coloured.—Native of the coaſt of New Zeeland, where it was diſcovered by ſir Joſeph Banks and Dr. Solander, and was thought by captain Cook to have been very ſerviceable to the health of his crew. Its infuſion or tea is pleaſantly aromatic and fragrant; if not ſuffered to ſtand too long, in which caſe it becomes bitter. Mixed with an equal quantity of the New Zeeland Spruce, (ſee DACRYDIUM,) it was found to make excellent and highly palatable beer, of the moſt ſalutary qualities, the *Dacrydium* being too aſtringent alone. This plant, raiſed at Kew from ſeed in 1772, is eaſily kept in our green-houſes, and is covered in ſummer with elegant white *bloſſoms*, whoſe calyx-teeth, ſtamens and ſtyle are purpliſh. In New Zeeland it becomes a ſmall tree. The *leaves* are numerous, ſcattered, ever-green, ſmall, nearly ſeſſile, entire, ſharp-pointed, rigid,

ſmooth, dotted, paler beneath, more or leſs ovate, but varying extremely in length and breadth, ſo that the two varieties indicated by authors are by no means diſtinctly marked, and the gardeners make many more, which are equally evaneſcent. The *capſule* is hard and woody, permanent on the old branches long after the ſeeds are diſperſed, as in moſt New Holland plants of this family.

2. L. *flaveſcens*. Yellowiſh South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 262. Willd. n. 3. Brown in Ait. Hort. Kew. ed. 2. n. 2. (L. Thea; Willd. n. 2. Melaleuca Thea; Schrad. Sert. Hannov. 24. t. 14.)—Leaves linear-lanceolate, obtuſe, without lateral ribs. Calyx ſmooth; its teeth membranous, coloured, naked. Native of New South Wales. It was procured from thence for Kew garden, by ſir Joſ. Banks, about 1787. The *branches* are longer, and more flexible, than in the former; *leaves* narrower, longer, almoſt linear, inclining to elliptic, and pointleſs. *Petals* white, often with a purple tinge, turning yellowiſh in drying. The *calyx-teeth* are coloured, that is, whitiſh, not green; which Willdenow, in copying the character, has omitted, and this cauſed the ſame omiſſion in Hort. Kew.

3. L. *attenuatum*. Fine-branched South-ſea Myrtle. Sm. n. 3. Willd. n. 4.—Leaves linear, ſlightly lanceolate, acute, three-ribbed. Calyx clothed with ſilky hairs; its teeth membranous, coloured, nearly naked.—Native of New South Wales, ſent to Kew by ſir Joſ. Banks in 1795. Its ſlender habit, and narrow acute *leaves* diſtinguiſh this from both the former. The *flowers* moreover are ſmaller, often two together, their ſtalks, germen, and baſe of the calyx clothed with ſilvery, ſilky, rather ſpreading hairs. *Petals* and *calyx-teeth* white. It bloſſoms from May to July.

4. L. *grandifolium*. Large-leaved South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 6. 299.—Leaves lanceolate, ſharp-pointed, obſcurely five-ribbed, downy beneath. Calyx hairy; its teeth membranous and coloured.—Sent from Port Jackſon, New South Wales, in 1795, by Dr. White to Mr. Lambert. It is larger than any of the foregoing in all its parts; the *leaves* above an inch long, and near a quarter of an inch broad, lanceolate inclining to obovate, with a ſmall prominent ſharp point; ſhining and ſmooth above, except when young; paler, opaque, dotted, downy, and marked with two ſlight lateral ribs, on each ſide the principal one, beneath. *Flowers* large, white and handſome, ſeſſile and ſolitary at the ends of the ſhort lateral leafy branches. The back of their *calyx-teeth*, as well as the germen, is covered with long, white, ſhaggy hairs.

5. L. *trinerve*. Silky South-ſea Myrtle. (L lanigerum; Willd. Sp. Pl. n. 5. Melaleuca? trinervia; White's Voyage, 229. t. 24.)—Leaves lanceolate inclining to obovate, three-ribbed. Calyx ſilky; its teeth leafy, permanent.—Native of New South Wales; *Dr. White*. This has much the habit of the laſt, but is in all its parts only about half the ſize. The *leaves* vary in breadth, and are more or leſs obovate. The *germen*, with the *calyx* and its teeth, are entirely clothed externally with beautiful, cloſe-preſſed, ſilky or ſilvery hairs. *Petals* white.

6. L. *lanigerum*. Hoary South-ſea Myrtle. Brown in Ait. Hort. Kew. ed. 2. n. 4. Sm. Tr. of Linn. Soc. v. 3. 263. (Philadelphus laniger; Ait. Hort. Kew. ed. 1. v. 2. 156.)—Leaves oblong or obovate, obſcurely three-ribbed, ſomewhat hairy. Calyx clothed with long ſhaggy hairs.—Native of Van Diemen's land, and of New South Wales. In the Tranſ. of the Linn. Soc. this was confounded with the laſt, but Mr. Brown has corrected that miſtake. The preſent ſpecies has the *germen* and whole *calyx* remarkably hoary with long ſpreading hairs, not ſilky with cloſe or erect ones. The *leaves* when young are more or leſs hairy, and the young *branches* downy. The ſcales of the flowering *buds* appear alſo to be larger and more permanent, imbricated, elliptical, and externally hairy.

7. L. *parvifolium*. Small-leaved South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Ait. Hort. Kew. ed. 2. n. 5.—Leaves obovate, imbricated, ribleſs. Young branches and calyx clothed with ſpreading hairs; teeth membranous, coloured, naked.—Sent to us from New South Wales by Dr. White in 1795. It is ſaid to have been communicated to Kew garden by ſir. Joſ. Banks in 1789. The *leaves* are not a quarter of an inch long, numerous, imbricated, either obovate or exactly elliptical, blunt, flat, thickiſh, without any rib, dotted, ſmooth, on ſhort pale ſmooth ſtalks. *Flowers* terminal, ſolitary, ſmall, white. *Germen* and baſe of the *calyx* clothed with ſpreading hairs, but the teeth are naked, roundiſh and coloured. The younger branches are rough with coarſe, long, ſpreading hairs.

8. L. *imbricatum*. Imbricated South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 6. 300.—Leaves obovate, imbricated, ribleſs. Branches and calyx ſmooth; teeth membranous, coloured, naked, keeled.—Gathered at Port Jackſon, New South Wales, by Mr. David Burton, and communicated to us by ſir Joſ. Banks in 1797. It greatly reſembles the laſt, but the copious little *leaves* are ſtill more ſtrikingly imbricated, eſpecially on the long lateral *branches*, which moreover are ſmooth, as well as every other part. The *flowers* are extremely ſmall, ſtanding two or three together about the end of each branch; their *germen* and *calyx* perfectly naked; the teeth of the latter ſharply keeled, which in *L. parvifolium* are only a little convex.

9. L. *arachnoideum*. Cobweb-flowered South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Gærtn. v. 1. 174. t. 35. f. 3.—Leaves awl-ſhaped, ſharp-pointed. Branches hairy. Germen and calyx entirely clothed with long ſpreading hairs.—Native of New South Wales. The *ſtem* is ſtout, apparently of humble growth, with numerous, ſhort, zigzag, leafy, hairy, lateral, compound branches. *Leaves* crowded, awl-ſhaped, ſharp-pointed, ſmooth, dark-green, about half an inch long, channelled above, convex beneath, reſembling ſome ſlender kind of juniper. *Flowers* ſmall, ſolitary, terminating the ſhort ſubdiviſions of the branches, and remarkable for the very long and fine white ſpreading hairs, like a ſpider's web, which clothe the germen and whole calyx. It is a ſtranger to our gardens.

10. L. *juniperinum*. Juniper-leaved South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 263. Venten. Malmaiſ. t. 89.—Leaves linear-lanceolate, ſharp-pointed. Young branches ſilky. Calyx ſmooth; its teeth membranous, coloured, naked.—Native of New South Wales. Mr. Fairbairn raiſed it in Chelſea garden about the year 1790. This is an upright buſhy *ſhrub*, whoſe young branches are clothed with ſilky hairs. The *leaves* are larger, and ſtill more like juniper, than thoſe of the preceding; ſilky when young. *Flowers* numerous, white, ſolitary at the ends of the very ſhort, lateral, axillary, leafy ſhoots. *Germen* depreſſed, ſmooth as well as the *calyx* and its teeth, which are broad and coloured.

11. L. *triloculare*. Three-celled South-ſea Myrtle. Venten. Malmaiſ. t. 88.—Leaves linear-lanceolate, ſharp-pointed. Calyx ſilky; its teeth coloured, minutely fringed. Stamens fifteen. Capſule of three cells.—Native of New Holland. We know it only by the plate and deſcription in M. Ventenat's ſuperb Jardin de la Malmaiſon. The habit and foliage are much like the laſt. *Branches* downy and reddiſh. *Germen* rather more elongated, clothed with ſhort ſilky down, as are alſo the calyx-teeth, which are fringed, and

coloured of a purpliſh red. *Petals* white. *Stamens* but fifteen, and cells of the *fruit* only three.

12. L. *baccatum.* Pulpy-fruited South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 264. (L. juniperifolium; Cavan. Ic. v. 4. 18. t. 331. f. 2.)—Leaves linear-lanceolate, ſharp-pointed. Bracteas ſmooth. Germen and calyx-teeth downy. Capſule with a pulpy coat.—Native of New South Wales, ſent to Kew garden by ſir Joſ. Banks in 1790. A low depreſſed rigid ſhrub, with the habit and foliage of our Engliſh dwarf variety of the juniper. *Flowers* much like ſome of thoſe laſt deſcribed, but their *germen* and whole *calyx* with its teeth are clothed with white cottony, rather than ſilky, hairs. The *germen* is cloſely enveloped in ſmooth, ſomewhat fringed, concave *bracteas*, which, being taken for the germen itſelf, cauſed an error in the original deſcription of this ſpecies; but indeed that part becomes ſmooth as it ripens into fruit, as well as very thick and pulpy. The *petals* are yellowiſh in the dried plant, but probably white when recent, like *L. flaveſcens.* Cavanilles's ſynonym ſeems rightly applied in Hort. Kew. though he deſcribes the *calyx* as ſmooth. The *fruit* in our plant, as well as his, has five cells.

13. L. *ambiguum.* Hook-leaved South-ſea Myrtle. Sm. Tr. of Linn. Soc. v. 3. 264. Exot. Bot. v. 1. 115. t. 59. (Metroſideros corifolia; Venten. Malmaiſ. t. 46.)—Leaves linear-lanceolate, recurved at the point. Calyx nearly ſmooth; its teeth leafy, lanceolate, naked. Stamens longer than the corolla.—Native of New South Wales, ſent to Kew garden by ſir Joſ. Banks in 1791. It forms a handſome buſhy evergreen ſhrub, bloſſoming plentifully in the green-houſe in ſummer. The *branches* are downy. *Leaves* numerous, crowded, dark-green, channelled, dotted, bluntiſh, recurved at the tip, often roughiſh. *Flowers* white, with very numerous ſpreading *ſtamens*, that are peculiar in this genus as being longer than the *corolla*, yet not near ſo long as in *Metroſideros*, and the capitate *ſtigma* ſtamps our plant a *Leptoſpermum*, which the habit altogether confirms. Ventenat deſcribes the *germen* as of three cells only; we find four or five, ſo that this character appears variable.

14. L. *virgatum.* Wand-like South-ſea Myrtle. Forſt. Gen. 36. Willd. n. 12. (Melaleuca virgata; Linn. Suppl. 343. Forſt. Prodr. 37.)—Leaves oppoſite, linear-oblong, bluntiſh. Stalks axillary, three-flowered.—Gathered by Forſter in New Caledonia. As Willdenow has admitted this into *Leptoſpermum*, we would not leave it out, notwithſtanding the reaſons given in Tr. of Linn. Soc. v. 3. 265, which ſtrongly induce us to think it a decandrous *Bæckea.* The *ſtamens* are ten. *Leaves* oppoſite, whereas in every certain *Leptoſpermum* they are alternate. The umbellate *flower-ſtalks* too are not natural in this genus.

15. L. *pubeſcens.* Downy Twiſted South-ſea Myrtle. Willd. n. 6. See Tr. of Linn. Soc. v. 3. 263.—Leaves elliptic-obovate, downy, twiſted, with a ſmall recurved point. Germen and calyx-teeth downy.—Native of New Holland, common in gardens. We ſubjoin this as a ſpecies taken up by Willdenow from the Linn. Tranſ. but whoſe limits we have not yet fully determined. It does however ſeem diſtinct enough from *laniger* and *trinerve*, as well as from all the reſt. Much more light is to be expected relative to all the ſpecies of this genus from the ſequel of Mr. Brown's Prodromus, and we therefore leave theſe two laſt ſpecies for future determination, eſpecially as the *pubeſcens* is not received into the ſecond edition of Hort. Kew.—For ſimilar reaſons we leave unnoticed the three ſpecies figured in Cavanilles, t. 330 and 331, which moſt probably are referable to ſome of the above; but his plates and deſcriptions are inſufficient to determine which, and would therefore ſtill be uſeleſs, if by any means determined.

LEPTOSTACHYA, from λεπτος, *ſlender*, and ϛαχυς, *a ſpike of flowers*, elegantly applied by Mitchell to the *Phryma* of Linnæus, and retained by the latter as the ſpecific name. See Phryma.

LEPTOSTOMUM, from λεπτος, *ſlender* or *narrow*, and ϛομα, *the mouth*, expreſſive of the narrow orifice of the capſule. Brown. Tr. of Linn. Soc. v. 10. 320.—Claſs and order, *Cryptogamia Muſci.* Nat. Ord. *Muſci.*

Eſſ. Ch. Capſule oblong, without furrows, terminal. Lid hemiſpherical, without a beak. Fringe a ſimple, flat, annular, undivided membrane, from the inner coat.

All the four known ſpecies of this genus are natives of the ſouthern hemiſphere. They are moſſes of a denſely tufted mode of growth, with upright, branched, perennial ſtems. Leaves moderately ſpreading in every direction, broadiſh, entire, revolute, with a ſtrong midrib, and a terminal hair, which is ſuſpected by Mr. Brown to be ſometimes branched. Fruit-ſtalk terminal. Capſule either erect or drooping; tapering at the baſe into an inverſely conical apophyſis; much contracted at the mouth. Veil ſmooth and naked, deciduous.

1. L. *inclinans.* Tr. of Linn. Soc. v. 10. 320. t. 23. f. 2.—Leaves obovate, obtuſe. Capſule drooping, obovate-oblong.—Found by Mr. Brown in Van Diemen's land, upon rocks and ſtones at the eaſt ſide of Table Mountain, near the ſummit, in 43° ſouth latitude, and from 3000 to 3500 feet perpendicular above the ſea. This moſs is two or three inches high. *Stems* but little branched, leafy in the upper part, denſely clothed with ruſty down below. *Leaves* rather concave, very minutely dotted or reticulated, tipped with a twiſted hair ¼th the length of each leaf. *Fruit-ſtalk* brown, ſmooth. *Sheath* at the baſe accompanied below by numerous abortive piſtils and capillary, jointed, ſucculent threads.

2. L. *erectum.* Leaves oblong-parabolic, obtuſe. Capſules oblong, erect.—Found by Mr. Brown on the eaſt coaſt of New Holland, in a mountainous part of the country, growing on rocks near the banks of the rivers Hawkeſbury and Groſe. *Stems* about as tall as the former, ſimple or branched, clothed with ruſty down in their lower part, leafy above. *Leaves* crowded, a little incurved and cloſe-preſſed by drying, each tipped with a ſimple hair. *Fruit-ſtalk* elongated, brown, ſmooth. *Capſule* ſtraight. The *lid* had fallen off.

3. L. *gracile.* Leaves ovate-oblong, rather pointed; terminal hair half their length. Capſule oblong, ſtraight, drooping.—Gathered by Mr. Archibald Menzies, at Duſky bay in New Zeeland. The *ſtems* are denſely tufted, ſomewhat branched, about an inch high, thickly clothed with ruſty down in their lower part. *Leaves* yellowiſh-green, dotted, cloſe-preſſed when dry, pellucid, ſtrongly revolute, with a very thick rib, and a ſmooth terminal hair. *Fruit-ſtalk* near two inches high, ſlender, tawny, with a ſheath at the bottom, the ſummit very ſlender and drooping. *Capſule* nearly pendulous, a quarter of an inch long, ſlender, ſtraight, ſlightly ſwelling in the middle, of a dark opaque brown. *Lid* very ſmall, obtuſe, of a ſtill deeper brown.

4. L. *Menzieſii.* Leaves oblong-lanceolate, acute; terminal hair a quarter their length. Capſule cylindrical, drooping, recurved.—Diſcovered by Mr. Menzies at Staten-land in 1787. We, as well as Mr. Brown, are indebted to him for fine ſpecimens of this and the laſt. The *ſtems* of *L. Menzieſii* are half an inch or more in height, moſtly ſimple, with denſe ruſty fibres and roots. *Leaves* bright yellowiſh-green, crowded, finely dotted, wavy and cloſe-

preſſed when dry, with a ſhortiſh terminal hair. *Fruit-ſtalk* about an inch high, ſolitary, erect. *Capſule* light brown, ſmooth, one-third of an inch long, drooping, cylindrical, ſingularly recurved, with ſomewhat of a turgid appearance. *Lid* very ſmall; after it is fallen the white, membranous, very delicate fringe becomes diſtinctly viſible.

Mr. Brown with good reaſon ſuſpects *Bryum macrocarpum* of Hedwig, Crypt. v. 3. t. 10, may belong to this genus. If ſo, there is an error in the delineation of its fringe; and it will prove the only known ſpecies whoſe leaves are tipped with a branched hair.

LEPTUM, in *Antiquity*, a ſmall piece of money, which, according to ſome, was only the eighth part of an obolus; but others will have it to be a ſilver or braſs drachm.

LEPTURA, in *Entomology*, a genus of Coleoptera: the antennæ are ſetaceous; palpi four, and filiform; wing-caſes tapering towards the tip; thorax ſlender and rounded. Thoſe of the Linnæan lepturæ which have the lip entire, conſtitute the genus Donacia of Fabricius; and ſuch as have the lip bifid form a part of the lepturæ of that author; for the latter do not excluſively conſiſt of thoſe inſects which, according to the Linnæan character, belong to leptura; leptura abbreviata of Fabricius, for example, is necydalis major of Linnæus, and leptura variegata, the Gmelinian necydalis variegata. Moſt of the leptura tribe are furniſhed with legs of pretty conſiderable length; run with much ſpeed and activity; and are found on flowers.

Species.

AQUATICA. Golden; poſterior thighs clavated and dentated. Fabr. *Leptura aquatica*, Linn. *Leptura aquatica ſpinoſa*, Degeer. Donov. Brit. Inſ. *Donacia dentata*, Hoppe.

The colour of this ſpecies varies from reddiſh, or braſſy, to green; the antennæ blackiſh, with pale teſtaceous at the joints; head with a line down the middle; thorax grooved; body beneath downy; legs obſcure, teſtaceous. Common in Britain, and other parts of Europe, on aquatic plants, particularly the nymphæa.

SIMPLEX. Golden; thighs ſimple. Fabr.

An European ſpecies, perhaps leptura aquatica mutica of Degeer.

FASCIATA. Golden; wing-caſes with a purple longitudinal band. Herbſt. *Leptura aquatica faſciata*, Degeer.

Inhabits watery places in Europe. The thighs ſometimes armed with teeth.

MICANS. Poſterior legs bidentated; ſhanks ſimple; wing-caſes gloſſy-violet. Hoppe.

Allied to L. aquatica, and inhabits the ſame places.

HOLOSERICEA. Shining-green; antennæ and legs fuſcous, black; poſterior thighs dentated. Herbſt.

An European ſpecies, found in damp fields, &c.

PALUSTRIS. Blackiſh-violet; antennæ and legs cheſnut; poſterior thighs dentated. Herbſt.

A native of Pomerania; found in marſhes.

CINEREA. Cinereous, ſpeckled with coppery. Herbſt.

Inhabits with the former.

MARGINATUS. Poſterior thighs one-toothed; wing-caſes golden; margin and ſpot at the baſe rufous; abdomen and legs ſilvery. Hoppe.

On aquatic plants in Germany.

NYMPHÆÆ. Poſterior thighs dentated; thorax and wing-caſes coppery; body cinereous, downy. Fabr.

Native of Europe, on the leaves of the nymphæa alba. The head is coppery; antennæ and mouth black; body beneath ſilvery-brown.

SAGITTARIÆ. Poſterior thighs one-toothed; wing-caſes green-golden, minutely punctured and truncated; abdomen and legs golden. Hoppe.

Antennæ blackiſh; thorax wrinkled and furrowed.

VIOLACEA. Deep black, and ſomewhat braſſy; wing-caſes obſcure, violet; abdomen ſanguineous. Pallas.

Size of leptura aquatica, and inhabits Siberia.

ÆNEA. Poſterior thigh armed with one tooth; wing-caſes braſſy, equal, rounded; abdomen and legs braſſy. Hoppe. *Lepturæ ænea*, Linn.

Native of Europe.

BICOLOR. Golden; thorax above, with the wing-caſes, green, the latter with ſtriæ of impreſſed dots; poſterior thighs dentated. Linn. Muſ. Leſk.

An European ſpecies.

FUSCA. Poſterior thighs with a ſingle tooth; body brown; wing-caſes ſtriated and punctured; mouth, antennæ, and legs rufous. Linn.

Inhabits with the former.

CRASSIPES. Poſterior thighs unarmed; body green-bronzed, beneath cinereous, braſſy; wing-caſes ſtriated with punctures, and marked with tranſverſe ſmall lines; mouth, antennæ, and legs rufous. Linn.

Native of Europe.

RUFESCENS. Poſterior thighs dentated; body reddiſh-bronze; beneath cinereous-bronze; wing-caſes ſtriated, punctured with crenated wrinkles. Linn.

Inhabits Germany and Sweden.

NITIDA. Poſterior thighs toothed; body ſhining-green gold; wing-caſes ſtriated and punctured, with crenated wrinkles, and a broad, common, purple-green fillet; abdomen, antennæ, and legs gold. Linn.

Native of Europe.

CÆRULEA. Poſterior thighs dentated; body blue; wing-caſes ſtriated, punctured with crenated wrinkles; antennæ braſſy. Linn.

Inhabits Europe.

CLAVIPES. Poſterior thighs unarmed; body braſſy; abdomen covered with ſilvery down. Fabr.

Native of Germany, on aquatic plants.

FASCICULATA. Body black; poſterior legs long; thighs unarmed; the ſhanks with a tuft of long feathers. Fabr.

Inhabits Cayenne; the body very ſlender, with a ſilvery gloſs beneath.

LINEARIS. Poſterior thighs unarmed; wing-caſes linear, truncated, ſhining-braſſy; legs ſomewhat teſtaceous. Hoppe.

A ſpecies found in Europe; antennæ blackiſh; abdomen cinereous.

HYDROCHARIS. Poſterior thighs unarmed; wing-caſes cinereous, gloſſy, rounded at the end; body and legs cinereous. Hoppe.

Native of Germany; the antennæ cinereous.

MUCRONATA. Poſterior thighs unarmed; body above livid; beneath, head, and antennæ black; thorax with two divergent lines; wing-caſes ſpinous at the end. Hoppe.

VULGARIS. Poſterior thighs unarmed; body ſilvery-green; wing-caſes ſtriated and punctured, with crenate wrinkles, and a broad, common, purple-green fillet; head, abdomen, and legs ſilvery-aſh.

** *Lip bifid.*

UNIPUNCTATA. Black; wing-caſes rufous, with a black dot in the middle. Fabr.

Inhabits about Dreſden.

HASTATA. Deep black; wing-caſes red; tip and ſuture in the middle black. Fabr. *Stenocorus niger, &c.* Geoffr.

Native of the ſouthern parts of Europe. Segments of the abdomen with ſilvery down at the edge.

BIPUNCTATA. Black, villous; wing-caſes livid, with a black dot in the middle. Fabr.

Inhabits Siberia.

TOMENTOSA. Thorax villous and golden; wing teſtaceous, with the tip black. Geoff.

Head and antennæ black; wing-caſes ſmooth, ſlightly notched at the tip; abdomen covered with ſilvery down; tail emarginate; legs black.

Native of France.

MELANURA. Black, wing-caſes reddiſh or livid, the ſuture and tip black. Schæff.

Inhabits Europe on flowers.

LÆVIS. Black; wing-caſes and legs livid, ſuture, and tip of the wing-caſes black. Fabr. *Leptura ſuturalis.*

Antennæ black; body clothed with ſilvery down. Native of Europe.

LIVIDA. Black; wing-caſes teſtaceous and without ſpots; legs black. Herbſt.

Wing-caſes rounded at the tip, and ſcarcely emarginate. Native of Germany.

VILLICA. Ferruginous; antennæ, wing-caſes, and breaſt brown. Schæff., &c. Fabr.

Inhabits Europe; firſt joint of the antennæ rufous.

MERIDIANA. Thorax ſomewhat ſpinous; wing-caſes faſtigate; breaſt ſhining. Schæff.

Male blackiſh, female teſtaceous; legs of the larva long. A native of Europe.

STRIGILATA. Black; wing-caſes teſtaceous, with a blackiſh fillet. Fabr.

Native of Sweden.

EMARGINATA. Black; wing-caſes purple, tip black, and emarginate. Fabr.

Inhabits Cayenne, the abdomen bidentated at the end; ſegments ſhining ſilvery at the baſe.

SANGUINOLENTA. Black; wing-caſes ſanguineous. Linn. Fn. Su. *Leptura dubia*, Scop.

Native of Northern Europe.

RUBRA. Black; thorax, wing-caſes, and ſhanks purple-red. Linn.

Inhabits Sweden.

TESTACEA. Black; wing-caſes teſtaceous; ſhanks rufous; thorax rounded behind. Fabr.

Found in the north of Europe, and is ſuppoſed to be the male of the former.

REVESTITA. Teſtaceous; wing-caſes, breaſt, and antennæ deep black. Schreber.

Native of Germany.

PUBESCENS. Black, with cinereous down, rib of the wing teſtaceous at the baſe. Fabr.

Inhabits Sweden.

VIRENS. Silky greeniſh; antennæ varied with brown and green. Oliv.

SMARAGDULA. Silky greeniſh; antennæ and legs black. Fabr.

Inhabits Sweden.

ATRA. Body entirely deep black. Oliv. Fabr. *Leptura æthiops*, Poda.

Legs ſometimes teſtaceous; abdomen with white ſilky down.

HUMERALIS. Black; ſhoulders and abdomen ferruginous. Fabr.

Native of Germany.

SCUTELLATA. Black; ſcutel white. Fabr.

Inhabits Italy.

SUTURATA. Cinereous; wing-caſes teſtaceous, with a black ſuture. Fabr.

Found in Germany; the antennæ teſtaceous, with black tip; legs rufous, the joints black.

EXCLAMATIONIS. Black; wing-caſes with a yellow line down the middle, and a dot at the baſe. Fabr., &c.

A ſmall ſpecies found in Sweden.

LURIDA. Ferruginous; wing-caſes teſtaceous. Fabr., &c.

Inhabits deſerts of Hircania.

FEMORATA. Black; thighs rufous at the baſe. Fabr.

Found in Saxony.

RUFICORNIS. Black; antennæ and legs rufous. Fabr.

Native of Italy. Body covered with yellowiſh down.

MARGINATA. Black; margin of the wing-caſes and hind ſhanks rufous. Fabr.

Inhabits Norway.

NIGRA. Wing-caſes tapering; body black, poliſhed; abdomen red. Schæff.

An European ſpecies.

PRAEUSTA. Body covered with golden down; head and tip of the wing-caſes black. Fabr.

Firſt joint of the antennæ ferruginous; legs red.

Native of Europe.

QUADRIMACULATA. Black; wing-caſes teſtaceous, with a black ring. Oliv.

Native of Germany.

4-GUTTATA. Brown; wing-caſes black, with two ferruginous dots at the baſe. Fabr.

Inhabits Saxony.

ROSTRATA. Dull braſſy; legs yellow. Fabr.

SUBSPINOSA. Black; wing-caſes teſtaceous, with four black bands, the firſt punctured; antennæ and legs yellow. Fabr. &c.

Perhaps the female of the laſt. Head black, with a fulvous frontal band; wing-caſes emarginate; three ſegments of the abdomen yellow. Native of Germany.

AURULENTA. Black; fore and hind margin of the thorax golden; wing-caſes teſtaceous, with four ſimple black bands. Fabr.

Inhabits Germany; ſegments of the abdomen edged with white.

DUBIA. Black and ſomewhat villous; wing-caſes teſtaceous, dotted with black; legs black. Fabr.

Native of Siberia. Allied to Leptura attenuata.

SEXGUTTATA. Black; wing-caſes with three yellow ſpots. Fabr.

Inhabits Germany. Herbſt.

QUADRIFASCIATA. Black; wing-caſes teſtaceous, with four indented black bands. Linn. *Leptura octomaculata*, Degeer. *Cerambyx faſciatus*, Scop.

Native of Europe.

3-FASCIATA. Black; wing-caſes with three yellow bands, the firſt interrupted. Fabr.

Antennæ pale aſh, with the baſe black; firſt band on the wing-caſes compoſed of two dots, the ſecond with a ſmall tooth, the third lunated. Inhabits Sweden and Germany.

RETICULATA. Black; wing-caſes teſtaceous at the baſe, reticulated with yellow, and tipped with black. Fabr.

Native of Italy. The antennæ black; joints at the baſe yellow; legs rufous, with black joints.

SERICEA. Green-blue; wing-caſes ſomewhat faſtigate. Fabr.

This and the ſeven following inhabit Europe.

COLLARIS. Thorax globular, and with the abdomen red; wing-caſes black. Fabr.

VIRGINEA. Thorax globular and black; wing-caſes violet; abdomen rufous. Oliv.

Carbonaria. Black; wing-caſes teſtaceous, tipped with brown. Linn.

Native of Africa. Antennæ yellowiſh at the baſe; thorax and wing-caſes ſmooth.

Luteicornis. Yellow; thorax with two black lines; wing-caſes with four black bands. Fabr.

Inhabits Carolina. Head and antennæ yellow; legs yellow; poſterior thighs with a black ring.

4-Pustulata. Black; wing-caſes with two remote ferruginous ſpots. Fabr.

Native of Sweden.

8-Maculata. Black; wing-caſes livid, with four black ſpots. Schæff.

An European ſpecies.

Interrogationis. Black; wing-caſes yellow, with a longitudinal curved black line, and four marginal ſpots. Linn. Donov. Br. Inſ.

Native of the northern parts of Europe.

Marginella. Blackiſh; ſuture of the wing-caſes, two marginal ſpots, and tip yellow. Fabr.

An inhabitant of Italy.

6-Maculata. Black; wing-caſes teſtaceous, with three indented black bands, the anterior one a little interrupted. Schæff. &c.

Native of Europe.

7-Punctata. Black; thorax teſtaceous, with a black dot; wing-caſes teſtaceous, with ſeven black dots. Fabr.

Small, linear; head with a large frontal teſtaceous ſpot; abdomen teſtaceous; legs black. Native of Hungary.

12-Maculata. Black; wing-caſes yellow, with ſix large black ſpots on each. Fabr.

Native of Siberia.

Attenuata. Wing-caſes tapering, yellow, with four black bands; legs teſtaceous. Schæff.

Inhabits Europe; abdomen entirely black, or rufous, with the tip black.

Calcarata. Black; wing-caſes tapering, yellow, with four black bands, the firſt punctured, ſecond interrupted; poſterior ſhanks bidentated. Herbſt.

Nigella. Black; wing-caſes teſtaceous; anterior ſhanks rufous. Linn.

Erythropus. Black; legs red; baſe of the thighs, tips of the ſhanks, and ends of the legs black. Linn.

5-Maculata. Black; antennæ annulated with black; legs and wing-caſes teſtaceous, the latter with five black ſpots and three bands. Linn.

Fusca. Brown, with golden down; baſe of the antennæ teſtaceous; fore thighs and ſhanks teſtaceous, the former with four teſtaceous bands, the latter teſtaceous at the baſe. Linn.

Morio. Thorax orbicular; body entirely black and poliſhed. Fabr.

Native of Sweden.

Cerambyciformis. Black, with whitiſh down; wing-caſes yellowiſh, with five black ſpots and a line in the middle. Herbſt.

Found in Hungary and Auſtria.

Russica. Black, with whitiſh down; wing-caſes yellowiſh, with five black ſpots and a line in the middle. Herbſt.

Inhabits Ruſſia.

Lævis. Black, beneath ſilky; antennæ yellowiſh-brown; anterior legs ferruginous. Herbſt.

Native of Pomerania.

Solstitialis. Black; antennæ ferruginous at the baſe; legs and wing-caſes yellow, the latter edged with black. Herbſt.

Inhabits Pruſſia.

4-Notata. Black, with yellowiſh down, beneath with whitiſh; antennæ brown at the baſe; thighs ferruginous at the baſe; wing-caſes punctured with two orange ſpots. Herbſt.

Same country as the preceding.

Splendida. Black, with yellow down; wing-caſes glabrous at the tip; legs fulvous; antennæ brown, with ferruginous baſe. Herbſt.

Inhabits Germany.

Plumipes. Brown, punctured; thighs ſubclavated; hind-legs very long, the ſhanks rufous at the tip. Pallas.

Country unknown.

Rufipes. Black; legs rufous; thighs black at the baſe. Schaller.

Native of Germany.

Octo-maculata. Black; wing-caſes teſtaceous, with ſix black ſpots and tip. Schaller.

Inhabits Saxony.

Schalleri. Brown; baſe of the ſhells with four rufous ſpots. Schaller.

Inhabits Germany.

Pumila. Brown; anterior legs teſtaceous, the thighs black above. Schaller.

Native of Saxony. A rare ſpecies, found on rhamnus catharticus.

Ustulata. Black; thorax and wing-caſes teſtaceous, tipped with black; legs teſtaceous.

Inhabits Germany on flowers.

Parisina. Black; baſe of the antennæ and thighs reddiſh. Thunb.

Oblong, narrow. Inhabits Germany.

Bipustulata. Wing-caſes black, ſtriated with dots, and marked with two teſtaceous ſpots. Thunberg.

Inhabits Upſal.

Scopolii. Abdomen and thorax at the poſterior margin red; wing-caſes teſtaceous, pellucid, and attenuated; tip and margin below the middle black. Scop.

Nigripes. Black; wing-caſes dull yellow-teſtaceous; legs black. Gmel. Degeer, &c.

Country unknown.

Verna. Black; anterior ſhanks fulvous. Müll.

Native of Denmark.

Maculosa. Black; wing-caſes livid-teſtaceous; antennæ ſpotted with black. Degeer.

Country unknown.

Lunulata. Black; thorax with a narrow yellow band behind; wing-caſes with two ferruginous lunules. Swederus.

Inhabits the Cape of Good Hope.

Bicolorata. Pale ferruginous; eyes, wing-caſes, wings, and tail above black. *Leptura bicolor*, Swederus.

Native of America.

Vittata. Pale teſtaceous; antennæ annulated with fuſcous; wing-caſes dotted with black, with four yellow ſtripes. Swederus.

Inhabits America.

10-Punctata. Black; thorax ſubglobular; wing-caſes with ten dots. Lepech.

Inhabits Ural.

Varia. Villous, hoary; thorax ſubglobular; wing-caſes black with white dots, and four interrupted bands. Lepech.

Same country as the former.

Viridis. Greeniſh; thorax ſomewhat ovate, with two darker lines; the back black. Lepech.

Native of Siberia.

Nitens. Thorax globular, and with the abdomen black, with yellowiſh ſhining down; wing-caſes black, with four broad yellow bands; legs ferruginous. Forſter.

Inhabits North America.

Bilineata. Blackiſh-brown; thorax with two yellowiſh lines; wing-caſes with ſcattered dots. Scop.

Found in Carniola.

Cærulea. Blue; anterior ſhanks rufous. Scop.

Native of Italy.

Squalida. Black; wing-caſes teſtaceous at the baſe and inner margin. Scop.

Same country as the former.

Bipartita. Black; thorax ferruginous with a black line; wing caſes with a common ferruginous ſpot. Schrank.

This and the two following are natives of Germany.

Ferruginea. Black; wing-caſes ferruginous, with a broad patch of black. Schrank.

Lambda. Black; wing-caſes with three white bands. Schrank.

Maculata. Black, with yellow downy ſpots; thorax globular; antennæ half as long as the body. Geoffr.

This and the five following are inhabitants of France.

Nævia. Black, with yellow down; wing-caſes with two black glabrous ſpots. Geoffr.

Punctulata. Blackiſh; head and thorax red, dotted with black. Geoffr.

Strigosa. Yellow downy; wing-caſes with three narrow black bands. Geoffr.

Gallica. Blue; ſhanks rufous; thorax ſubglobular. Geoffr.

Crassipes. Deep black; thighs thick and rufous. Geoffr.

Bimaculata. Rufous; thorax cylindrical; wing-caſes dotted, with a ſpot and waved line of white. Müll.

Inhabits Europe.

Villosa. Black, villous; thorax cylindrical, with pale longitudinal line. Müll.

Native of Denmark.

LEPTURUS, in *Botany*, from λεπτος, *ſlender*, and ουρα, *the tail of an animal*, a genus of graſſes, eſtabliſhed by Mr. Brown, Prodr. Nov. Holl. v. 1. 207, and ſo called from its long ſlender cylindrical ſpike. It is founded on *Rottbollia repens*, Forſt. Prodr. 9. u. 50, with a queſtion whether *R. incurvata* of Linnæus and Fl. Brit., as well as *R. filiformis* of Roth, may not belong to the ſame. The chief difference between *Lepturus* and *Rottbollia* ſeems to lie in the joints of the ſpike being ſingle-flowered in the former, two-flowered in the latter; for in the detail of the florets, reſpecting the preſence or imperfection of the parts of impregnation, this tribe of graſſes, and indeed all graſſes, are to be truſted with great caution.

Lepturus, in *Ichthyology*. The name is of Greek origin, and is formed of λεπτος, *ſlender*, and ουρα, *a tail*, expreſſing that the fiſh bearing this name has a very long and ſlender tail. See Trichiurus *lepturus*.

Lepturus, in *Ornithology*. See Phaeton *æthereus*.

LEPUS, the *Hare*, in *Aſtronomy*, a conſtellation of the ſouthern hemiſphere; whoſe ſtars in Ptolemy's catalogue are twelve; in that of Tycho thirteen; in the Britannic catalogue nineteen. See Constellation.

Lepus *Aqueus*, the *water-hare*, in *Ornithology*, a name given to the creſted diver, or colymbus of America, which is the ſame ſpecies with the large European kind, though deſcribed by many authors as a different bird. It has the name of the *ſea-hare* or *water-hare*, from its great nimbleneſs in the water. It is caught with much difficulty; and the Mexicans have a thouſand fabulous ſtories about it. See Colymbus *criſtatus*.

Lepus, in *Zoology*, a genus of the order of Glires, in the claſs of Mammalia, the characters of which are that the animals of this genus have two fore-teeth in each jaw; in the upper jaw is a ſecond inner row of fore-teeth, which are conſiderably ſmaller than the outer or primaries; the fore-feet have each five, and the hind-feet four toes. Theſe animals are very timid; they live on vegetable food; and they uſe the hind-feet in walking as far as the heel, running by a kind of leaps, or repeated bounds. They have either exceedingly ſhort tails, named *ſcuts*, or none at all.

* *With tails.*

1. L. *Viſcaccia*, *Vizcacha*, *Viſcachos*, the Peruvian hare, with a longiſh tail, beſet with briſtles. Molin. Hiſt. Nat. Chil. Hares of this ſpecies inhabit the plains and baſes of mountains in the colder parts of Peru and Chili. The fur is of a mouſe colour, and ſo fine and ſoft, that, in the time of the Incas, it was woven into cloth for the Peruvian nobles, and is that employed for bonnets by the Chileſe. In habit and manner this ſpecies reſembles the rabbit, and digs holes under ground, in which are two contiguous chambers, one in which it ſleeps, and the other, which is lower, is employed for eating its proviſions, that are collected in the night; the tail is buſhy, and much longer than that of any other ſpecies, and in general it turns up and is uſed as a weapon of defence.

2. L. *Timidus*, common hare, has a very ſhort tail, the ears longer than the head, and black at the ends. Of this there are two varieties, *viz.* the horned common hare, L. *timidus cornutus*, having ſlightly branched horns, an animal probably fabulous; and the yellow common hare, L. *timidus melinus*, of a ſtraw colour, of the ſame ſize with the hare, and running like it. Cook's Voy. iii. Pennant's Quad.

This ſpecies inhabits the whole of Europe, and more plentifully in Bulgaria; in the northern parts of Perſia, Japan, Ceylon, and almoſt the whole of Aſia; in Egypt and Barbary; in North America, and even in Chili. The hare is very timid, very quick in its ſight and hearing, and very ſwift, particularly in running up hill; when hunted it runs circularly, gradually leſſening the circuit, and often doubling back parallel to its path, and leaping through a great interval at the turn, in order to throw off the dogs. (See *Hare* Hunting.) The hare feeds only by night, and chiefly on the twigs and bark of ſhrubs and young trees. It is hunted for ſport with dogs or hawks, and, in India, with ſome ſpecies of the cat genus. It is ſaid to be fond of the ſound of a drum; it is much infeſted with fleas; it does not burrow, but makes a kind of neſt, called by ſportſmen a "form," among buſhes or long graſs; its urine is fœtid, which it takes care not to diſcharge in its neſt. It does not pair, but breeds often in the ſummer and ſpring the male purſuing the female, when in ſeaſon, by the ſcent; after going 30 or 31 days, the female brings three or four at a litter; and as hares are very laſcivious, ſuperfœtation is not uncommon. It is about two feet in length, when full grown between eight and nine pounds in weight, ſometimes, though rarely, twelve; the head is oblong or oval; the ears long and tipt with black, the eyes large, prominent, and black, placed much outwards, and provided with a nictitating membrane, which remains open when the animal is aſleep; the upper lip is divided; the ſnout furniſhed with long white whiſkers, the chin white; the fur on the face, back, and ſides white at the roots, black in the middle, and tawny red at the ends; the breaſt and throat are reddiſh; the belly is white; the tail is black above and white beneath; the hind thighs are ſtrong, thick, and fleſhy, with a cavity on each ſide at the pubes; the feet are thickly covered with hair on the ſoles. This animal is fond of birch, parſley, and pinks. Its fleſh was forbidden by the Druids, but much eſteemed by the Romans. For other particulars, ſee HARE.

3. L. *Variabilis*, varying hare, *Alpine hare*, has a very ſhort tail, the ears ſhorter than the head; the whole fur becomes white in winter, except the tips of the ears, which remain black. Of this ſpecies there is a variety, called the L. *variabilis hybridus*, or ſpurious varying hare, the ſides of which only turn white in winter. This ſpecies inhabits the coldeſt and moſt hilly parts of Europe and Aſia, as Scotland, Norway, Lapland, Ruſſia, Siberia, Kamtſchatka, Greenland, and in America, about Hudſon's bay, and Labrador. The ſpurious variety is a mixed breed, between the varying and common ſpecies, ſuſtaining a partial change of colour, and found only in the ſouthern and weſtern parts of Siberia. In autumn the varying hares ſometimes collect in flocks of 5 or 600: driven from the mountains of Ruſſia and Siberia, they migrate in queſt of ſubſiſtence into the lower country, and return in ſpring. The fleſh of this ſpecies is harder, drier, and leſs flavoured than that of the common kind. It never mixes with the common ſpecies, but keeps on the tops of the higheſt hills; it does not run ſwiftly, but when purſued, takes ſhelter in the clefts of rocks; is eaſily tamed and very frolickſome; fond of honey and ſweatmeats; it eats its own dung before a ſtorm; changes to white in September, and recovers its grey colour in April; and it is ſubject to theſe changes when kept in a warm room; in Greenland, it is always white. Penn. Quad. Arctic Zool. Forſter. Phil. Tranſ. lxii.

4. L. *Niger*, the black hare, has a very ſhort tail, fur entirely black, or very dark tawny, the whole year, and inhabits Siberia, and the government of Caſſan. It is much larger than the common kind, and very gloſſy.

5. L. *Americanus*, American hare, Hudſon's bay hare, Hudſon's bay quadruped, Phil. Tranſ. lxii. with the tips of the ears and tail grey, has a very ſhort tail. The hind legs are a half longer than the body; the tips of the ears and tail grey. This ſpecies inhabits North America. In New England, Canada, and farther north, this ſpecies acquires a long, ſilky, ſilver-white coat of fur during winter, the edges of the ears only remaining grey: to the ſouth it retains the whole year a ſhort fur of an aſh colour, mixed with ruſty and black, on the neck and body, the legs pale-aſh colour, and the belly white. It is ſmaller than the common hare, ſhelters in hollow trees and under fallen timber, and breeds once or twice a year, producing from five to ſeven at a litter; the fore legs are proportionally ſhorter, and the hind legs conſiderably longer than thoſe of the common kind.

6. L. *Tolai* of Buffon, Baikal hare of Pennant, the Daurian hare of Erxleb. the cuniculus leporinus of J. G. Gmelin, has a ſhort tail, and the edges of the ears black. This ſpecies inhabits the country beyond the lake Baikal, in the deſert of Gobi or Cobi, and as far as Thibet. This is larger than the former ſpecies; in ſummer of much the ſame colour with the varying hare, and in winter a little paler; the legs are ſmaller and the hind legs longer; the tail longer than that of a rabbit, but ſhorter than that of the common hare, and like that black, eſpecially at the root. It does not burrow, runs ſtraight forward when purſued, and ſhelters in the holes of rocks. Its fleſh is white, like that of the rabbit.

7. L. *Minimus*, Chileſe hare, has a very ſhort tail, and the ears of an uniform colour. Molin. H. N. Chil. This ſpecies inhabits the kingdom of Chili. It is ſmall, not exceeding the ſize of a ſmall rat; its body is of a conical form, its ears are ſmall and ſharp-pointed, its ſnout is lengthened, the fur is fine and very ſhort; the fleſh is white and good for food. It reſembles the domeſtic rabbit in variableneſs of colour, in its prolific quality, producing almoſt every month ſix or ſeven young ones at a time; and in Chili it is domeſticated.

8. L. *Capenſis*, Cape hare, has a buſhy tail, as long as the head, and red feet. It inhabits the country three days' journey from the Cape of Good Hope; dwells in the fiſſures of rocks, and does not burrow; about the ſize of a rabbit, and probably the ſame animal that is mentioned by Adanſon as found in Guinea, which, he ſays, is ſmaller than the common kind, with a colour between that of a rabbit, and has white fleſh.

9. L. *Cuniculus*, common rabbit, has a very ſhort tail, almoſt of the ſame colour with the body, ears black at the points, and hind legs ſhorter than the body. Of this ſpecies there are the following varieties, *viz. cuniculus ferus*, or wild rabbit, of a browniſh-grey colour; *cunic. domeſticus niger*, of an uniform black colour; *cun. domeſticus albus*, of an uniform, white colour, with fiery red eyes; *cun. domeſticus variegatus* pied tame rabbit, of a pied or mottled black and white colour; *cun. domeſticus argenteus*, ſilvery tame rabbit, of a ſilvery grey or aſh-colour, with tawny feet. This ſpecies inhabits naturally the warmer parts of Europe, Aſia, and Africa; it is not a native of Britain, but has ſubſiſted in a wild and tame ſtate in this country for ſeveral ages. It occupies principally dry ſandy ſoils, in which it forms long winding burrows; confining itſelf to theſe holes in the middle of the day, and wandering in the evening, night, and morning, in ſearch of food. It feeds on all kinds of green vegetables and grain. Its fleſh is white and much eſteemed. The female breeds ſix or ſeven times in a year, going 30 or 31 days with young, and bringing from four to eight at a litter: it acquires its full ſize in ſix months, and lives about eight or nine years; the male is very ſalacious, and apt to deſtroy the young; rabbits are preyed upon by hawks, badgers, and polecats, and are caught by means of terriers, nets, and ferrets. Numbers of them are bred in a wild ſtate in places ſet apart for the purpoſe, called “warrens,” and many are bred in houſes in a domeſtic ſtate. The wild variety is of a brown aſh-colour, having the upper part of the tail black, and the under part white. The fur of the ſilvery variety is valuable.

10. L. *Saccatus*, hooded rabbit, Ruſſian rabbit, has a double fold of the ſkin behind the head, and another under the throat. This animal's habitat is unknown. It is deſcribed by Mr. Pennant, from a drawing in the Britiſh Muſeum by Mr. Edwards, and called by him a Ruſſian rabbit, but it is unknown in that empire.

11. L. *Sericeus*, Angora rabbit, is covered with long, waved, ſilky hair. The Ruſſian rabbit is reckoned by Gmelin a variety of this. It inhabits Angora in Aſia Minor, and is exceedingly beautiful on account of its fine, white, ſilky fur, which is a valuable article in commerce.

* * *Having no Tails.*

12. L. *Braſilienſis*, Braſilian hare, named “Tapeti” by the natives, has very large ears, no tail, and, for the moſt part, a white ring or collar round the neck. (Pallas Glir.) This ſpecies inhabits South America and Mexico; it is of

the ſame colour and magnitude with the common hare, but darker, with ſimilar large ears; in its general appearance it reſembles the rabbit. It lives in the woods, does not burrow, and its fleſh is good food.

13. L. *Puſillus*, calling-hare of Pennant, has no tail, triangular ears, white at the edges; the upper parts of the body are dark-brown, mixed with blackiſh-grey, and the under parts hairy. (Schreber.) This ſpecies inhabits the ſouthern extremity of the Ural mountains, about the Irtiſch and the ſunny hills to the ſouth of the Altaic chain. It feeds chiefly on the flowers and bark of the Cytiſus ſupinus, Robinia fruteſcens, Ceraſus pumila, and Malus ſylveſtris; digs holes in dry places, amid buſhes, and leads a very retired life, near its burrows, which are long and intricate, with a very ſmall entrance. Theſe animals are diſcovered by their voice, which is very loud and ſonorous, like the piping of a quail, and may be heard at a great diſtance; it is repeated at ſhort intervals, three, four, or even ſix times, moſtly at night and morning, and never in winter or bad weather. This ſpecies is gentle, and eaſily tamed; it ſleeps little, drinks frequently, and is moſt active in the night ſeaſon; its pace is not quick, but by leaps.

14. L. *Alpinus*, Mountain hare, Alpine hare of Pallas, &c. Muſtela Daurica, or Daurian weaſel, has ſhort rounded ears, and no tail, is of a bright bay colour, with brown ears and hind feet. (Schreber.) This animal inhabits the Altaic chain of mountains, to the extremity of Aſia, and beyond the Lena and Yeniſei, occupying the moſt rugged and inacceſſible ſhelves of the mountains, burrowing in the clefts of the rocks, or living in the hollow trunks of decayed trees. Its voice or cry reſembles a loud whiſtle. The mountain hare is preyed on by ſables and Siberian weaſels, and is much infeſted by the Oeſtrus leporinus, a ſpecies of gad-fly, which lodges its eggs in their ſkins, and often deſtroys them. This ſpecies varies in ſize from ſeven to nine inches in length, and weighs from 1¼ pound to four ounces.

15. L. *Ogotona*, the Ogotona hare, or Mongalian weaſel, has oblong, oval, ſomewhat pointed ears, of the ſame colour with the body, which is pale grey; but it has no tail. (Schreber.) It inhabits the mountains beyond the lake Baikal, and all Mongalia, eſpecially the great deſert of Cobi; dwelling ſometimes in rocky places, among ſtones, or forming in the ſand with two or three entrances. Its voice is ſharp and clamorous; it feeds chiefly on the bark of the Pyrus baccata, and on the ſuckers of the dwarf elder, and in ſpring on various herbs which grow on the ſandy ſoil. It is nimble, and ſcarcely capable of being tamed; it is preyed upon by various ſpecies of the weaſel tribe, by the Manul cat, hawks, wood-peckers, and owls; it differs from the calling and mountain hares, chiefly in ſize, being about 6½ inches long. It procreates in ſpring, and the young ones are fully grown by the end of June.

LEPYRODIA, in *Botany*, λεπυρωδης, *ſcaly*, ſo called on account of the inner ſcales at the baſe of each flower. Brown Prodr. Nov. Holl. v. 1. 247.—Claſs and order, *Dioecia Triandria.* Nat. Ord. *Tripetaloideæ*, Linn. *Junci*, Juſſ. *Reſtiaceæ*, Brown.

Eſſ. Ch. Flowers either dioecious or hermaphrodite. Petals ſix, nearly equal, prominent, with one or two ſcales at their baſe, within the proper ſcale of the ſpike, or catkin.—Male, Stamens three. Anthers ſimple, peltate. A rudiment of a piſtil. Female, Styles three. Capſule of three cells, three-lobed, burſting at the prominent angles. Seeds ſolitary.

This genus is very near *Elegia*, Linn. Mant. 2. 162, (which was afterwards ſunk in *Reſtio*), but differs in the preſence of inner ſcales to the flowers, and in the male flowers being like the female, with nearly equal petals, as well as in having the ſheaths of the ſtem permanent, not ſeparating juſt above their baſe, and in the ſmaller ſize of the ſpathas. The *Calorophus* of Labillardiere nearly anſwers to the above character, but is a totally different plant.

1. L. *gracilis.* Stems ſomewhat branched. Sheaths tight. Spike compound; its lower branches rather diſtant. Three outer petals ſhorteſt.—Gathered by Mr. Brown at Port Jackſon, New South Wales.

2. L. *ſtricta.* Stems perfectly ſimple. Sheaths tight. Spike compound; its branches rather crowded. Petals all nearly equal.—Native of the ſouth coaſt of New Holland.

3. L. *ſcarioſa.* Stems perfectly ſimple. Sheaths lax. Spike compound; its branches imbricated, divided. Three inner petals ſmalleſt. Found at Port Jackſon.

4. L. *hermaphrodita.* Stems perfectly ſimple. Sheaths lax. Spikes nearly ſimple. Flowers hermaphrodite.—Found on the ſouth coaſt of New Holland.

Our account of this genus is entirely taken from Mr. Brown's work, with ſome ſlight difference in terms, according to what we have uſed in the articles LEPTOCARPUS and LEPIDOSPERMA.

LERANG POINT, in *Geography*, a cape on the N. coaſt of the iſland of Java. S. lat. 6° 37′. E. long. 111° 27′.

LERAY, a town of France, in the department of the Cher, and chief place of a canton, in the diſtrict of Sancerre; 8 miles N. of Sancerre. The place contains 1109, and the canton 6544 inhabitants, on a territory of 170 kiliometres, in 7 communes.

LERCHEA, in *Botany*, was ſo named by Linnæus, as a tribute of reſpect to the botanical acquirements and publications of John James Lerche, principal phyſician to the Ruſſian armies, who was born at Potſdam in the year 1703, and who died at St. Peterſburg in 1780. He publiſhed a deſcription of certain plants growing at Aſtrachan, and in the provinces of Perſia which border on the Caſpian ſea. This tract is printed in the 5th vol. of the New Tranſactions of the Academy Naturæ Curioſorum, Appendix 161. 206. He alſo furniſhed an account of the *Nymphæa Nelumbo* of the Caſpian ſea. Haller mentions that Lerche made many curious obſervations on the agriculture and botany of the countries through which he travelled.—Linn. Mant. 155. Schreb. 453. Willd. Sp. Pl. v. 3. 586. Mart. Mill. Dict. v. 3. Juſſ. 421.—Claſs and order, *Monadelphia Pentandria.* Nat. Ord. unknown.

Gen. Ch. *Cal.* Perianth of one leaf, tubular, five-toothed, permanent. *Cor.* of one petal, funnel-ſhaped; tube longer than the calyx; limb five-cleft, nearly erect. *Stam.* Filaments ſcarcely diſtinct from the tube of the germen; anthers five, oblong, placed upon the tube of the germen. *Piſt.* Germen ſuperior, ſomewhat ovate, terminated (within the corolla) by an obtuſe tube; ſtyle within the tube of the germen, thread-ſhaped, the length of the ſtamens; ſtigmas two or three, rather obtuſe. *Peric.* Capſule ſomewhat globoſe, toruloſe, of three cells, ſometimes only two. *Seeds* numerous.

Eſſ. Ch. Calyx five-toothed. Corolla funnel-ſhaped, five-cleft. Anthers five placed on the tube of the germen. Style ſingle. Capſule of three cells and many ſeeds.

1. L. *longicauda.* Linn. Syſt. Veg. ed. 14. 610. Mant. 256. There is no figure of this ſolitary ſpecies of *Lerchea*, which is a native of the Eaſt Indies, and a *ſhrub* of irregular growth, furniſhed with ſtraggling jointed branches. *Leaves* oppoſite, on foot-ſtalks, lanceolate, ſmooth, entire, a foot in length. *Stipulas* ſword-ſhaped, ſhorter than the leaf-

ſtalks. *Spike* terminal, ſlender, a foot high; *flowers* remote, ſcattered, ſmall.

The above deſcription is entirely taken from the works of Linnæus, the only perſon who ever ſaw the plant. No trace of it is to be found in his herbarium, yet it is to be preſumed the ſpecimen exiſts ſomewhere in his collection, probably without a name.

LERENZA, in *Geography*, a town of New Granada; 25 miles N. of Tunja.

LERGE, a town of Sweden, in Weſt Gothland; 4 miles N. of Gothenburg.

LERI, John de, in *Biography*, a French Proteſtant miniſter, was born at La Margelle, a village in Burgundy, and proſecuted his academical ſtudies at Geneva. In 1556 he was ſelected to accompany two miniſters, on a miſſion to join an intended colony of the reformed religion in Brazil, under the protection of admiral de Coligny. On their arrival, they found their project ſo involved with difficulties, that Leri returned to France in the following year, having endured aſtoniſhing hardſhips during his voyage. He afterwards was admitted to the office of the miniſtry, and exerciſed it at La Charitè, at the time of the maſſacre of St. Bartholomew, when he was obliged to make a very haſty eſcape to the town of Sancerre. It was during the memorable ſiege of this place that he was granted a paſſport from marſhal de la Châtre, permitting him to retire wherever he pleaſed: he went to Bern in Switzerland, where he was received in the moſt kind and hoſpitable manner by M. de Coligny, ſon of the admiral. In 1574 he publiſhed an intereſting "Hiſtory of the Siege of Sancerre:" giving an account of the tranſactions of that ſiege, and of the horrors of famine to which the Proteſtants ſubmitted in defence of their religion, and all that was dear to them, which was widely diſperſed, and went through many editions. In 1577 he publiſhed an account of his voyage to Brazil. He died at Bern in 1611, greatly regretted by all who knew him. Bayle. Moreri.

LERIA, in *Ancient Geography*, an iſland of the Ægean ſea; one of the Sporades, according to Strabo.—Alſo, a town of Spain, in the Tarragonenſis, and in the interior of the country of the Edetani. Ptolemy.

LERIDA, in *Geography*, anciently called *Ilerda*, a town of Spain, in Catalonia, diſtinguiſhed in ancient and modern hiſtory for the great events which have rendered it memorable. It was the capital of the country of the Ilergetes long before the firſt invaſion of Spain by the Romans, and had its own particular princes. In the plains of Lerida Scipio gained a ſignal victory over Hanno, the Carthaginian general, A.U.C. 537 It was, likewiſe, under the walls of this town that Julius Cæſar conquered the lieutenants of Pompey, A.U.C. 705. The beauty of its ſituation and the fertility of the country attracted the attention of the Romans; and as ſoon as they had made a conqueſt of it they planted colonies there, and gave it the title of "Municipium Ilerdenſe." This town, having fallen under the dominion of the Goths, embraced the Chriſtian religion, and was the ſeat of a celebrated council held here A.D. 528, or 524. A council held here in 546 is remarkable for two of its canons: one prohibiting eccleſiaſtics from ſhedding human blood, and another permitting the communion to be adminiſtered to magicians when they are dying. After the conqueſt of the Moors, it became at firſt ſubject to the caliphs of Damaſcus, and afterwards to the Mooriſh kings of Cordova; but its own governor erecting the ſtandard of rebellion and uſurping the ſupreme power, it had a ſeparate king. In 1149, Raymond Berenger, the laſt count of Barcelona, who had juſt aſcended the throne of Aragon, took Lerida from the Moors, and from that time it formed a part of Catalonia.

This town is ſituated on the declivity of a hill, at the top of which the caſtle ſtands, on the right and weſt bank of the river Segra, which bathes the walls of it. It is long, narrow, almoſt triangular, cloſe, and ill built. It has one tolerable ſtreet, a quarter of a league in length, but, like the others, narrow and ill paved. A quay, lately built, extends through the whole length of the town, which forms a kind of promenade for the inhabitants. Their number is about 18,000. It is an epiſcopal ſee, ſuffragan to Tarragona. Its dioceſe includes 150 pariſhes; Lerida itſelf has one cathedral chapter, four pariſhes, eight convents of monks, three of nuns, one hoſpital, and one college. The town has a civil and military governor, a ſmall garriſon, and an alcade-major for the adminiſtration of juſtice. Its univerſity, eſtabliſhed in 1300, by James II., king of Aragon, was ſuppreſſed by Philip V. at the commencement of the eighteenth century. The cathedral is the only edifice in Lerida that claims attention. Lerida formerly carried on a trade in ſalt-fiſh, which has wholly failed. Its preſent commerce is confined to the exportation of ſome productions of the land, chiefly fruits and pot-herbs; great quantities of which are ſent to Urgel and Aragon. The adjacent country is very fertile, and valuable on account of the variety and abundance of its produce; conſiſting of wheat, oats, flax, hemp, oil, wine, beans, and all kinds of excellent fruits and pot-herbs. The country is interſected with canals ſupplied by neighbouring rivers, and is ſkilfully and carefully watered. Some ſilk-worms are alſo bred here, but in no great number; 62 miles E. of Saragoſſa. N. lat. 41° 29′. E. long. 0° 25′.

LERIKA, a town of Swediſh Lapland; 100 miles W.N.W. of Tornea.

LERILLON, a ſmall iſland in the Grecian Archipelago, near the N. coaſt of the iſland of Lero.

LERIN, a town of Spain, in Navarre; 15 miles E. of Eſtello.

LERINA, in *Ancient Geography*, *Lerins*, an iſland of the Mediterranean, upon the coaſt of Gallia Narbonnenſis, S.W. of Nicæa. Strabo, who calls it "Planaſia," from its form and ſituation, ſays that it had a garriſon.

LERINS, in *Geography*, a name given to two ſmall iſlands in the Mediterranean, near the coaſt of France, about ſix miles S. of Antibes; called "St. Marguerite" and "St. Honorat;" near theſe are ſome other iſlets.

LERMA, a diſmantled town of Spain, in Old Caſtile, on the Arlanza; 23 miles S. of Burgos.—Alſo, a town of Mexico, in the province of Yucatan; 12 miles S. of Campeachy.

LERNA, in *Ancient Geography*, a lake or marſh, now called "Molini," in the Argolide, a little N. of Geneſium. It is rendered famous by the fable of the defeat of the hydra with many heads, which retired hither and was killed by Hercules. The people of the country pretend that near this lake Neptune ran away with Proſerpine; in memory of which event were annually celebrated the myſteries conſecrated to Ceres: and hence theſe myſteries were denominated the "Lernæan myſteries." Near the lake was a wood conſecrated to this goddeſs, which commenced at mount Pontinus. Pauſan. Corinth. l. ii. c. 36.

LERNÆA, in *Zoology*, a genus of the claſs Vermes, and order Molluſca, which is characterized by Linnæus as having an oblong, ſomewhat cylindrical and naked body; tentacles or arms two, or ſometimes three on each ſide and round, by which it affixes itſelf to any ſubſtance; two ovaries projecting like tails from the lower extremity. They are without eyes, and are very troubleſome to fiſh, adhering very firmly to them, chiefly to the gills and fins. There are fifteen ſpecies, which we ſhall briefly enumerate.

Species.

Branchialis is one of the largeſt, being about two inches in length. The body is round and flexuous, the mouth is lateral, and ſeated between three ſlightly branched horns. It inhabits the northern ſeas, and is found adhering to the gills of cod-fiſh. It is uſed as food by the Greenlanders. Müll. Zool.

The body of this ſpecies is hollow, membranaceous, thicker before and behind ; dull white, dirty red. The neck is long, tubular, and filiform ; tail ending in a perpendicular groove ; ovaries two, compoſed of long twiſted cirri.

Cyprinacea. Body cylindrical, clavate behind ; thorax forked ; tentacula lunate at the tip. It has four tentacula, two of them lunate at the tips ; it is only about half an inch long, and of the thickneſs of a ſmall ſtraw ; the body is rounded, of a pale greyiſh-white, gloſſy on the ſurface, and ſomewhat pellucid ; it is thruſt out of a kind of ſheath at the baſe, which is of a white colour, and a thick ſkin ; towards the other extremity of the body there are three obtuſe tubercles, one of which is much larger than the reſt. It is found on the ſides of the bream, carp, and roach of our ponds and rivers, in abundance.

Salmonea, or *Salmon-louſe.* Body obovate ; thorax inverſely heart-ſhaped ; tentacula two linear and approaching each other. It is rather more than half an inch long, and is found, as its name imports, adhering to the ſalmon about its gills. Barbut.

The body is pale and ſoft, head ſmall, oblong, rather convex, with two horizontal lips ; the upper one is armed with two rigid moveable hooks, the lower ſhort, bifid ; abdomen inverſely ovate ; ovaries round, granulate within, and as large as the whole body.

Asellina has a lunated body, and cordated thorax, and is found in the gills of cod-fiſh and ling. Barbut.

Huchonis. Body knotty ; two tentacula ; ovary double and united behind ; is found in the gills of the ſalmo hucho, in northern lakes and rivers. The body is clear white and ſomewhat cartilaginous.

Clavata. Body cylindrical, ſubſinuate and tripled beneath the tip and ſnout. Müll. It is found in the fins, gills, mouth, and eyes of the Perca Norwegica.

Unciata. Body rather heart-ſhaped ; ſnout ſimple, curved, and the mouth terminal. Müll. It is found on the gills and fins of cod-fiſh in the Greenland ſeas. The body is ſoft, pale, with a longitudinal groove down the middle of the back ; the ovaries are rounded and thickened towards the tip.

Gobina. Body rhomboid ; it has two arms before and two behind, all of which are nodoſe ; the head is armed with two curved horns. Shaw. Müll. It inhabits the gills of the Cottus gobio, or Miller's thumb, and is nearly three quarters of an inch in length.

Body blueiſh-white ; head roundiſh, with two incurved horns ; the mouth is placed between the horns, and is furniſhed with three lips ; the tentacula are angular, curved, knotty ; inteſtines tranſlucent above ; tail bifid ; ovaries ſpiral, round, ſubulate.

Radiata has a ſquare depreſſed body, with three pair of arms and four horns. Müll. It is found in and about the mouth of the Coryphæna rupeſtris, in the Greenland ſeas. It is rather more than an inch in length ; whitiſh or cinereous, and rough with hardiſh tubercles ; the ſides a little crenate ; head depreſſed, rounded, and covered with numerous papillæ ; ovaries large, oboval.

Nodosa. Body ſquare tuberculate ; with two very ſhort arms beneath on each ſide. Müll. Shaw. It inhabits about the mouth of the Perca Norwegica.

Body ſoft, pale cinereous, convex above, and concave beneath, with four hard white tubercles in the middle of the back, and five white teeth on each ſide ; head rounded, and divided by a ſtreak in the middle.

Cornuta. Body oblong, with four ſtraight emarginate arms ; head ſubovate. Shaw. Müll. It is found on ſome ſpecies of the Pleuronectes.

Body covered with a pellucid ſkin ; front with two horns and a ſingle tooth ; the mouth has two feelers ; ovaries brown, and its eggs are of a tawny colour.

Pectoralis. Head orbicular ; hemiſpherical ; abdomen obcordate, with a terminal truncate papilla. Müll. Shaw. It is found on the gill and pectoral fins of the flounder, or Pleuronectes fleſſus, and other ſpecies of the ſame genus.

Body white, diaphanous, covered with ſmall blackiſh ſpots ; the crown has two falciform projections ; ſnout conic, truncate, with four minute horns, two ſhort ſpines, and two feelers near the third conic ſpine. Two tentacula, not curved ; ovaries two, rather narrow, ſub-annulate, and of equal diameters.

Lotæ, found on the gills of the Gadus lota, has four unequal ovaries ; the mouth has two hooks ; four cruciate appendages.

Cyclopterina. Body round, flexuous, with a double orifice in the middle of the ſnout ; ſnout terminated by three horns, divided into three parts. It inhabits a ſpecies of the Cyclopterus, or Lump-fiſh.

Body reſembles the branchialis above deſcribed, but the horn is ſlender, turned up and entire at the tip ; tail is narrower, with two convex lobes on each ſide ; ovaries ſimple, ſpiral, and nearly five inches long when extended. There is another variety which is rather leſs and has greeniſh ovaries.

Pinnarum is of a reddiſh colour ; head cylindrical and roſtrate on the fore-part ; it has two tentacula, which are lunate, and bifid at the tip. It is found on the dorſal fins of the Gadus barbatus.

Body depreſſed, fleſhy, grooved on the back, with a cylindrical arm placed on the fore-part of the back, concealed in a groove ; the ovaries long and cylindrical.

LERNEB, in *Geography*, a town of Algiers ; 20 miles S. of Tipſa.

LERO, anciently *Lero*, or *Leros*, an iſland of the Grecian Archipelago, N.N.W. of that of *Calamo* (which ſee). Strabo ſays that it was formerly inhabited by a colony of Mileſians. It is about eight miles long, and two broad. It has a good harbour and a few coves, and alſo high mountains, in whoſe boſoms mines and quarries of marble might be worked ; its ſoil is ungrateful, and its inhabitants are under the neceſſity of ſeeking ſuccours abroad by navigation and traffic. N. lat. 37° 12′. E. long. 26° 35′.

LERONA, a town of Italy, in the Orvietan ; 7 miles N.W. of Orvieto.

LEROT, or *Garden Squirrel* of Buffon, in *Zoology*. See Myoxus *Nitela*.

LE ROY *le veut*, a form of words, by which the royal aſſent is ſignified by the clerk of the parliament to public bills ; to private bills this aſſent is expreſſed by *ſoit fait comme il eſt deſiré*.

Le Roy *s'aviſera*. By theſe words to a bill, preſented to the king by his parliament, is underſtood his abſolute denial of that bill in a more civil way; and the bill thereby becomes wholly null and void. See ROYAL and PARLIAMENT.

LERVADILLA, in *Geography*, a town of Spain, in the province of Leon; 12 miles S. E. of Ciudad Rodrigo.

LERWIA, or LERWEE, in *Zoology*. See ANTELOPE *Lerwia*.

LERWICK, in *Geography*, a ſea-port town, ſituated in a pariſh of the ſame name, on the eaſt ſide of the Mainland of the Shetland iſles. It is diſtinguiſhed as the ſeat of the courts held by the ſheriff-depute of this ſtewartry, and as the general rendezvous of all the veſſels employed in the whale-fiſhery. The harbour is one of the ſafeſt and largeſt in Great Britain. It is formed by the iſland of Breſſay, and is particularly commodious from the circumſtance of having two entries, one from the ſouth, and another from the north. On the outſide of the north entrance is a ſunk rock, which is called the Unicorn. It derived its name from the Unicorn man-of-war, which was ſent in purſuit of the earl of Bothwell, when that nobleman fled to Shetland. As this veſſel appeared at the mouth of the ſouth entry, before her approach was diſcovered by the earl, he with difficulty eſcaped by the north paſſage. The Unicorn eagerly purſued, but having no pilot on board, ſhe ſtruck upon this rock and was wrecked. The town of Lerwick is about half a mile in length, and is irregularly built, but contains ſeveral excellent houſes. Near the north end is a ſmall fortification, called Fort Charlotte. It is uſually garriſoned by a party of invalids, and ſerves to protect the north entry of the harbour. About a mile and a half from the town are the remains of two ancient Daniſh caſtles. The pariſh extends about ſix miles along the coaſt, but at no point is more than one in breadth. The ſurface of the ground is for the moſt part rocky and mountainous. Immediately upon the ſhore, however, there are many very fine arable fields, the ſoil of which, though light and ſandy, poſſeſſes conſiderable fertility. The population of the whole pariſh, according to the parliamentary returns in 1800, amounted to 1706 perſons; about 900 of whom are reſident in the town. Sinclair's Statiſtical Account of Scotland, vol. iii. communicated by the Rev. James Sands.

LESARA, a ſmall iſland in the Baltic, E. of Aland. N. lat. 60° 18′. E. long. 20° 19′.

LESBIAN CYMATIUM. See CYMATIUM.

LESBIUM MARMOR, a name given by the ancients to a ſpecies of marble of a blueiſh-white, ſometimes uſed for the vaſes and other ornamental works, but principally in the walls of public buildings.

LESBONAX, in *Biography*, a native of Mitylene, who flouriſhed in the firſt century of the Chriſtian era, was a diſciple of Timocrates, afterwards became a teacher of philoſophy in his native city, and obtained a great number of ſcholars. He was author of many books of philoſophy, and Photius ſays he had read ſixteen orations written by him. Two of theſe, it is ſuppoſed, have reached modern times, and were firſt publiſhed by Aldus, in his edition of the ancient orators, in 1513. They were afterwards publiſhed by Henry Stephens, with the orations of Æſchines, Lyſias, and others. They were alſo publiſhed, in 1619, by Gruter. Leſbonax is ſaid to have been the author of a treatiſe "De Figuris Grammaticis." He left a ſon named Potamon, an eminent rhetorician at Rome, in the reign of the emperor Tiberius. So ſenſible were the magiſtrates of Mitylene of his merits, and of the utility of his labours, that they cauſed a medal to be ſtruck in his honour: one of which was diſcovered in the ſouth of France about fourſcore years ago, and an engraving of it publiſhed in 1744, by M. Cary, of the Academy of Marſeilles. Moreri.

LESBOS, in *Ancient Geography*, now called *Metelin*, an iſland of the Grecian Archipelago, ſituated N.E. and S.W. and occupying in its length the port of the gulf of Adramyttium, on the coaſt of Aſia Minor. It extended in latitude from 39° 5′ to 39° 30′, S.E. of the iſland of Lemnos. It is ſaid, that the Pelaſgi firſt ſettled themſelves in this iſland under the conduct of Xanthus, ſon of Triopus, king of the Pelaſgi, driven from Argos, who paſſed from Lycia to this iſland, called Iſſa, and named by him Pelaſgia. Seven generations after this time, the inhabitants periſhed in the deluge of Deucalion, or rather in an inundation that overwhelmed this iſland. It was then left deſolate. In proceſs of time Maccareus, an inhabitant of Ionia, afterwards denominated Achaia, formed an eſtabliſhment in this iſland. This prince was accompanied with Ionians and ſome other people of different nations. Leſbus, it is ſaid, came hither ſome time after Maccareus, his progenitor.

Euſtathius, in his Commentary on the third book of the Odyſſee, ſays, that this iſland contained five towns, *viz.* Leſbos, whence it derived its name, Antiſſa or Iſſa, Pyrrha, Methymna, and Mitylene, whence this iſland has been ſince called Mitylene and Metelin. This laſt town was the capital. Leſbos, originally governed by rulers choſen among its own inhabitants, became afterwards ſubject to the dominion of foreign tyrants. It ſucceſſively paſſed under the domination of the Perſians, and then under that of the Greeks, till its liberty was reſtored to it by Alexander the Great. This liberty it preſerved till the time of Pompey, who reduced it into the ſtate of a Roman province; continuing, however, for ſome time to Mitylene its ancient privileges. The Cruſaders next eſtabliſhed themſelves for a certain period, and the Genoeſe were maſters of it when the empire of the Eaſt fell into the hands of the Turks. It was on this occaſion that Mahomet II. ten years after the capture of Conſtantinople, equipped a conſiderable fleet in order to ſubdue it. Mitylene, Methymna, and moſt of the places of this iſland had been well fortified; the knights of Rhodes ſuccoured it; and the inhabitants, who knew the cruelties committed by the Turks at the capture of Conſtantinople, were all diſpoſed to defend their lives. The Ottoman forces, although very conſiderable, would undoubtedly have miſcarried againſt thouſands of heroes, if theſe heroes had not been betrayed by the treachery of Lucco Gattiluſio, who thought of obtaining the ſovereignty of the iſland by delivering it up to Mahomet. Accordingly, he perſuaded his couſin Gattiluſio to ſign a ſhameful capitulation. However, as a recompence for the treachery of the one, and for the weakneſs of the other, Mahomet cauſed them to be cruelly put to death a ſhort time after. Leſbos gave birth to ſeveral perſons of diſtinction; among whom we may reckon Alcæus, a lyric poet, who long declaimed againſt tyranny; Sappho, the celebrated poeteſs, whom antiquity has placed among the Muſes, and who, by an unfortunate paſſion, was impelled to precipitate herſelf from the promontory Leucates; Theophraſtus, a diſciple of Plato and Ariſtotle; Pittacus, whom Greece reckons among her ſages, and who, more ardently deſirous of the happineſs of his fellow-citizens than of his own, conceived and executed the project of uſurping power in order to reſtore liberty to his country; and laſtly, Potamon, born at Mitylene, a diſtinguiſhed rhetorician, who lived at Rome under Tiberius. This latter, wiſhing to return to his country, and there eſtabliſh a chair of eloquence, obtained from Tiberius letters, in which it was expreſsly mentioned, that whoever ſhould dare to inſult Potamon, would inſult in his perſon the emperor himſelf. We might alſo mention, in more modern times, the two brothers, Barbaroſſas, ſons of a porter, who from ſimple ſailors, became famous pirates, and were afterwards, in ſucceſſion, ſovereigns of Algiers. The younger, appointed high admiral by Soliman I., is more known than his brother in the hiſtory of the Ottoman empire. For an account of the preſent ſtate of Leſbos, ſee Metelin.

LESCAILLE, James, in *Biography*, a Dutch printer and poet, born in 1610, was deſcended from a family of diſtinction and much conſideration at Geneva, which took refuge in Holland on account of ſome perſecution. By profeſſion he was a printer and bookſeller, and gained great reputation by the beauty and accuracy of various editions of books which he publiſhed. He was in high eſtimation as a poet, and was noticed by the emperor Leopold. He died in 1677, leaving behind him a daughter, Catherine, born in 1649, and ſo diſtinguiſhed by her poetical talents, that ſhe was called the Dutch Sappho. Her brother-in-law, Ranck, publiſhed, in 1728, a volume of her works, which contains ſeven tragedies, beſides other pieces. She died in 1711. Moreri.

LESCANO, in *Geography*, a town of Spain, in the province of Guipuſcoa; 9 miles S.S.W. of Toloſa.

LESCAR, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the diſtrict of Pau; 3 miles N.W. of Pau. Before the revolution, it was the ſee of a biſhop, ſuffragan of Auch. The place contains 1885, and the canton 7823 inhabitants, on a territory of 177½ kiliometres, in 15 communes.

LESCHERES, a town of France, in the department of the Upper Marne; 9 miles S. of Joinville.

LESCIVER, a town of Perſia, in the province of Irak; 101 miles W. of Hamadan.

LESCZYN, a town of Poland, in Volhynia; 24 miles N. of Berdiczow.

LESDIGUERES, Francis de Bonne, *Duke of*, in *Biography*, was born of an ancient family, in the Upper Dauphinè, in 1543. He was brought up to the military profeſſion, and acquired, while he was yet a young man, ſo much reputation for ſkill and true courage, that he was choſen by the Calviniſts of his native province their leader, after the death of Montbrun. Soon after the command devolved upon him, he took a number of provinces, and at length the capital of Grenoble. This was in the year 1590. When the duke of Savoy, taking advantage of the diſturbances in France, projected an invaſion of Provence and Dauphinè, Leſdigueres, who acted as an independent commander, covered the latter province with his arms. He now ſent to court to demand the government of Grenoble, which Henry IV. could not grant him, as he had, by the advice of his council, reſerved it for a Catholic; the envoy being refuſed his requeſt, he applied to the council aſſembled, "Gentlemen, if you do not think it proper that my maſter ſhould have this government, you ſhould think of the means of taking it from him." This energetic anſwer was not diſpleaſing to the king, who was glad to be under the neceſſity of promoting a general of the Proteſtant perſuaſion. Leſdigueres was, from this time, appointed lieutenant-general of the king's armies in Piedmont, Savoy, and Dauphinè, and by his vigilance and activity diſappointed all attempts of the duke of Savoy, who was accuſtomed to call him the fox of Dauphinè. When that prince was conſtructing a ſtrong fort on the French territory, Leſdigueres was reproached by the king for allowing it, to which he replied, "Your majeſty has occaſion for a good fortreſs to bridle that of Montmelian. Since the duke of Savoy is willing to build one at his expence, let him do it: I engage, as ſoon as it is completed, and furniſhed with cannon and ammunition, to take it from him." He performed his promiſe, and his ſervices were rewarded, in 1608, with the ſtaff of a marſhal of France, and his eſtate of Leſdigueres was erected into a dukedom and peerage. In the ſucceeding reign he ſaved his old antagoniſt, the duke of Savoy, when attacked by the armies of Spain. In 1620, when the civil war was renewed, he received great offers from his party, the Calviniſts, to accept the poſt of commander-in-chief, but he preſerved his fidelity to the king, and accompanied him into the field. Upon the death of the conſtable of France, nothing but his religion ſtood in the way of his ſucceeding to the high office, and this obſtacle he removed by abjuring the Calviniſtic creed. The patent which conferred upon him the office, gave as a reaſon for his appointment, that it was on account of "his having been always victorious, and never vanquiſhed." Having apoſtatized from his creed, probably for the ſake of honours and wealth, of which he was exceedingly avaricious, he did not heſitate to take the command againſt his party, and was uniformly ſucceſsful in the ſervice, till his death, in 1626, when he had attained to the age of eighty-four. Notwithſtanding his defects, Leſdigueres had a great mind: while leader of the Calviniſts, his principal domeſtic was bribed to aſſaſſinate him: the plot was diſcovered, and taking the man aſide, he ordered him to arm, at the ſame time he armed himſelf: "Since you have promiſed," ſaid he, "to kill me, try to do it now, and do not forfeit your character for valour by an act of cowardice." The man threw himſelf at his feet, confeſſed his crime, and the general not only pardoned, but continued to employ him.

LESIGNA, in *Geography*, a town of France, in the department of the Aude; 11 miles W. of Narbonne.

LESINA, anciently *Pharos*, an iſland in the Adriatic, between Brazza and Corzola Nigra, about 44 miles long, and 5—8 broad, lying from W. to E. in N. lat. 43° 30′. In the higheſt parts it is rocky and barren, but nevertheleſs contains ſome good land, yielding abundance of corn. Its principal productions are alſo wine, oil, figs, almonds, ſaffron, honey, aloes, oranges, wool, cheeſe, and ſalt. Marble, in great quantities, is found on the iſland. Salt-fiſh is the chief article of commerce. Its capital is *Leſina;* which is a ſmall, fortified town, at the bottom of a bay near Cape Pellegrino, the ſee of a biſhop, and reſidence of a governor, with a capacious and ſafe harbour. The number of inhabitants is reckoned about 1200; 20 miles S. of Spalatro. N. lat. 43° 5′. E. long. 16° 50′.—Alſo, a town of Naples, in Capitanata, the ſee of a biſhop, ſuffragan of Benevento, on a lake of the ſame name communicating with the Adriatic; almoſt totally deſtroyed in 1627 by an earthquake; 26 miles N.W. of Manfredonia. N. lat. 41° 59′. E. long. 14° 30′.

LESKAU, a town of Bohemia, in the circle of Pilſen; 7 miles E. of Plau.

LESKEA, or Leskia, in *Botany*, an Hedwigian genus of moſſes, named by its author in his Hiſt. Nat. Muſcorum Frondoſorum, v. 2. 93, in memory of his friend Leſke, profeſſor of Economy at Leipſic, and afterwards of Nat. Hiſt. at Marburg, who died in 1786, aged 35. This genus is by Britiſh botaniſts united to *Hypnum*, as agreeing therewith entirely in habit, and differing only in a very minute and uncertain character of the inner fringe, which is furniſhed with 16 ſimple teeth, inſtead of double or compound ones. See Fringe of Mosses, and Hypnum.

LESKEN, in *Geography*, a town of Pruſſia, in Pomerelia; 6 miles N.N.W. of Marienburg.

LESKIRCH, a town of Tranſylvania; 14 miles W. of Fogaras.

LESKNITZ, or Lesnitz, a town of Sileſia, in the principality of Oppeln; 18 miles S.E. of Oppeln. N. lat. 50° 25′. E. long. 13° 6′.

LESKO, a town of Auſtrian Poland, in Gallicia; 48 miles S. of Lemberg.

LESKOVETZ, a town of European Turkey, in Bulgaria; 84 miles W.N.W. of Sophia.

LESLEY, John, in *Biography*, biſhop of Roſs, of an eminent family in the northern part of Scotland, was born in 1527. He was educated at Aberdeen, and was preſented, in 1547, with a canonry in the cathedral of that city. Having obtained this preferment, he ſpent ſome years at the French univerſities, and took his degree of doctor of laws at Paris. In 1554, he returned to Scotland, and, taking orders, was appointed official and vicar-general of the dioceſe of Aberdeen. He took a moſt active part againſt the reformation, which was now taking root in Scotland; and appeared as a principal champion of the Roman Catholic party, in a diſputation held between them and the reformers at Edinburgh, in 1560. When the young queen Mary was invited to return and aſſume the reins of government, he was ſent over by the Catholics to perſuade her to throw herſelf into the arms of the Popiſh party. He embarked with her at Calais in 1561; and ſoon after her arrival was created one of the ſenators of the college of juſtice, and privy-counſellor. Shortly after this, he was nominated to the ſee of Roſs. He did not confine his labours to the duties of the church, but was appointed by the queen to collect and reviſe the ſubſiſting laws of the realm; and the collection printed at Edinburgh in 1566, called the black acts of parliament, from being in the black letter, was the reſult of its labours. When the unfortunate queen had taken refuge in England from the fury of the covenanters, and commiſſioners were appointed by queen Elizabeth to examine the diſpute between her and her ſubjects, the biſhop of Roſs was one of thoſe whom Mary choſe for the defence of her cauſe. When reaſoning and argument were found to be ineffectual, he joined in conſpiracies, for her deliverance, which were dangerous to the perſon and government of Elizabeth. He urged the duke of Norfolk to thoſe deſigns which proved his ruin, and was himſelf involved in conſiderable danger: he was taken into cuſtody, his papers ſearched, himſelf committed to the Tower, treated with the utmoſt rigour, threatened with capital puniſhment, and, after a long confinement, ſet at liberty, on condition that he ſhould leave the kingdom. He accordingly went into the Netherlands, and employed himſelf in the moſt preſſing ſolicitations to the kings of France and Spain, the German princes, and at length to the pope, in order to obtain Mary's liberation. He publiſhed ſeveral books in her defence, and in vindication of her right and title to the crown of England. In 1579, he was appointed ſuffragan and vicar-general of the archbiſhopric of Rouen; but on making his viſitation of the dioceſe he was ſeized, impriſoned, and forced to purchaſe his liberty by a high ranſom. In 1593, he was nominated to the biſhopric of Conſtance. When there was no hope left him of returning to his own country, he retired to a monaſtery near Bruſſels, where he died in 1596. He was a man of learning, an able ſtateſman, and a faithful ſervant and ſubject of his ſovereign: his principal works, as an author, are, 1, his hiſtory, entitled "De origine, moribus, et rebus geſtis Scotorum," in ten books: of theſe the laſt three books are dedicated to the queen, to whom they were preſented in Engliſh, before their publication in Latin: and, 2, a geographical work, entitled "Regionum et Inſularum Scotiæ Deſcriptio." Gen. Biog. Robertſon's Hiſt. of Scotland.

LESLIE, John, an Iriſh prelate in the 17th century, was born in the north of Scotland, and received the early part of his education at Aberdeen. From this place he was ſent to Oxford to complete his ſtudies. He afterwards viſited Spain, Italy, Germany, and France for farther improvement, and made a proficiency in polite literature, as well as in the abſtruſe branches of learning. He was ſo great a maſter of the Latin, that it was ſaid of him when in Spain "Solus Leſlius Latine loquitur." He continued abroad twenty-two years, became converſant in courts, and procured the favour and friendſhip of many foreign princes: and on his return he was honoured with the patronage of Charles I., who admitted him into his privy-council, in which he was continued by Charles II. after the reſtoration. In the church of Scotland he was preferred to the biſhopric of Orkney, and was tranſlated, in 1633, to Raphoe, in Ireland. Here he built a ſtately palace in the form of a caſtle, which was found of great utility in the civil wars, as it ſuſtained a ſiege, with the biſhop as a kind of commander, who was, in fact, the laſt perſon who maintained the ſtruggle in defence of the royal cauſe in thoſe parts. After the reſtoration, he was preferred to the biſhopric of Clogher. He died in 1671, being upwards of an hundred years old, and having worn the mitre more than fifty years. He wrote many curious and very learned works, which he deſigned for publication, but which were deſtroyed, together with his valuable library and MSS., the fruits of many years collection, in the civil wars. Biog. Brit.

Leslie, Charles, ſecond ſon of the preceding, was educated in grammar-learning at Inniſkilling, and, in 1664, was admitted a fellow commoner of Trinity-college, Dublin, where he took his degrees. Upon the death of his father he came over to England, and entered himſelf of the Temple, at London. He ſoon abandoned the ſtudy of the law for that of theology, and was, in 1680, admitted into holy orders. In 1687, he was made chancellor of the cathedral church of the dioceſe of Connor. About this time he made himſelf extremely obnoxious to the Popiſh party in Ireland, by a zealous oppoſition to their doctrines, and by an earneſt attachment to the Proteſtant religion, which he endeavoured to propagate by every means in his power. The Papiſts, encouraged by the reigning prince, James II., aimed at engroſſing civil as well as ſpiritual offices; and a high-ſheriff of their party was appointed for the county of Monaghan. Mr. Leſlie, as a magiſtrate, and as converſant with the law of the land, was applied to with regard to the legality of the appointment: he inſtantly decided that it would be as illegal for the people to permit the ſheriff to act, as it would be in him to attempt it. The magiſtrates, at the next quarter-ſeſſions, inquired if the ſheriffs were legally qualified, to which he replied, that "he was appointed by the king, and was of the king's religion." The anſwer to this was, that they boldly agreed to commit him for intruſion and a contempt of the court. Mr. Leſlie, notwithſtanding his attachment to the law of the land, had imbibed the doctrines of paſſive obedience and non-reſiſtance, which ſo warped his underſtanding, that, at the revolution, he refuſed to take the oaths to William and Mary. He was, in conſequence of this conduct, deprived of his preferments; and in 1689 withdrew with his family into England. Here he employed his pen in ſupport of the cauſe and the party which he embraced, and was eſteemed one of the ableſt champions which the non-jurors had. He publiſhed an anſwer to the "State of the Proteſtants in Ireland, under the late King James's Government," by biſhop, afterwards archbiſhop, King. He publiſhed a weekly paper, entitled "The Rehearſal," conſiſting of dialogues on the affairs of the times: this was continued ſix or ſeven years, when the papers were collected and publiſhed together; and it was ſaid by biſhop Burnet, that the ſame thread of the argument is purſued through them all, againſt the lawfulneſs of reſiſtance in any caſe whatever, deriving the ſource of government wholly from God. Mr. Leſlie wrote againſt Deiſts, Jews, Papiſts, Socinians, and Quakers: all his writings he afterwards collected, excepting an illiberal piece againſt the learned Tillotſon, and publiſhed in two volumes folio. The frequent viſits which he made to the continent, rendered him obnoxious to the Britiſh government; and the hatred of him was much increaſed by a piece, entitled "The hereditary Right of the Crown of England aſſerted," of which he was the reputed author. He went to Bar-le-Duc to attempt the converſion of the ſon of James II. to the Proteſtant religion, in the hope that he might one day be ſettled on the throne. Towards the cloſe of queen Anne's reign, he took much pains in recommending him as her ſucceſſor. The attempt was made in vain; and after the rebellion of 1715, he retired with the young Pretender to Italy. In 1721, he made up his mind to return and die in his native country; and his friends implored the protection of government, which was granted. He died at his own houſe in Glaſlough, in the county of Monaghan. He was unqueſtionably a man of extenſive learning and great merit, and diſtinguiſhed by his piety, humility, and integrity. Biog. Brit.

LESNEVEN, in *Geography*, a town of France, in the department of Finiſterre, and chief place of a canton, in the diſtrict of Breſt; 13 miles N.E. of Breſt. The place contains 2030, and the canton 16,024 inhabitants, on a territory of 167½ kiliometres, in 10 communes. N. lat. 48° 34′. W. long. 4° 14′.

LESNICA, a town of Lithuania, in the palatinate of Minſk; 48 miles N.E. of Minſk.

LESNIOW, a town of Poland, in Volhynia; 18 miles S. of Lucko.

LESNO, a town in the duchy of Warſaw; 35 miles S. of Poſen.

LESOANDELOR, a town of Aſiatic Turkey, in Caramania; 40 miles S.S.W. of Cogni.

LESPARRE, a town of France, and principal place of a diſtrict, in the department of the Gironde; 11 miles N.N.W. of Bourdeaux. The place contains 800, and the canton 15,247 inhabitants, on a territory of 542½ kiliometres, in 18 communes. N. lat. 45° 19′. W. long. 0° 50′.

LESPEDEZA, in *Botany*, ſo named by Michaux, in compliment to his friend and patron Leſpedez, governor of Florida, who was very favourable to his botanical expedition through that country, though it does not appear that the governor himſelf was a botaniſt. Michaux Boreali-Amer. v. 2. 70.—This genus differs from *Hedyſarum*, ſee that article, in its legume, which is elliptical and turgid, ſmooth, of one cell, with a ſolitary ſeed. The ſtigma moreover is ſaid to be capitate and ſomewhat conical.—The leaves are moſtly ternate, rarely ſimple.—It appears to be a good genus, and merits further examination, for its ſpecies will probably be found rather numerous. Examples are *L. ſeſſiliflora*, (Hedyſarum junceum; Walter Carolin. 184. Medicago virginica; Linn. Sp. Pl. 1096.) a native of Virginia and Carolina: and *L. polyſtachya*, Michaux, t. 40, (Hedyſarum hirtum; Linn. Sp. Pl. 1055.), found in Carolina and Georgia. The habit is ſlender and ſhrubby. Flowers ſmall, purpliſh, in longiſh ſtalked ſpikes.

LESSANITZ, in *Geography*, a town of Bohemia, in the circle of Kaurzim; eight miles S.E. of Prague.

LESSAY, a town of France, in the department of the Channel, and chief place of a canton, in the diſtrict of Coutances; 11 miles N. of Coutances. The place contains 1503, and the canton 13,644 inhabitants, on a territory of 260 kiliometres, in 13 communes.

LESSEE, a law term employed in leaſing land, to ſignify the tenant. See LEASE.

LESSEES, a term uſed by ſportſmen for the dung of a wild boar.

LESSINES, in *Geography*, a town of France, in the department of the Jemappe, and chief place of a canton, in the diſtrict of Tournay; ſituated on the river Dender, and celebrated for its linen manufacture; 23 miles W.S.W. of Bruſſels. The place contains 3037, and the canton 14,708 inhabitants, on a territory of 115 kiliometres, in 11 communes.

LESSING, GOTTHOLD, EPHRAIM, in *Biography*, was born at Kamenz, in Pomerania, in 1729. Having received the early part of his education partly at home, and partly at a boarding ſchool, he was admitted, at the age of twelve, to the free-ſchool of Meiſſen, where he remained five years, and laid in a ſtock of Greek and Latin. Some odes of Anacreon, which he tranſlated at this ſchool, were afterwards publiſhed in his works. His removal to the univerſity of Leipſic opened a new ſcene to him; he paid little attention to the lectures of the profeſſors, but ſtudiouſly ſought out the company of the ſtudents moſt diſtinguiſhed for talents, and bold and ſingular opinions. He became a frequenter of debating clubs, and was not ſurpaſſed by any perſon in the ſocieties in the originality of his ſentiments, and the acuteneſs with which he defended them. After he had ſpent three years at the univerſity, his father, who could ill bear the expence, urged him to take orders, or to purſue ſome profeſſion by which he might ſupport himſelf. He declined this reaſonable propoſal, and ſet about tranſlating, and original compoſitions for the ſtage. After many changes, and much roaming about, he went to Gottenburg, where he took his degree of Maſter of Arts, with a view to a profeſſorſhip at Gottingen, but he ſtill continued to find ſupport by literary employment, which conſiſted in tranſlations, compilations, and ſome original pieces. He was a great proficient in the game of cheſs, a circumſtance that introduced him to the acquaintance of Moſes Mendelſohn; and the printer Nicolai made the third of a literary trio, who mutually ſharpened each other's intellectual faculties, and influenced each other's opinions. Ramler the lyric poet, Sulzer the critic, and Suſſimilch the ſtatiſtic writer, were occaſionally of their parties, and Germany perhaps could not then boaſt of converſations more literary and enlightened. In conjunction with Nicolai and Mendelſohn, he undertook a periodical work, entitled "The Library of Belles Lettres," which was a kind of review of works in polite literature, with original correſpondence. In 1760, he was elected a member of the Academy of Berlin, and ſoon after was appointed ſecretary to general Tauenzier; his income at this period was conſiderable, which he ſpent liberally upon his relations and friends. His military aſſociates gave him a taſte for high play, which he found arguments to juſtify. In 1762, he accompanied his general to the ſiege of Schweidnitz; but after the peace, he was introduced to the king of Pruſſia, and then reſumed his literary occupations at Berlin. Though he produced many works, yet they were not the ſource of much profit, and, in 1769, his circumſtances were ſo narrow, that he was obliged to ſell his library for ſupport. At this critical juncture he met with a generous patron in Leopold, heir-apparent to the duke of Brunſwick, through whoſe means he was appointed librarian at Wolfenbuttle.

buttle. One of the fruits of this very deſirable ſituation was a periodical publication, entitled "Contributions to Literary Hiſtory," containing notices and extracts of the moſt remarkable MSS. The "Contributions" were made the vehicle of "Fragments of an anonymous Writer diſcovered in the Library at Wolfenbuttle," which conſiſted of direct attacks upon the Chriſtian revelation. They occaſioned a great commotion among the German theologians, and would not have been printed but for the interference of prince Leopold with the licencers of the preſs. In 1778 they were ſuppreſſed. Leſſing, from his riſing fame, and connection with prince Leopold, with whom he went on a tour to Italy, was ſo diſtinguiſhed among the German literati, that ſeveral potentates of that country made him offers of an advantageous ſettlement. Nothing, however, would lead him to break his connection with his liberal patron the prince of Brunſwick, who, by his acceſſion in 1780 to the ſovereignty, was enabled to augment his favours towards him. His latter publications were "Nathan the Wiſe;" a ſecond part of the ſame drama, entitled "The Monk of Lebanon;" and "A Diſſertation on the Education of the Human Race." He died at Hamburgh in the month of February, 1781. Monthly Mag.

LESSOE, in *Geography*, an iſland of Denmark, in the Scaggerac, nine miles long, and from one to four wide; within are ſome ſmall villages, and about it ſome iſlets; about 12 miles from the coaſt of Jutland. N. lat. 57° 17′. E. long. 11°.

LESSOE, a town of Norway, in the province of Aggerhuus; 145 miles N.N.W. of Chriſtiania.

LESSON, in the *Manege*, is uſed for any piece of inſtruction in that art, whether given to the ſcholar or the horſe.

LESSONS, among *Eccleſiaſtical Writers*, portions of the holy ſcripture, read in Chriſtian churches, at the time of divine ſervice.

In the ancient church, reading the ſcriptures was one part of the ſervice of the catechumens, at which all perſons were allowed to be preſent, in order to obtain inſtruction.

The church of England, in the choice of leſſons, proceeds as follows; for the firſt leſſon on ordinary days, ſhe directs, to begin at the beginning of the year with Geneſis, and ſo continue on, till the books of the Old Teſtament are read over, only omitting the Chronicles, which are for the moſt part the ſame with the books of Samuel and Kings, and other particular chapters in other books, either becauſe they contain names of perſons, places, or other matters leſs profitable to ordinary readers.

The courſe of the firſt leſſons for Sundays is regulated after a different manner. From Advent to Septuageſima Sunday, ſome particular chapters of Iſaiah are appointed to be read, becauſe that book contains the cleareſt prophecies concerning Chriſt. Upon Septuageſima Sunday Geneſis is begun, becauſe that book, which treats of the fall of man, and the ſevere judgment of God inflicted on the world for ſin, beſt ſuits with a time of repentance and mortification. After Geneſis, follow chapters out of the books of the Old Teſtament, as they lie in order; only on feſtival Sundays, ſuch as Eaſter, Whitſunday, &c. the particular hiſtory relating to that day is appointed to be read; and on the Saints days, the church appoints leſſons out of the moral books, ſuch as Proverbs, Eccleſiaſtes, Eccleſiaſticus, &c. as containing excellent inſtructions for the conduct of life.

As to the ſecond leſſons, the church obſerves the ſame courſe both on Sundays and week-days; reading the goſpels and Acts of the Apoſtles in the morning, and the epiſtles in the evening, in the order they ſtand in the New Teſtament; excepting on ſaints days and holy days, when ſuch leſſons are appointed, as either explain the myſtery, relate the hiſtory, or apply the example to us.

LESSONS *for the Virginal, Spinet, and Harpſichord*, have undergone great changes in the denomination and arrangement of their movements, from the time of queen Elizabeth to the preſent. In that princeſs's virginal book, now in the poſſeſſion of viſcount Fitzwilliam, we find *pavana* in general to be the ſlow movement, and *galliarda* the quick. Now and then a *fantaſia*, a *coranto*, and a *gigg*; but as ſingle movements, not parts of a ſuite of leſſons. *Præludium*, or prelude, frequently occurs without leading to any other movement; as does *paſſamezzo*, *alman*, *toccata*, once; but the reſt are chiefly old tunes with variations. Theſe pieces are all written on a ſtaff of ſix lines.

Lady Nevil's Virginal Book.—This lady was a pupil of our admirable countryman Bird; and all the leſſons in her book, a thick quarto, are of his compoſition. They are admirably tranſcribed by John Baldwayne, a ſinging-man of Windſor, and a celebrated copyiſt of that time, 1591.

Its contents are; "My lady Nevil's *grounde*, with eight variations. *Qui paſſe*, four variations. March before the battle, 12 military movements. Old tunes varied. Groundes and fancies, with 18 pavans, and two leſſons of voluntaire, all neatly written on four-ſtaved paper of ſix lines.

Thus far all our muſic for keyed-inſtruments was in MS. But in the reign of James I. the following book appeared in print, ſtill on ſix-lined paper. "Parthenia, or the Maydenhead of the firſt Muſicke that ever was printed for the Virginalls; compoſed by three famous Maſters; William Byrde, Dr. John Bull, and Orlando Gibbons, Gentlemen of his Majeſty's moſt illuſtrious Chapel. Dedicated to all the Maſters and Lovers of Muſick." The pieces in this collection ſeem to follow in *ſuits*, of which the firſt is of Bird's compoſition; as preludium, pavana, galliardo, all in G minor; then a prelude, and a galliardo in C; and a pavan, and two galliardos in G, by the ſame.

The next author in the collection is maſter doctor Bull, whoſe pieces are arranged in the following order, "A pavan and two galiards in A minor; prelude, pavan, and galiard, in G major; two galiards in D minor." Orlando Gibbons' pieces have little connection, being a galliardo in C natural; a fantaſia in four parts, in A minor; a pavan in do.; the queen's command in C, and a preludium in G. This book was again engraved on copper in 1651, fol.

The title of Handel's two ſets of leſſons is in French, and the movements of each *ſuit* have the ſame denominations as many French compoſers of leſſons had long uſed in Louis XIVth's time; as prelude, allemande, courante, gigue, with ſometimes adagio, ſarabande, allegro, and air with *doubles*, or variations, which include all the technica of the firſt book.

In the ſecond book, he has prelude, aria con variationi, minuet, chacone, and gavotta. The movements of the ſecond book are of a lighter kind than thoſe of the firſt, as the firſt and third ſet of Corelli's ſonatas are called "Suonate da Chieſa," and the ſecond and fourth ſets, "Suonate da Cameſa."

Scarlatti's leſſons are almoſt all ſingle pieces, and we believe Alberti's were the firſt harpſichord leſſons publiſhed in England, that were called ſonatas. "Suonate da Cimbalo," which, without accompaniments, is ſtill the general title of what uſed to be called leſſons.

LESSOR, a legal term applied to the landlord, proprietor, or perſon who lets the land. See LEASE.

LESTANO, in *Geography*, a town of Italy, in the Friuli; 15 miles W. of Udina.

LESTI, a town of Sweden, in the government of Waſa; 54 miles E. of Jacobſtadt.

LESTIBUDESIA, in *Botany*, named in honour of M. Leſtiboudois, a French naturaliſt. Aub. du Petit Thouars, Plant. Inſ. Afric. v. 1. 53. t. 16. Brown. Prodr. Nov. Holl. v. 1. 413.

This genus is ſeparated from *Celoſia* only on account of its ſtigmas, which are three or four, ſlender and recurved, inſtead of being capitate or two-lobed. It includes *Celoſia paniculata* and *trigyna* of Linnæus, with ſome others, but Mr. Brown hints that it is probably not a natural genus, nor eſtabliſhed on ſufficient grounds. His L. *arboreſcens*, the only ſpecies mentioned as found in New Holland, was gathered by ſir Joſeph Banks in the Tropical part of that country. It has a ſhrubby twining ſtem; elliptic-oblong, ſomewhat pointed, ſmooth leaves; terminal as well as axillary panicles; and three ſtigmas, which, according to Dr. Solander's remarks, are deeply emarginate. The manner in which the fruit burſts has not been obſerved.

LESTIGUANO, in *Geography*, a town of Etruria; 27 miles W. of Volterra.

LESTOFF. See Lavestoff.

L'ESTRANGE, *Sir* Roger, in *Biography*, was a great lover of muſic, and a performer. His family, one of the moſt ancient in Norfolk, were always great patrons of muſic, and muſicians. Jenkins was frequently an inmate at Hunſton, where, during the ſeventeenth century, when times were tranquil, profeſſors and dilettanti frequently aſſembled to ſing madrigals, and make uſe of ſeveral cheſts of viols in the performance of fancies in ſix parts, by the beſt compoſers of the times.

LESTRIGONS, in *Ancient Geography* and *Fabulous Hiſtory*, inhabitants of Sicily towards the S.E., who are repreſented to have been a ferocious people. It is reported that they took Elpe, the daughter of Polyphemus the Cyclop, by force from Ulyſſes, who had ſeized her and was running away with her, and returned her to her father. If we may credit the poets, both the Leſtrigons and the Cyclops were real cannibals, who devoured ſix of Ulyſſes's companions. The learned Bochart will have the riſe of this fable to be, that the Leſtrigons were anciently called Leontini, a name derived from their barbarous and cruel manners; "à Leontinis moribus."

LESTWITHIAL, in *Geography*. See Lœstwithial.

LESZAISKO, a town of Auſtrian Poland, in Galicia; 28 miles N.W. of Przemyſl.

LET-*Fall*, in *Sea Language*, the word of command for putting out a ſail, when the yards are aloft, and the ſail is to come down from the yard; but when the yards are ſtricken down, then the ſail is looſed below, before they hoiſt the yard.

Let-fall is not properly ſaid of top-ſails, becauſe they lie on the top; and therefore the word for them is, *Heave out your top-ſails*. Nor can it be applied to the mizen; for the word is, *Strike the mizen and ſet it*. So that in ſtrictneſs the term *let-fall* belongs only to the main-ſail, fore-ſail, and ſpritſail, when their yards are hoiſted up aloft.

Let-*in*, in *Ship Building*, is the letting of one thing into another for ſupport or ſecurity, as the beams into the clamps, carlings into the beams, &c. by ſcores being cut to receive them.

LETAC, in *Geography*, a cape on the W. coaſt of the iſland of Jerſey; ſix miles N.W. of St. Aubin.

LETALA, a town of Sweden, in the government of Abo; 30 miles N.W. of Abo.

LETHAIS, a town of Mingrelia, on the Black ſea; 10 miles N. of Anarghia.

LETHAM, a town of Scotland, with a market, in the county of Fergus; five miles E. of Forfar.

LETHARGY, in *Medicine*, ληθαργος, ληθαργία, ſignifying literally an *indolent forgetfulneſs*, (*deſidia oblivioſa*,) from ληθη and ἀργος, is commonly uſed to denote an inceſſant and irreſiſtible ſleepineſs, accompanied by an impaired ſtate of the memory, but without delirium.

The lethargy is, in fact, a minor degree of apoplexy, and originates from the ſame cauſes, and implies a ſimilar ſtate of preſſure on the brain, the common centre of the nervous energy, as occaſions that diſeaſe. Various denominations have been given to lethargic complaints, according to the difference of the degree of ſeverity, and ſome noſologiſts have treated of theſe varieties as diſtinct ſpecies of diſeaſe. Sauvages, for inſtance, has three genera of ſleepy affections, *Lethargus*, *Cataphora*, and *Carus*. The cataphora he defines, a ſtate of ſomnolency, from which the patient may be eaſily rouſed, without fever, delirium, or loſs of memory: the lethargy, a ſoporoſe ſtate, from which the patient may be eaſily rouſed, accompanied with the greateſt torpor of the memory and imagination, and with fever; and carus, a profound ſopor without ſnoring; for when the ſnoring is preſent, he denominates it apoplexy. (See his Noſol. Method. Claſs iv. Ord. 5.) But it is obvious, as Dr. Cullen long ago obſerved, that theſe various appellations and definitions deſignate the ſame diſeaſe, in different degrees of ſeverity; we may, therefore, refer to the article Apoplexy for a general view of the nature of the malady. We may obſerve, at preſent, that it originates from ſome *compreſſion* upon the ſubſtance of the brain, by which its functions are impeded, and its influence on the ſyſtem at large, through the medium of the nerves, obſtructed; that ſuch compreſſion may be occaſioned by fractures of the ſkull, when the fractured portion of the bone is depreſſed inwards; from tumours within the head; from over-diſtention of the blood-veſſels of the brain; or from fluids effuſed in or upon the brain; but that the moſt frequent of all theſe cauſes of compreſſion is a plethoric ſtate, or an accumulation and congeſtion of blood in the venous veſſels of the head, operating, according to its degree, in producing over-diſtention or effuſion.

Lethargic complaints may, therefore, both precede and ſucceed actual apoplexy, and are not unfrequently the forerunners of a fit. From this conſideration, the importance of obviating their progreſs in the outſet, before a rupture of the veſſels of the brain, or actual effuſion, takes place, muſt be obvious; for, however impracticable it may be to remove the fluids ſo effuſed, or to occaſion their abſorption, ſo as to preſerve the life of the patient, or to ſave him from an incurable palſy, if he ſurvive; yet, in the previous ſtate of mere plethora of the veſſels of the brain, the proper remedies may be employed with every proſpect of removing the lethargic ſymptoms, and warding off the impending danger. The plethora may be corrected by general evacuations by blood letting, if there is an imminent threatening of apoplexy; or by local evacuations by means of leeches, ſcarification, and cupping, bliſters, or iſſues, where the danger is leſs imminent. At the ſame time, the alvine excretions ſhould be promoted by proper laxative medicines, the diet ſhould be light, and rather ſpare, and unſtimulating, conſiſting of a large proportion of vegetable matter; and fermented liquors of all kinds ſhould be very ſparingly taken, or altogether diſcarded. Exerciſe in the open air ſhould be regularly perſiſted in, and the hours appropriated to ſleep ſhortened, In a word, a lethargy is to be conſidered as an impending apoplexy, or an apoplexy already begun, and to be treated accordingly. See Apoplexy.

LETHE, Ληθη, in the *Ancient Mythology*, one of the rivers of hell, ſignifying oblivion or forgetfulneſs; its waters, according to poetic fiction, having the peculiar quality of making thoſe who drank them entirely forget every thing that was paſt; or, according to Virgil, "longa potant oblivia vitæ."

Lethe, *Leth*, or *Lathe*, a meaſure or portion of land, making one of the ancient diviſions in England.

King Alfred divided England into counties, as it ſtands at preſent; thoſe counties he ſubdivided into hundreds or tithings. The hundred was a diviſion, wherein were a hundred officers to ſecure the peace; the *lethe* or *lathe* comprehended three or four of theſe hundreds.

Lethe was alſo the juriſdiction of a viſcount: or a kind of aſſize, held once a year in each village, about Michaelmas. Whether this was inſtituted by Alfred, or not, is a queſtion.

LETHERS, in *Geography*, a town of Hindooſtan, in the circar of Sumbulpour; 16 miles W.N.W. of Sumbulpour.

LETHRABERG, or Ladreborg, a town of Denmark, in the iſland of Zealand; four miles S.W. of Roeſchild.

LETHUM, in *Ancient Mythology*, was diſtinguiſhed by the Roman poets from *mors*, or death. See Petronius Arb. ver. 263.

Mr. Spence conjectures, that by Lethum they meant that general principle, or ſource of mortality, which they ſuppoſed to have its proper reſidence in hell; and by *mors*, or *mortes*, the immediate cauſe of each particular inſtance of mortality on our earth. The poets give him a robe, but mention his arms being exerted out of it, as reaching at his prey. They hint at his catching people in a net, and his hunting them as they did beaſts, within his toils. They repreſent Lethum as nearly related to Sleep; and Valerius Flaccus, in particular, acquaints us that they were brothers. Val. Flac. viii. ver. 74. Spence's Polymetis, p. 261. 263.

LETI, Gregory, in *Biography*, was born at Milan in 1630. He received his education at the Jeſuits' college at Coſenza, and afterwards paſſed ſome years in an unſettled ſtate, manifeſting a ſtrong repugnance to the eccleſiaſtical profeſſion, which was propoſed to him by his uncle the biſhop of Aquapendente. Falling in company, at Genoa, with an officer of the Calviniſtic perſuaſion, he became a convert to the reformed religion, and openly avowed it at Lauſanne. He went to Geneva in 1660, married there, and ſettled as a man of letters. His talents were held in ſuch eſtimation, that the right of citizenſhip was preſented to him gratuitouſly; but his temper was ſo ſarcaſtic, as to involve him in great troubles, and in 1680 he retired to England. Here he was favourably received; a penſion was granted him, and he was promiſed the office of hiſtoriographer; but before he obtained it, he was ordered to quit the kingdom on account of ſome freedom which he had exerciſed in a work entitled "Teatro Britannico." He went to Amſterdam, became acquainted with the celebrated Le Clerc, who married his daughter, and obtained the title of hiſtoriographer of that city. Leti was a moſt induſtrious writer; his works are ſaid to amount to a hundred volumes. Moſt of them are hiſtorical, but they are frequently deſtitute of truth, and cannot be relied on unleſs ſupported by other authority than the dictum of the writer. All his works are written in Italian, in a lively ſtyle, but diffuſe and void of taſte. His beſt productions are the lives of Sixtus V.; Charles V.; queen Elizabeth; Philip II.; and Cromwell. He died ſuddenly in the year 1701.

Leti, in *Geography*, a ſmall inſland in the Eaſt Indian ſea, near the iſland of Timor. N. lat. 8° 28′. E. long. 127° 15′.

LETLING, a town of Brandenburg, in the New Mark; five miles E. of Cuſtrin.

LETNA, a river of Ruſſia, which runs into the Viatka, at Podrelſkoi.

LETSCHKOM, or Odisch, a town of Aſiatic Turkey, and capital of Mingrelia; the reſidence of the chief and ſee of a Greek archbiſhop; 60 miles N. of Cotatis.

LETTER, or Letterbach, a town of Bavaria; 11 miles N. of Bamberg.

LETTER, Litera, a character either in print or writing, by which any people have agreed to expreſs one of the ſounds, uſed in conveying their thoughts to each other in ſpeech.

Letter is by ſome defined a ſimple uncompounded ſound of the voice, that cannot be ſubdivided into any more ſimple, and generally marked with a particular character.

But it muſt be owned that, ſtrictly ſpeaking, a letter is not the ſound itſelf, but rather the ſign of a ſound; for γραμμα, *litera*, is derived from γεγραμμαι, of γραφω, *to write;* and *litera* is formed from *litus*, the participle of *linere*, *to ſmear*, or *mark;* whence *obliterare* ſignifies *to blot out.*

Where a ſign or character does not expreſs a ſound entirely ſimple, but one reſolvable into ſeveral, it is not ſo properly a letter as an abbreviation, containing in itſelf as many letters as its power does ſimple ſounds. This is evident in the Latin &, *x*, and the Greek ξ, ψ, ϛ, &c. which are compoſed of *e*, *t*, *k*, *s*, κσ, πσ, στ, &c.

On the contrary, a ſimple ſound, though expreſſed by ſeveral characters, is yet to be eſteemed one letter; for *th*, *ph*, are ſingle letters; as much as φ, θ, and *f*.

The letters, *f*, *g*, *h*, *k*, *q*, *x*, *y*, *z*, were unknown to the ancient Romans, as is proved by Dauſquius in his Orthography, where he traces the origin of the ſeveral letters. See F, G, H, &c.

Grammarians diſtinguiſh letters into *vowels* and *conſonants;* into *mutes*, *diphthongs*, *liquids*, and *characteriſtics*. See each of theſe terms reſpectively.

The Hebrews divide their letters into *guttural*, as *a*, *h*, *ch*, *gn*, aleph, he, cheth, hain, expreſſed by אהחע; *dental*, as *z*, *s*, *ts*, *r*, *sh*, zain, ſamech, tſade, reſch, ſchin, expreſſed by זסצרש; *labial*, as *b*, *m*, *u*, *p*, beth, mem, vau, phe, expreſſed by the word בומף; *lingual*, or thoſe chiefly formed by the tongue, as *d*, *t*, *l*, *n*, *th*, daleth, teth, lamed, nun, thau, expreſſed by דטלנת; and *palatal*, as *g*, *i*, *c*, *k*, ghimel, jod, caph, koph, expreſſed by גיכק.

Printers diſtinguiſh their letters into capital, majuſcule, initial, or upper-caſe letters, which ſerve for the titles of books, proper names, &c.; and minuſcule, ſmall, or under-caſe letters; which are again divided, according to their ſize, into *pearl*, *nonpareil*, *pica*, *greatprimer*, *cannon*, &c.

They have alſo their flouriſhed letters, engraven on wood or metal, which take place of the illumined letters of the ancient manuſcripts.

There are letters of various ſizes, or bodies; each of which, again, are ſometimes caſt with the Roman, ſometimes an Italic, and ſometimes an Engliſh, or Black letter face. There are alſo bodies with Greek, Hebrew, Arabic, the muſic face, &c.

Letters make the firſt parts or elements of grammar, conſtituting the ſubject of *orthography;* an aſſemblage of theſe compoſes *ſyllables*, of thoſe *words*, and of theſe *ſentences*. See each under their titles.

The alphabet of every language conſiſts of a certain number of theſe letters, which ought to have a different ſound, figure, and ſignification. See ALPHABET.

As the difference of articulate ſounds was intended to expreſs the different ideas of the mind, ſo one letter was originally intended to ſignify only one ſound, and not, as at preſent, to expreſs ſometimes one ſound, and ſometimes another: which practice has brought a great deal of confuſion into the languages, and rendered the learning of the modern tongues infinitely more difficult than it would otherwiſe have been. This conſideration, together with the poverty of all the known alphabets, and their want of ſome letters to expreſs certain ſounds by, has occaſioned ſeveral attempts towards an univerſal alphabet, to contain one enumeration of all ſuch ſingle ſounds or letters as are uſed in any language. A thing of very conſiderable uſe; a ſpecimen of which is given us by Mr. Lodwick, in the Philoſophical Tranſactions. See *Univerſal* CHARACTER.

According to Crinitus, Moſes invented the Hebrew letters; Abraham the Syriac and Chaldee; the Phœnicians thoſe of Attica, brought into Greece by Cadmus, and thence by the Pelaſgians into Italy; Nicoſtrata the Latin; Iſis the Egyptian: and Ulphilas, about three hundred and ſeventy years after our Saviour, thoſe of the Goths. Yet as to the firſt letters, what they were, who firſt invented them, and among what people they were firſt in uſe, there is ſtill room to doubt; however, ſetting aſide conjectures and prejudice, the buſineſs of antiquity ſeems to lie between the Egyptians and Chineſe. Philo attributes the firſt invention of letters to Abraham; Joſephus, St. Irenæus, and others, to Enoch; Bibliander, to Adam; Euſebius, Clement Alexandrinus, Corn. Agrippa, &c. to Moſes; Pomponius Mela, Herodian, Rufus Feſtus, Pliny, Lucan, &c. to the Phœnicians; St. Cyprian, to Saturn; Tacitus to the Egyptians; and ſome to the Ethiopians.

The Egyptian mummies and obeliſks prove a great antiquity on the ſide of the hieroglyphics; but if the Chineſe chronology may be credited, their characters are much more ancient than thoſe of the Egyptians. The Chineſe make Fohi, the firſt of their kings, ſuppoſed by many learned and judicious writers to have been no other than the patriarch Noah, the inventor of their letters, and compute him to have lived two thouſand nine hundred and fifty years before Chriſt, during all which time they pretend to have certain and written accounts in their books. If this holds true, their character muſt be older than Moſes by fourteen hundred years, and even prior to Menes, the firſt king of Egypt, by five hundred years; ſo that the Chineſe letters appear to be the moſt ancient of that kind; and the book Yekim, ſaid to be written by Fohi, the moſt ancient book.

But as China is ſo remote, and had ſo little communication with theſe parts of the world, we may reaſonably make another enquiry into the original of letters in the hither parts of Aſia, Egypt, and Europe. Here, indeed, the Egyptians ſeem to have the beſt title. It is more than probable, from the obeliſks, &c. that their hieroglyphics were the firſt manner of writing, and the original characters in theſe parts, as being prior to Moſes; and were made, at leaſt in great meaſure, while the Iſraelites were ſlaves among them, and conſequently not well qualified for inventions ſo very curious and judicious.

To this ſource the learned biſhop Warburton aſcribes the origin of alphabetical writing among the Egyptians: for as philoſophy advanced, and their learned men wrote much, the exact delineation of hieroglyphic figures became too tedious and too voluminous; and they, therefore, by degrees perfected another character, which he calls the running hand of hieroglyphics, reſembling the Chineſe characters, which being at firſt formed only by the outlines of each figure, became at length a kind of marks. See HIEROGLYPHICS.

This running character was denominated by the ancients *hieroglyphical*, and led to the compendious uſe of letters by an alphabet, which method of writing, as the ancients inform us, was invented by the ſecretary of an Egyptian king, and firſt uſed for ſecrecy in the conveyance of letters of ſtate, whence it was called epiſtolary writing: but afterwards letters became common, and, as he obſerves, hieroglyphics ſecret and myſterious. This political alphabet, he adds, ſoon occaſioned the invention of a ſacred one, uſed by the prieſts, and called *hierogrammatical*. But the preciſe time of the invention of Egyptian letters cannot be ſo much as gueſſed at, becauſe hieroglyphics continued in uſe long after letters had been found out: it is certain that they were very early, becauſe the invention of them was aſcribed to their gods. Biſhop Warburton farther conjectures, that Moſes brought letters with the reſt of his learning from Egypt, and that he both enlarged the alphabet, becauſe the Hebrew alphabet which he employed in the compoſition of the Pentateuch is conſiderably fuller than that which Cadmus brought into Greece; and altered the ſhapes of the letters, reducing them into ſomething like thoſe ſimple forms in which we now find them, in order to prevent the abuſe to which they would be liable as hieroglyphic marks and ſymbolic images. He argues, that, conſidering the importance of letters among the Hebrews, with regard to the integrity of their religion, if God had been the immediate author of them, Moſes would have recorded the hiſtory of their invention, as the beſt ſanction to their uſe and beſt ſecurity from the danger of hieroglyphic writing, to which this people, ſo fond of Egyptian manners, were very powerfully inclined. Divine Legation, vol. ii. p. 1. 124, &c. See alſo on this ſubject Sharpe's Origin of Languages, p. 56, &c.

Many of the fathers, and ſome learned men among the moderns, have imagined that the knowledge of alphabetic writing was either ſupernaturally imparted to our firſt parents, or diſcovered very ſoon after the Creation by the effort of their own powers. Others have ſuppoſed that alphabetical letters were introduced very early after the deluge, about the time of the diſperſion of mankind, to which period the records of the Chaldean aſtronomy very nearly extend. Mr. Shuckford, who ſuppoſes that they were invented both in Aſſyria and Egypt, conjectures that the great project of Babel, next to the building of the tower, was the improvement of language, by diſſolving the monoſyllables, of which the firſt language of mankind conſiſted, into words of various lengths, in order to obtain new ſets of names for new things; and that a project of this kind might gradually lead to the invention of alphabetical letters. Con. of Sacred and Prof. Hiſt. vol. i. p. 248.

But to theſe conjectures it may be replied, that we have no authentic relation of any alphabetic character before the flood; the account of the inſcription upon pillars by the firſt Mercury from Manetho, or of Seth mentioned by Joſephus, being too fabulous to deſerve credit. Beſides, if they had been in uſe among the patriarchs after the deluge, many occaſions occur, in which they would not have been omitted: and as we have no account of the uſe of alphabetic characters in epiſtles or contracts, or for other purpoſes to which they would naturally be applied, we may infer that they were not known. To which we may add, that none of the revelations of God to the patriarchs, were enjoined to be recorded till the giving of the law. Others have aſcribed the invention of letters to the

Arabs, before the time of Moſes; but when we conſider the rudeneſs of their lives and manners, this opinion is by no means probable: and, therefore, the greater number of writers among Jews and Chriſtians, both ancient and modern, have contented themſelves with tracing their origin to Moſes, ſuppoſed to be the ſame with the Egyptian Thoth or Hermes, mentioned in the hiſtory of that nation; alleging that God taught him the uſe of alphabetic letters, in the exemplar of the two tables, written, as the text aſſures us, with the finger of God; which words can be underſtood to mean only that they were written by a divine order and direction, as is evident by comparing Exod. xxxiv. 27, 28. and ch. x. 4. It has been ſaid by ſome of the advocates of this opinion, that the elements of language were thus ſupernaturally revealed to Moſes upon the firſt arrival of the Iſraelites before Horeb, but that their characters, with the arrangement of them, might be left to his diſcretion. But it ſeems more probable, that letters were at this time well known to the Iſraelites, as God thought fit to deliver the firſt elements of their religion in that kind of writing: more eſpecially as the hiſtory of ſo momentous a circumſtance is not recorded; a circumſtance, the memory of which would have been one of the greateſt barriers againſt idolatry. From the Iſraelites, it is ſuppoſed this art of alphabetical writing paſſed to the Syrians, and from them it was communicated to the Phœnicians and Egyptians: though it ſeems probable that it was of a more ancient date among the latter than the time of the decalogue, or the delivery of the law on mount Sinai.

Sir Iſaac Newton, in his Chronology, allows the Midianites, ſprung from Abraham by his concubine Keturah, to have inſtructed Moſes in the knowledge of writing.

Nevertheleſs, whether Cadmus and the Phœnicians learnt letters from the Egyptians, or from their nearer neighbours of Judea and Samaria, is a queſtion; ſince ſome of the books of the Old Teſtament, being written in letters, is more likely to have given them the hint, than the hieroglyphics of Egypt But when or whereſoever the Phœnicians learnt this art, it is generally agreed, that Cadmus, the ſon of Agenor, firſt brought letters to Greece; whence, in the following ages, they ſpread over the reſt of Europe.

Herodotus, in his fifth book intitled Terpſichore, informs us, that thoſe Phœnicians who accompanied Cadmus into Greece, and ſettled there, among many other arts and ſciences, introduced into that country the knowledge of letters, which the Greeks, in his opinion, were ignorant of till that time: their firſt letters were ſuch as were in uſe among the Phœnicians; but ſome time after they altered them a little, both with regard to their make and ſound; which alteration ſome have ſuppoſed to have been the change of the Hebrew characters into thoſe that were afterwards called the Samaritan; and as at that time many of the neighbouring parts were inhabited by ſuch as were originally Ionians, who alſo had received their letters from the Phœnicians, they mixed the one with the other; and hence thoſe characters were termed Phœnician, becauſe they were brought out of Phœnicia into Greece. Herodotus alſo adds, that he ſaw at Thebes, in Bœotia, in the temple of Iſmenian Apollo, three tripods, that had inſcriptions upon them in Cadmean letters, which very much reſembled the Ionic. The time of this expedition of Cadmus into Greece, is fixed by ſir Iſaac Newton to about the 1045th year before Chriſt. The number of letters which Cadmus brought into Greece, according to Ariſtotle, as cited by Pliny, was eighteen; but according to Plutarch and Pliny himſelf, ſixteen; to which Palamedes, in the time of the Trojan war, added four, and Simonides four; ſo that the Greek alphabet was gradually perfected. The alterations and improvements introduced into Greece have led ſome writers to aſcribe the invention of the alphabet to the Greeks: thus, Voſſius de Arte Gram. lib. i. cap. 10. aſſerts, that Cecrops, who was much older than Cadmus, was the firſt author of the Greek letters; and others aſcribe them to Linus, or to Palamedes. (Diod. Sic. lib. iii. Tacitus, lib. xi. cap. 14.) But the more general opinion of the ancient writers is that they were derived from the Phœnicians and Egyptians. Diodorus (lib. v.) ſays expreſsly, that they were invented by the Syrians, and communicated by them to the Phœnicians, who changed the form of the characters brought into Europe by Cadmus. Pliny, (Nat. Hiſt. lib. vii. cap. 56.) ſays, that he is of opinion, that they were Aſſyrian, though he acknowledges that others thought they were invented by the Egyptians, and that Mercury was their firſt author. Diodorus, (lib. ii.) aſcribes the invention of them to the ſame perſon; and likewiſe Plutarch Sympoſ. lib. xx. cap. 3. and Cicero de Natura Deorum, lib. iii. And the era of this invention is computed by chronologers to be as early as the year of the world 2054, and before the incarnation 1950 years. The Greeks retained the names and orders of ſeveral of the oriental or Cadmean letters, though they altered the form of them; and there are ſeven letters, *viz.* Γ, Δ, Η, Κ, Λ, Ρ, Τ, whoſe original figures were retained by the Greeks with little variation. As to the Latins, all writers agree, that they received their letters from the Greeks, being firſt taught the uſe of them by ſome of the followers of Pelaſgus, who came into Italy about 150 years after Cadmus came into Greece; or by the Arcadians, whom Evander led into theſe parts about 60 years after Pelaſgus. Pliny (lib. vii. cap. 56.) and Solinus imagined the Pelaſgi to have been the firſt authors of the Latin letters; but Tacitus (lib. xi. p. 131.) was of opinion, that the firſt Italians were taught letters by the Arcadians; and Dionyſius Halicarnaſſus (lib. iii.) expreſsly affirms the ſame thing. That the Latin letters were derived from the Greek ſeems very probable from the ſimilitude which the ancient letters of each nation bore to one another. Tacitus (Annal. lib. xi.) obſerves, that the ſhape of the Latin letters reſembled that of the moſt ancient Greek ones; and the ſame obſervation was made by Pliny, lib. vii. cap. 58. and confirmed from an ancient table of braſs inſcribed to Minerva. Scaliger Digreſſ. ad Annum Euſeb. 1617, and Voſſius, lib. i. cap. 24, 25. have adopted and ſupported the ſame opinions. See thoſe citations in Shuckford's Conn. vol. i. p. 223, &c.

Thus we find, that Greece was the centre from which the rays of ſcience ſhot into the weſtern world; and the barbarous nations which penetrated into Italy towards the cloſe of the Roman empire, carried arts and learning back into the North; or the knowledge of letters might be introduced among the northern nations from the borders of Aſia, in an earlier age. (Sharpe's original Powers of Letters. Obſervations on Alphabetical Writing, 1772.) Rudbecks, who, in his Atlantica, claims the glory of all inventions, from all other nations, for the Swedes, maintains, that the Ionians had letters before Cadmus; that at the time of the ſiege of Troy, the Greeks had but ſixteen letters, whereas the Phœnicians had twenty-two; whence he concludes, that it was not either Cadmus, or the Phœnicians, who taught this art to the Greeks. But, becauſe the ancient northern nations had juſt ſixteen letters, like the Greeks, he concludes the Greeks muſt either have taught them to the people of the North, or have learnt them of them. But becauſe the form and make of the Runic letters is more artleſs and coarſe than that of the Greek letters, he concludes, that theſe laſt muſt be derived from the former;

taking it as a principle, that thoſe who derive any thing from another, poliſh and improve it. He even aſſerts, that by the golden apples, which Hercules was obliged to ſteal, muſt be underſtood the letters in uſe among the Hyperboreans.

There are few things on which there has been ſo much written as on the original Hebrew letters. Origen, Euſebius Cæſarienſis, St. Jerom, &c. have made it the ſubject of their enquiry. See HEBREW and SAMARITAN.

The art of joining letters to form words, and of combining the one and the other an infinite number of different ways, is a ſecret unknown to the Chineſe. Inſtead of the alphabetical letters, they at firſt, like the Egyptians, uſed hieroglyphics; they painted, rather than wrote; ſtriving, by the natural images of things drawn on paper, to expreſs and communicate their ideas to one another.

To remedy the inconveniences of this method, they changed, by little and little, their manner of writing, making it more ſimple, though leſs natural. They even invented ſeveral characters, to expreſs things that did not come within the reach of painting to repreſent: as voice, ſmell, thoughts, paſſions, and a thouſand other objects that have no body or figure. From ſeveral ſimple ſtrokes they afterwards framed others more compound; and in this manner multiplied the letters and characters to infinity, contriving one, or more, for every word.

This multitude of letters ſeems the ſource of that ignorance which we find among the Chineſe; their whole lives being ſpent in learning their letters, they have no time to apply themſelves to the ſtudy of things, but think themſelves very learned when they are able to read. There are ſcarcely any of them that know all their letters; they think it is a great progreſs they have made, when, after forty or fifty years hard ſtudy, they are able to underſtand fifteen or twenty thouſand. But the generality of their learned men come ſhort of this. Father Le Compte is of opinion, that the greateſt doctor among them never underſtood half of their letters well; for the whole number he reckons eighty thouſand. This is a prodigious inconvenience to foreigners, of which the miſſionaries in that country make loud complaints.

Among the Chineſe letters, there are ſome now almoſt worn out of uſe, and only preſerved out of reſpect to antiquity. There is a ſecond claſs, much leſs ancient than the former, only uſed in public inſcriptions. A third, much more regular and beautiful, uſed in printing, and even in ordinary writing. However, as the ſtrokes are to be diſtinctly formed, they cannot be written with any expedition. For this reaſon, they have invented a fourth kind, where the ſtrokes, being cloſer, and leſs diſtant from each other, allow them to be written with more eaſe and readineſs; and this they call the *running letter*. See CHINESE *Tongue*.

The Americans had no letters before the diſcovery of that country by the Spaniards. The Acaanibas engrave their memorable events and epochs on ſtones and metals; their ſongs ſupply the reſt. In Peru and Chili, to keep an account of their goods and chattels, and to preſerve the memory of their particular affairs, the Indians have recourſe to certain knots of wool; which, by the variety of their colours and ties, ſerve inſtead of characters, and writing. The knowledge of theſe knots, which they call *quipos*, is one of their great ſciences; but which is always kept as a ſecret, and never revealed to the children, till the fathers think themſelves at the end of their days. See on the ſubject of this article LANGUAGE, GRAMMAR, and WRITING.

LETTERS, or *Literal Notation*, in *Muſic*. The Greeks uſed all the twenty-four letters of their alphabet as muſical characters; and theſe not ſufficing for all their modes and genera in their natural ſtate, were ſometimes uſed as capitals, ſometimes ſmall; ſome entire, ſome mutilated; ſome doubled, and ſome inverted; to the amount of 1620 notes. See ALYSIUS, and NOTATION.

LETTER, *Dominical*. See DOMINICAL.

LETTER, *Double*. See DOUBLE.

LETTER, *Final*. See FINAL.

LETTER, *Guttural*. See GUTTURAL.

LETTER *Foundery*. See FOUNDERY.

LETTER *Founders' Furnace*. See FURNACE.

LETTER *Founders' Mould*. See MOULD.

LETTER, *Labial*. See LABIAL.

LETTERS, *Numeral*, are thoſe uſed, inſtead of ciphers, to expreſs numbers.

The Roman numerals are, C, D, I, L, M, V, X; which are all formed by deſcribing a circle, and drawing two lines through it, croſſing each other at right angles in the centre. See CHARACTER.

LETTER, *Nundinal*. See NUNDINAL.

LETTER is alſo a writing addreſſed and ſent to one. See EPISTLE.

By 9 Geo. I. cap. 22. amended by 27 Geo. II. cap. 15. knowingly to ſend any letter without name, or with a fictitious name, demanding money, &c. or threatening, without any demand, to kill or fire the houſe of any perſon, is made felony without benefit of clergy. And by 30 Geo. II. cap. 24. perſons ſending letters with or without a name, or with a fictitious name, threatening to accuſe any one of a crime puniſhable by law with death, tranſportation, pillory, or any other infamous puniſhment, in order to extort money or goods, ſhall be puniſhed at the diſcretion of the court by fine and impriſonment, pillory, whipping, or tranſportation for ſeven years.

LETTERS *of abſolution* were formerly granted by an abbot, to releaſe any of his brethren from the obligation of ſubjection and obedience, and to make them capable of entering into any other religious order.

LETTER *of attorney*, in *Law*, a writing authorizing an attorney to do ſome legal act in our ſtead: as, to give ſeiſin of lands, to receive debts, to ſue a third perſon, &c. And letters of attorney are either general or ſpecial. Weſt. Symb. par. 1. ſtat. 7 R. II. cap. 13.

The nature of this inſtrument is to give the attorney the full power and authority of the maker, to accompliſh the act intended to be performed. Sometimes theſe writings are revocable, and ſometimes not ſo; but when they are revocable, it is uſually a bare authority only; and they are irrevocable, when debts, &c. are aſſigned to another; in which caſe the word irrevocable is inſerted.

LETTERS *claus*, or *cloſe*, are oppoſed to *letters patent*. See CLOSE *Rolls*.

LETTER *of credit*, among *Merchants*. See CREDIT.

LETTERS *communicatory*. See LITERÆ *communicatoriæ*.

LETTER *of exchange*. See BILL and EXCHANGE.

LETTER *of licence*, in *Trade*, an inſtrument or writing granted to a man who has failed, or broke, ſigned and ſealed by his creditors; which letter uſually gives a longer time for payment: ſo that the debtor, having ſuch an aſſurance, may go about his buſineſs, without fearing an arreſt.

LETTERS *of mart*, or *marque*, are letters under the privy ſeal, granted to the king's ſubjects; impowering them to take, by force of arms, what was formerly taken from them by the ſubjects of ſome other ſtate, contrary to the law of mart. Letters of marque, in the Britiſh dominions, are to be granted by the admiralty ; and they empower the commander of a merchant ſhip or privateer to cruiſe againſt and make prizes of the enemies ſhips and veſſels, either at ſea, or in their harbours. See Marque.

Letter *miſſive*, in the *Election of a Biſhop*. See Bishop.

Letter *miſſive*, in *Chancery*. If a peer is defendant in this court the lord chancellor ſends a letter miſſive to him, to requeſt his appearance, together with the copy of the bill: if he neglects to appear, then he may be ſerved with a ſubpœna ; if he continues ſtill in contempt, a ſequeſtration iſſues out immediately againſt his lands and goods, without any of the meſne proceſs of attachments, &c. which are directed only againſt the perſon, and therefore cannot affect a lord of parliament. The ſame proceſs iſſues againſt a member of the houſe of commons, except that the lord chancellor does not ſend him any letter miſſive.

Letters *patent*, or *overt*, are writings ſealed with the great-ſeal of England, whereby a man is authorized to do or enjoy any thing, which of himſelf he could not do. They are ſo called, on account of their form ; as being open with the ſeal affixed, ready to be ſhewn for the confirmation of the authority given by them ; and uſually directed or addreſſed by the king to all his ſubjects at large, thus, and in ſome other reſpects, differing from cloſe letters. See Close *Rolls*.

Common perſons may grant letters patent ; but they are rather called patents, than letters patent ; yet for diſtinction, thoſe granted by the king, are ſometimes called letters patent royal.

Letters patent conclude with *teſte meipſo* ; charters with *hiis teſtibus*. See Patent.

Letters *of reſpite*, letters iſſued out by a prince, in favour of honeſt unfortunate debtors, againſt too rigorous creditors, whereby payment is delayed for a certain term.

The uſe of theſe letters is very ancient. Caſſiodorus obſerves, they were in uſe in the time of Theodoric, king of the Goths ; others will have them introduced towards the end of the eleventh century, by pope Urban II. in favour of thoſe who went on the croiſades.

They are ſtill in uſe in France and ſome other countries, and take their name, *à reſpirando*, becauſe they give the debtor a breathing time.

St. Louis granted three years reſpite to all who made the voyage of the Holy Land with him.

Letters *circular*, *dimiſſory*, *frank*, *monitory*, *pacific*, *paſchal*. See the ſeveral adjectives.

Letters *of ſafe-conduct*. See Safe-*conduct*.

LETTERE, in *Geography*, a town of Naples, in Principato Citra, the ſee of a biſhop, ſuffragan of Amalfi ; 12 miles W.N.W. of Salerno. N. lat. 40° 43′. E. long. 14° 20′.

LETTERED, Letrados. See Literati.

LETTERKENNY, in *Geography*, a townſhip of America, in Franklin county, Pennſylvania ; containing 1497 inhabitants.

Letterkenny, a poſt-town of the county of Donegal, Ireland, ſituated on the river Swilly, over which it has a bridge. It is 113 miles N.W. from Dublin.

LETTERN, from *Lectrinum*, the reading deſk in ancient churches, &c., from which the epiſtles and goſpels of the liturgy were read. The deſks for the former frequently repreſented the prophet Moſes with his horned countenance, thoſe for the latter an eagle, the well-known emblem of St. John the Evangeliſt.

LETTES, a people of Ruſſia, derived from the Slavi and evincing a near affinity with the Vendi. Originally they were one people with the Lithuanians ; as is evident from the identity of their language and even of their names. In the middle ages the following denominations are uſed without diſtinction ; *viz.* Letthnia, Letthovia, Lithavia, Litſonia, Lottavi, Litthvini, Letthovini, Letthvani, Lettones, &c. Probably, ſays Tooke, the Lettes obtained their particular name from their firſt homeſtead. In the circle of Valk, not far from the town of Vendra, a river named Lecta takes its riſe ; this river is called in Lettiſh "ta Latte," and a Latte is in their language Latvis, a man living by the river Latte. Till towards the end of the twelfth century Livonia or Lettland was entirely unknown to the German hiſtorians ; it is mentioned only by Danes, Swedes, and Ruſſians. By the two former on occaſion of their piracies, and by the Ruſſians for denoting their dominion over that country. Although Neſtor, the oldeſt and moſt authentic Ruſſian annaliſt, does not expreſsly mention the Lettes ; this may poſſibly be owing to their not being at that time a particular nation diſtinct from the Lithuanians. It appears unqueſtionable from many teſtimonies, that the diſtrict inhabited by the Lettes on the Baltic already belonged to Ruſſia in the earlieſt periods of its monarchy ; it nevertheleſs appears that Livonia had then no ſettled conſtitution, nor was bound to the parent ſtate by any firm political tie. (See Livonia.) The homeſtead of the Lettes is not the whole of Livonia, but only a part of it which is called Lettland, conſiſting of four of the nine diſtricts or circles into which Livonia, or the preſent vice-royalty of Riga, is divided ; the remaining five circles being inhabited by Eſthonians. Beſides, the Kures in Courland, Semigallia, and the biſhopric of Pilten are true Lettes ; by whom, in part, the Lettiſh language is ſpoken in the greateſt purity ; and theſe people are moſtly degenerated in Poliſh Livonia, where they are mixed with Poles and Ruſſians. The number of them at preſent cannot be properly aſcertained ; but in the vice-royalty of Riga alone, there were upwards of 226,000 Lettes, according to the laſt cenſus. At preſent they are no longer known as a ſeparate people ; they were mingled by imperceptible degrees, and at laſt blended with the Lettes, the Eſthes, and the Coures, as they are uſually called, the Lettonians, the Eſthonians, and Courlanders. The Lettes, or Lettonians, are repreſented as a people always peaceable, induſtrious, hoſpitable, frugal, and of a ſomewhat better diſpoſition than the Eſthonians ; and they inhabited the greater part of the Venden diſtrict, and extended themſelves even into Dorpat, and hence it is that the chronicles mention the Lettes in Ungannia. Their origin has been at one time ſought for among the Grecian, and at other times among the Sarmatian tribes. By their language, however, it is perceived, that they bear an affinity with the Courlanders, or Coures, and that they are properly of Lithuanian, or in general of Slavonian origin. At preſent they occupy two diſtricts, which both together are after them called Lettland. By the augmentation which they received from the Liefs, now reckoned with the Lettes, the Vendes, the Lettgallians, and the Eſthonians, they are more numerous than they were in the twelfth century. The Lettes call themſelves Latwertis.

Both Eſthonians and Lettonians, admitting many exceptions, are addicted to intemperance. Without beer and brandy they have no conception of pleaſure. The aged in particular are hard drinkers, and continually ſmoke tobacco. They derive alſo a great part of their pleaſure from ſinging and muſic. At their work in the field, as well as at their play, the girls are always ſinging. The moſt uſual inſtrument with both nations is the bag-pipe, made by themſelves, and ſounded in proper time, in two keys, with great dexterity. The miſerable horizontal harp, and the fiddle, which the Lettes are very fond of at all their feſtivals, were firſt introduced among them by the Germans. They are alſo very fond of dancing. Among their favourite ſummer paſtimes is the ſwing; and this diverſion, for which there is accommodation in every village at every houſe of entertainment, is in high vogue in Eaſter. In hot weather ſwimming is much practiſed by perſons of all ages and ſexes; and the boors without exception are paſſionately fond of ſcalding hot-baths. Infidelity towards their maſters, diſtruſt, a diſpoſition to cheat and ſteal, and ſuch like, are the vices to which they are addicted, and they certainly take their riſe from the ſlavery in which they are held. They rarely rob one another; but they are very ingenious in deviſing means to impoſe upon their maſters. Againſt them they have frequently riſen in rebellion. Lying, curſing, and ſwearing are very current among them. Of their religion we ſhall only ſay, that when they were heathens, they were much given to ſuperſtition. Their paganiſm, it is ſaid, was very ſimilar to that of the Celts and ancient Germans. They had no temples, and acknowledged only one God, whom they adored under various names. They performed their religious rites in the open fields, on the top of a mountain, near a ſpring, or under the ſhade of a tree; and reckoned theſe places ſacred. They believed in inferior deities, to whoſe care and government certain regions were allotted, and whom they much feared to offend. They had a god Thou, to whoſe influence they aſcribed all aerial phenomena. Of the places and groves, where the ancient Lieflanders, as well Eſthonians as Lettonians, were accuſtomed to perform the holy rites of paganiſm, many, notwithſtanding the ſtrict orders that have been iſſued for their demolition, ſtill remain, and they teſtify towards them an awful reverence. Offerings of wood, wax, yarn, bread, &c. are ſtill in uſe among them, by laying them on the holy places, or cramming them in the hollows of aged trees. Springs and rivers likewiſe have their ſhares of theſe unbloody ſacrifices. At their ſecret idolatrous aſſemblies, the keeping up of the fire, into which they throw all ſorts of offerings, is ſtill a principal obſervance. In Liefland they had idols, but no proper idol temples. The religious rites of the Celts and Lieflanders ſeem very much to reſemble one another. Among both the Lettes and the Eſthes many remains of heatheniſm are ſtill obſervable; although in the twelfth century the Liefs, and afterwards the Lettes, were brought to the profeſſion of Chriſtianity by the Germans; and a part of the Eſthes by the Danes. Tooke's View, &c. vol. i.

LETTING FARMS, in *Rural Economy*, the practice of providing proper tenants for them, which is a buſineſs effected by different methods in different diſtricts, as by private agreements, by propoſals, and by public auction, to the higheſt bidder; all of which are liable to objections in ſome degree, but the firſt of theſe modes probably the leaſt of any. See FARM.

LETTONIA, in *Geography*, a province of Ruſſia, now included in the government of Riga. See LETTES, LIVONIA, and RIGA.

LETTOWITZ, a town of Moravia, in the circle of Brunn; 20 miles N.N.W. of Brunn.

LETTUCE, in *Botany* and *Gardening*. See LACTUCA.

LETTUCE, *Hare's*. See SOW'S *Thiſtle*.

LETTUCE, *Lamb*. See VALERIANA.

LETTUCE, *Wild*. See PRENANTHES.

LETTUCE, in *Agriculture*, the name of a plant of the eſculent kind, cultivated in the field in ſome diſtricts for its uſe in feeding ſows and pigs in the ſummer ſeaſon. It is ſtated in the Calendar of Huſbandry, that the writer firſt obſerved the ſowing of lettuces for hogs practiſed in a pretty regular ſyſtem, on the farm of a very intelligent cultivator (not at all a whimſical man) in Suſſex. He had, every year, an acre or two which afforded a great quantity of very valuable food for his ſows and pigs. He adds, that "it yields milk amply, and all ſorts of ſwine are very fond of it." And he ſuggeſts, that "the economical farmer, who keeps many hogs, ſhould take care to have a ſucceſſion of crops for theſe animals, that his carts may not be for ever on the road for purchaſed grains, or his granary opened for corn oftener than is neceſſary." To raiſe this ſort of crop, "the land ſhould have been ploughed before the winter froſts, turning in by that earth 20 loads of rich dung *per* acre, and making the lands of the right breadth, to ſuit the drill-machine and horſe-hoes, ſo that in this month (March) nothing more may be neceſſary than to ſcarify the land, and to drill the ſeed at one foot equi-diſtant, at the rate of four pounds of ſeed *per* acre. If half an acre or even a rood be tried near the farm-yard, the advantage, it is ſuppoſed, will not be inconſiderable."

Where the ſtock of ſwine is large, it may be proper to drill half an acre or an acre of lettuce in April, the land having been well manured and ploughed as directed above, being alſo ſcuffled in February and March, and well harrowed, repeating it before drilling. And at this period "the crop which was drilled in March (a ſucceſſion being eſſentially neceſſary) ſhould be thinned in the rows by hand, to about nine or ten inches aſunder. If this neceſſary attention be neglected, the plants draw themſelves up weak and poor, and will not recover it. Women do this buſineſs as well as men. When about ſix inches high, they ſhould be horſe-hoed with a ſcarifier or ſcuffler," having the hoe about four inches, or at moſt five inches, in width. With this ſort of green food ſome kind of meal, or other dry meat, ſhould be combined, as without it, it is apt to prove very laxative, and of courſe injurious to the animals. See HOG and SWINE.

LETZKAW, in *Geography*, a town of Pruſſia, on the Viſtula; 13 miles S.E. of Dantzic.

LETZNIG, a town of the duchy of Holſtein; ſix miles S.S.W. of Segeberg.

LEVANDIS *Militum Expenſis*. See EXPENSIS.

LEVANGHE, in *Geography*, a ſmall iſland near the E. coaſt of Iſtria. N. lat. 45 1'. E. long. 15 52'.

LEVANT ſignifies any country ſituate to the eaſt of us, or the eaſtern ſide of any continent or country, or that on which the ſun riſes.

LEVANT, or *Titan*, one of the Hieres iſlands, on the Mediterranean, near the coaſt of France. N. lat. 43° 4'. E. long. 6° 34'.

LEVANT, in *Matters of Commerce*, &c. is generally reſtrained to the Mediterranean ſeas; or, rather, to the country on the eaſtern part of it; or the coaſts of Aſia, and eſpecially Aſiatic Turkey, from Alexandria in Egypt to the Black ſea, including the iſlands of Cyprus, Rhodes, and the Archipelago.

Hence, our trade thither is called the *Levant trade*; and a wind that blows from thence, out of the Straits mouth, is called a *Levant wind*.

France was the firſt nation that made treaties of commerce with the Porte. The ſieur de la Foret ſigned them in 1535, in the name of Francis I. and thereby obtained many privileges in favour of that kingdom; which they alone enjoyed, until the Venetians, the Engliſh, the Hollanders, and at length the Genoeſe, likewiſe obtained particular privileges for themſelves.

LEVANT *Meaſures*. See MEASURE.

LEVANT, *Bole of the*. See BOLE.

LEVANT *and Couchant*, in *Law*, is, when cattle have been ſo long in another man's ground, that they have lain down, and riſen again to feed, which, in general, is held to be one night at leaſt. See DISTRESS.

LEVANTINE VALLEY, or *Valle Leventina*, in *Geography*, a valley of Helvetia, ſubject to the canton of Uri, and ſituated S. of St. Gothard, watered by the Teſino, and inhabited chiefly by Italians. It is ſuppoſed to retain by its name, traces of the "Lepontii," the ancient inhabitants of the ſurrounding regions. Its length, from the ſummit of the paſſage on the St. Gothard, is about eight leagues; the breadth is very inconſiderable. The lower part is extremely populous, rich in paſturage, and produces much hemp and flax. In the vicinity of the lofty mountains adjacent to it, the climate is various, and the country ſubject to much rain. To prevent the rain from damaging the crops, the inhabitants ſuſpend and dry the corn and graſs, on bars ſupported by two high poles about 15 feet aſunder. The houſes are entirely of wood, and externally appear like Swiſs cottages; but a neglect of cleanlineſs proves the vicinity and greater ſimilarity to the Italians. The Teſino is here joined by the Bromio, a torrent which takes its riſe in mount Uccello, or the Vogelſberg, near Splagen; a bridge over it is the boundary of the two bailliages of the vallies Levantine and Poleſe, and leads into that of Riviere. The valley now becomes perfectly flat, and of courſe ſubject to violent inundations; the few villages are ſcattered on the ſides of the ſteep mountains; all below is deſolate. Oſſogne, the reſidence of the bailiff, conſiſts only of a few houſes.

LEVANTO, a town of the Ligurian republic, on the coaſt of the Mediterranean; eight miles W. of Spezza.

LEVANZO, a ſmall iſland in the Mediterranean, near the W. coaſt of Sicily; about nine miles W. of Trapani. N. lat. 38° 5'. E. long. 12° 24'.

LEVARE, ANTIPHONUM, in the *Muſic of the Romiſh Church*, is to begin or open the firſt note of an anthem.

LEVARI FACIAS, in *Law*, a writ directed to the ſheriff for levying a ſum of money on a man's lands and tenements, who has forfeited his recognizance; in virtue of which the ſheriff may ſeize all his goods, and receive the rents and profits of the lands, till ſatisfaction be made to the plaintiff: but this writ has now given way to the remedy by *elegit*. There is alſo a *levari facias damna diſſeiſitoribus*, for the levying of damages, wherein the diſſeiſor has been formerly condemned to the diſſeiſee; and alſo a *levari facias reſiduum debiti*, to levy the remainder of a debt upon lands and tenements, or chattels of the debtor, where part has been ſatisfied before. And farther, a *levari facias quando vicecomes returnavit quod non habuit emptores*, commanding the ſheriff to ſell the goods of the debtor which he has taken, and returned that he could not ſell.

LEVARLOW, in *Geography*, a town of Poland, in the palatinate of Lublin; 40 miles S.S.W. of Lublin.

LEVASCHEVA, a town of Ruſſia, in the government of Olonetz, on the W. coaſt of the lake Latcha; 16 miles S.S.W. of Kargapol.

LEVATIO ARIETUM. See ARIETUM.

LEVATOR, in *Anatomy*, a name given to various muſcles, which have the effect of drawing parts upwards, or elongating them.

LEVATOR *ani*, is a muſcle connected with the inferior extremity of the inteſtinal canal. See INTESTINE.

LEVATOR *anguli oris*, is a muſcle of the lips, deſcribed under DEGLUTITION.

LEVATOR *communis labiorum*, is the ſame with the levator anguli oris.

LEVATORES *coſtarum*, are the commencements of the external ſtrata of intercoſtal muſcles. See INTERCOSTAL.

LEVATOR *labii ſuperioris et alæ naſi*, a muſcle common to the upper lip and the wing of the noſe. See DEGLUTITION.

LEVATOR *labii ſuperioris proprius*, is a portion of the former, ſometimes deſcribed as a diſtinct muſcle.

LEVATOR *labii inferioris*, is the ſame with the levator menti.

LEVATOR *menti*, is a ſmall muſcle ſituated in the chin, and deſcribed with the muſcles of the lips in the article DEGLUTITION.

LEVATOR *oculi*, a name ſometimes given to the ſuperior ſtraight muſcle of the eye. See EYE.

LEVATOR *palati mollis*, a muſcle of the ſoft palate deſcribed in the article DEGLUTITION.

LEVATOR *palpebræ ſuperioris*, a muſcle of the orbit belonging to the upper eye-lid. See EYE.

LEVATOR *ſcapulæ*, a muſcle of the ſcapula, called alſo angularis, and, by Dumas, trachelo-ſcapulien. It is ſituated in the upper part of the back, and on the lateral and poſterior part of the neck; it extends from the ſuperior angle of the ſcapula to the tranſverſe proceſſes of the four firſt cervical vertebræ. It is elongated, flattened, and broader below than above. Its external ſurface is covered below by the trapezius, above by the ſterno-cleido-maſtoideus, and in the middle by the ſkin. The internal ſurface covers the ſerratus ſuperior poſticus, the ſacro-lumbalis, the tranſverſalis colli, and the ſplenius. The edges preſent nothing remarkable; the poſterior is longer than the anterior, and covers a part of the upper edge of the rhomboideus.

The inferior extremity is attached to the ſuperior angle of the ſcapula, to the upper part of its baſis, and to the internal portion of its upper edge. From this point the muſcle paſſes upwards and forwards; it grows narrower, and is ſoon divided into four portions, which are at firſt united together by cellular tiſſue, but afterwards ſeparate to be attached to the points of the tranſverſe proceſſes of the four firſt cervical vertebræ. Theſe portions are often connected to the ſplenius and ſcalenus poſterior. Sometimes the levator ſcapulæ has only three portions fixed to the three firſt vertebræ of the neck; that which is attached to the atlas is larger and longer than the others, which diminiſh ſucceſſively in ſize and length downwards.

It is tendinous at its attachments, and fleſhy in other parts. The poſterior fibres are longer than the anterior; a faſciculus of fibres is ſometimes added to its front edge from the firſt rib.

The name of this muſcle has led to a notion that it elevates the ſhoulder; and it has been called muſculus patientiæ, from the ſuppoſition, that it acted in ſhrugging the ſhoulders. In truth it rather depreſſes than elevates this part; it draws the ſuperior angle of the ſcapula upwards and forwards, but then the bone is rotated in ſuch a way that its anterior angle, forming the ſhoulder joint, is depreſſed. It is aſſiſted by the pectoralis minor. If the trapezius act in conjunction with it, the ſhoulder will be elevated. Suppoſing the ſhoulder to be fixed, it will incline the head and neck backwards, and towards its own ſide.

LEVATUM. See TERRIS & *Catalis tentis ultra debitum*.

LEUBITZ, in *Geography*, a town of Hungary; eight miles S. of Podolicz.

LEUBUS, a town of Sileſia, in the principality of Wohlen, on the Oder, near which is a celebrated Ciſtercian abbey, ſounded at the commencement of the 11th century; nine miles S.W. of Wohlen.

LEUCA, in *Ancient Geography*, a ſmall town of Italy, in the country of the Salentins, and in the vicinity of the Japygian promontory. Strabo.—Alſo, a town of Aſia Minor, on the confines of Ionia and Æolia. Pomponius Mela places it near Phocæa, in the gulf of Smyrna; and Pliny places it near Phocæa, on a promontory which was formerly an iſland. Diodorus Siculus ſays, that Leuca was ſituated between Cumæ and Clazomenæ.

LEUCACANTHA, in *Botany*, a name uſed by Dioſcorides, and the other Greek writers, for the acacia tree, which produces the gum arabic, but it was alſo uſed for a kind of prickly plant, called alſo *amgaila* by ſome of the Arabians; as being a plant whoſe roots were knotted and jointed. Theſe joints were ſeparated and dried, and then uſed in medicine as cardiacs and carminatives, under the names of *bunk* or *bunken*. They were of a very agreeable aromatic ſmell, and very little taſte; and the ancients always preferred ſuch of them as were yellow and light, rejecting thoſe which were heavy and white, and which wanted ſmell. It is not well known at this time what theſe roots were; but it is neceſſary, in order to the right underſtanding the works of the ancients, to know that there were ſuch roots; and that though called by the ſame name with the gum arabic tree, they were of a very different nature.

LEUCACHATES, in the *Natural Hiſtory of the Ancients*, the name of an agate, not a peculiar ſpecies, but only a particular appearance of the lead-coloured agate, called *phaſſachates*.

LEUCADENDRON, in *Botany*, from λευκος, *white*, and δενδρον, *a tree*, expreſſive of the hoary or ſilvery whiteneſs for which the firſt and fineſt of the ſpecies is remarkable. The name ſeems to have originated with Hermann, who communicated to Plukenet the Silver-tree of the Cape, under the appellation of *Leucadendros Africana*, for which Linnæus, in his *Claſſes Plantarum*, adopted it; but he afterwards, in his *Genera*, applied this name to another tribe of the ſame order, and ſubſequently ſunk both in *Protea*. Mr. Brown has reſtored the original *Leucadendron*. Silver-tree. Brown Tr. of Linn. Soc. v. 10. 50. (Conocarpodendra; Boerh. Lugd.-Bat. ed. 2. t. 195. 197. 200. 202—4.)—Claſs and order, *Dioecia Tetrandria*. Nat. Ord. *Aggregatæ*, Linn. *Proteæ*, Juſſ. *Proteaceæ*, Brown.

Gen. Ch. Male, *Cal.* Common Perianth imbricated, of numerous, unequal, ſingle-flowered ſcales. *Cor.* Petals four, equal, linear, cohering in their lower part, revolute at their extremities, downy externally. *Stam.* Filaments four, ſhort, inſerted into the petals; anthers linear, of two cells, burſting lengthwiſe. *Piſt.* imperfect, or none.

Female, *Cal.* like the male; its ſcales permanent, dilated and hardened. *Cor.* like the male; bearing abortive ſtamens. *Piſt.* Germen ſuperior, ſeſſile; ſtyle ſimple, ſtraight, rigid, terminal; ſtigma oblique, club-ſhaped, emarginate, rather hiſpid. *Peric.* none, except the permanent woody calyx, whoſe ſcales are ſometimes confluent. *Nut* ſolitary, concealed by the ſcales of one ſeed.

Eſſ. Ch. Male, Calyx imbricated; its ſcales ſingle-flowered. Petals four, bearing the ſtamens.

Female, Calyx imbricated, permanent. Petals four. Stigma oblique, club-ſhaped, emarginate, rather hiſpid. Nut of one ſeed, concealed by the hardened ſcales of the calyx.

Thirty-eight ſpecies of this noble genus are defined by Mr. Brown, all natives of ſouthern Africa, near the Cape of Good Hope, where they uſually grow in moiſt ſtony or ſandy places, about rivers, and, as far as we know, in no other part of the world. A few of them have long been cultivated in the greenhouſes of Europe, but the greater part are only known in the herbariums of the curious. One of the fineſt collections of this whole natural order was procured from the Cape by Mr. Niven, for his patron G. Hibbert, eſq. to whoſe liberality we are indebted for ſpecimens of the whole.

The habit of *Leucadendron* is arboreous or ſhrubby, but ſometimes tortuous and depreſſed. *Leaves* flat, linear, lanceolate, or obovate. Heads of *flowers* often yellow, not large, but frequently accompanied by very large, ſpreading, dilated, paliſh *bracteas*, which are highly ornamental.—Examples are

L. *argenteum*. (Protea argentea; Linn. Sp. Pl. 137. Gærtn. t. 51. Lamarck Illuſtr. t. 53. f. 1. Conocarpodendron; Boerh. t. 195. Argyrodendros africana, foliis ſericeis et argenteis; Commel. Hort. v. 2. 51. t. 26.)—Arboreous. Leaves lanceolate, ſilvery; their edges, as well as the branches, hairy. Inner bracteas ſhorter, downy. Corolla of the male ſilky.—This ſplendid tree, growing about the baſes and ſides of mountains at the Cape, ſoon attracted the notice of the firſt European viſitors, and was brought into the Dutch gardens, from whence probably it came to England early in king William's reign. The *flowers* are not ornamental, nor are they ſcarcely ever ſeen here, but the ſilvery ſplendour of the *leaves* is unrivalled; they are three or four inches long, ſeſſile, lanceolate, acute, entire, ſpreading in every direction, clothing the branches in great abundance. *Flowers* ſolitary, terminal.—The whole *ſtyle* is permanent in this and four other ſpecies only.

L. *Leviſanus*. Brown n. 9. Berg. Cap. 20. (Brunia Leviſanus; Linn. Sp. Pl. 289. B. foliis oblongis incanis, &c.; Burm. Afric. 267. t. 100. f. 2, male plant. Protea Leviſanus; Willd. Sp. Pl. v. 1. 526.)—Leaves obovate or ſpatulate, very blunt; ſmooth when full grown. Branches hairy. Heads of male flowers ſeſſile. Seeds pointleſs, inveſted with long hairs.—Grows in ſandy heathy plains near the Cape. The *ſtem* is abruptly branched. *Leaves* numerous, upright, about half an inch long, entire. *Flowers* in little round yellow heads, without any prominent *bracteas*.

L. *corymboſum*. Berg. Cap. 21, male plant. (Protea corymboſa; Thunb. Diſſ. de Proteâ, n. 28. t. 2, male plant. Andr. Repoſ. t. 495, female.)—Leaves linear-awl-ſhaped, imbricated, ſmooth. Scales when in fruit acute, recurved at the points. Seeds ſomewhat compreſſed, inverſely heart-ſhaped, hairy at the edge. Found at ſeveral places near the Cape. Much akin to the laſt in its *flowers*, but the *leaves* are totally different, reſembling the narrow foliage of an *Erica* or *Dioſma*. The young *branches* are purpliſh, whence it uſed to be called by gardeners, before it bloſſomed, *Protea purpurea*. Mr. Brown obſerves that each ſex has four glands, or nectaries, at the baſe of the germen, which our laſt-deſcribed wants.

L. *concolor*. Brown n. 15. (Protea globoſa; Andr. Repoſ. t. 307. Sims in Curt. Mag. t. 878, both male plants. P. ſtrobilina; Schrad. Sert. Hannov, t. 1, female.)—Leaves ſpatulate-oblong, with a callous point; ſmooth when full grown; the floral ones of the ſame colour. Branches downy. Scales of the fruit obtuſe, fringed; woolly at the baſe.—Found near the Cape. Said to have been firſt raiſed in England by Meſſrs. Lee and Kennedy. This belongs to a handſome tribe of ſpecies, whoſe large heads of yellow *flowers* are encompaſſed by large ſpreading floral leaves or *bracteas*, which in moſt are coloured, but in this agree in hue with the foliage, and like that are about two inches long, and nearly one broad, with red callous tips.

L. *grandiflorum.* Brown n. 16. (Euryſpermum grandiflorum; Saliſ. Parad. t. 105.)—Leaves obovate-oblong, with a callous point; ſmooth when full grown; the floral ones coloured. Branches very minutely downy. Scales of both ſexes ovate, bluntiſh, ſmooth, coloured.—Gathered on mount Wynberg at the Cape, by Mr. Niven, who ſent it to Mr. Hibbert. It is larger and handſomer than the laſt, having ſplendid whitiſh *bracteas*, reſembling the petals of ſome fine polyandrous flower.

L. *ſtrictum.* Brown n. 21. (Euryſpermum ſalicifolium; Saliſ. Parad. t. 75. Protea conifera; Andr. Repoſ. t. 541.)—Leaves ſmooth, linear, with an awl-ſhaped point. Bracteas ovate, acute, coloured, longer than the flowers. Scales of the fruit dilated, rounded, ſmooth. Seeds without wings, dotted.—Native of moiſt ſtony places, about rivers, at the Cape, according to Dr. Roxburgh. Mr. Niven ſeems to have introduced this pretty ſpecies to our gardens, which is diſtinguiſhed by its narrow *leaves*, copious and ornamental, though ſmall, *flowers*, whoſe *bracteas* are white and pointed.—This ſpecies is nearly allied to *Protea pallens* and *conifera* of Linnæus and other authors, the former of which appears to be the male, and the latter the female, of Mr. Brown's L. *adſcendens*.

L. *abietinum.* Brown n. 31. (Protea teretifolia; Andr. Repoſ. t. 461.)—Leaves all thread-ſhaped, channelled, bluntiſh, ſmooth, ſpreading, curved ſlightly inwards. Scales of the fruit united by their lower part; diſtinct and two-lobed above.—Frequent about the Cape. A humble *ſhrub*, with numerous ſpreading fir-like green *leaves*, the uppermoſt of which, unchanged, encompaſs the little yellow heads of female *flowers*, inſtead of *bracteas*. The heads of male *flowers* are ſmaller, and more elevated.

LEUCADIA, St. Maure, in *Ancient Geography*, an iſland, or rather a peninſula which was attached to Epirus by a ſtraight iſthmus, about 100 paces long and 600 broad. Upon it was ſituated the town of Leucas, on the ſummit of a mountain towards the N.E. Homer places here three towns, *viz.* Neriton, Crocylea, and Agylipa. On the ſcite of the firſt of theſe towns the Corinthians built that already mentioned; Leucas is now an iſland, the iſthmus having been ſeparated from the continent. Thus Ovid deſcribes it:

> "Leucada continuam veteres habuere coloni
> Nunc freta circumeunt."

It was a tradition that unfortunate lovers made choice of this promontory for precipitating themſelves into the ſea. On this promontory Apollo had a temple. See St. Maure.

LEUCANTHEMUM, in *Botany*, from λευκος, *white*, and ανθεμον, *a flower*, has been the appellation of ſeveral plants of the compound radiated kind, whoſe rays are white; and now remains as the ſpecific name of the common Engliſh *Chryſanthemum Leucanthemum*, Great Ox-eye, or Moon Daiſy.

LEUCARUM, in *Ancient Geography*, a place of Great Britain, on the route from Caleva to Urioconium, according to the Itinerary of Antonine. It is ſuppoſed to be the ſame with the Leucomagus of the anonym. of Ravenna. It lies between Scadum Nunniorum and Bomium, and is ſuppoſed to be near Glaſtenbury. Camden, Gale, and Baxter, imagine that Leucarum was ſituated where the village of Locharnum or Lochorſtands, on the bank of the river Lochor in Glamorganſhire. But this ſeems to be at much too great a diſtance from the other ſtations of Chiſelborough and Axbridge.

LEUCAS, in *Botany*, ſo named by Burmann and Brown, in alluſion to the downy whiteneſs of its flowers, λευκας being an ancient Greek name for ſome herb, now unknown to us, ſo called on account of its whiteneſs. Burm. Zeyl. 140. Brown. Prodr. Nov. Holl. v. 1. 504. Ait. Hort. Kew. ed. 2. v. 3. 409.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiatæ*, Juſſ. Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, oblong, with ten ribs, permanent; its orifice unequally toothed, with from ſix to ten teeth. *Cor.* of one petal, ringent; tube cylindrical; upper lip vaulted, bearded, undivided; lower longer, in three ſegments, the middle one largeſt, often notched. *Stam.* Filaments four, concealed by the upper lip, two of them longer than the reſt, anthers of two oblong divaricated lobes. *Piſt.* Germen ſuperior, four-cleft; ſtyle the length and poſition of the ſtamens; ſtigma cloven, acute, its upper ſegment ſhorteſt. *Peric.* none, except the permanent calyx. *Seeds* four, oblong, triangular.

Eſſ. Ch. Calyx with ten ribs; unequally toothed. Upper lip of the corolla bearded, undivided; lower longer, three-cleft; the middle ſegment largeſt. Lobes of the anthers divaricated. Upper ſegment of the ſtigma ſhorteſt.

1. L. *zeylanica.* Ceylon Leucas. (Phlomis zeylanica; Linn. Sp. Pl. 820. Jacq. Ic. Rar. t. 111? Herba admirationis; Rumph. Amboin. v. 6. 39. t. 16. f. 1.)—Leaves lanceolate, ſlightly ſerrated. Whorls nearly terminal. Bracteas fringed. Calyx oblique, with ten nearly equal teeth.—Native of the iſland of Mauritius; as well as of Java, and other parts of the Eaſt Indies. The *root* is annual. *Stem* ſquare, downy, leafy, about a foot high, branched from the bottom in a corymboſe buſhy manner. *Leaves* oppoſite, about an inch and half long, ſcarcely half an inch broad, lanceolate, bluntiſh, finely downy, veiny, wavy, or bluntly ſerrated, tapering at the baſe into a ſhort footſtalk. *Whorls* denſe, axillary, one or two at the top of each ſtem or branch, ſurmounted by leaves, and accompanied by ſeveral linear-lanceolate, acute, downy, ſtrongly fringed *bracteas*. *Calyx* downy, ſwelling upwards, its orifice oblique, fringed with ten, nearly equal, ſmall ſpinous teeth. *Corolla* twice as long as the calyx, white, hairy externally, eſpecially the upper lip.

2. L. *lavandulifolia.* Lavender-leaved Leucas. (Leonurus indicus; Linn. Sp. Pl. 817. Phlomis zeylanica β; Syſt. Veg. ed. 13. 450. Willd. Sp. Pl. v. 3. 123.)—Leaves linear-lanceolate, nearly entire. Bracteas linear, downy. Calyx oblique, with ſeven teeth; the uppermoſt largeſt.—Native of the Eaſt Indies. Linnæus had it from Burmann. He firſt deſcribed it as a *Leonurus*, but afterwards confounded it with his *Phlomis zeylanica*, of which laſt he had but a very imperfect ſpecimen. The preſent is diſtinguiſhed by its much longer, and nearly, if not quite, entire *leaves*; the *whorls* are more numerous; *bracteas* more linear, downy, but not fringed; and the *calyx* is eſſentially different, having but ſeven, and thoſe very unequal, teeth. *Corolla* much like the laſt. It is hard to ſay whether Jacquin's and Rumphius's ſynonyms belong to this or the *zeylanica*, for they neither of them teach any thing eſſential, but Jacquin's leaves certainly moſt reſemble the preſent. The three figures of Plukenet, cited doubtingly by Linnæus, do not well accord with either.

3. L. *martinicenſis.* Weſt Indian Leucas. (Phlomis martinicenſis; Swartz. Prodr. 88. Willd. Sp. Pl. v. 3. 123. Ph. caribæa; Jacq. Ic. Rar. t. 110. Swartz. Ind. Occ. v. 2. 1009.)—Leaves ovate-oblong, ſerrated, downy. Bracteas briſtle-ſhaped, fringed. Whorls globoſe. Calyx incurved, with ten teeth; the uppermoſt longeſt.—Native of Braſil,

and the Weſt Indies, from whence Mr. Maſſon ſent ſeeds to Kew in 1781. *Root* annual. *Stem* branched, two or three feet high. *Leaves* ſtalked, an inch and half long, oblong, more or leſs ovate, hairy above, more downy and paler beneath, bluntiſh, ſtrongly ſerrated; entire and tapering at their baſe. *Whorls* numerous, axillary, denſe, many-flowered, and nearly globoſe, with narrow, ſtrongly fringed or briſtly *bracteas*. *Calyx* curved forward, downy, with ſtrong green ribs and white reticulated ſpaces between; its orifice bordered with ten ſpinous, all rather unequal, teeth, of which the upper one is twice or thrice as long as the reſt. *Corolla* ſmall, white, brown in decay.

4. L. *urticifolia*. Nettle-leaved Leucas. (Phlomis urticifolia; Vahl. Symb. v. 3. 76. *Willden.*)—"Leaves ovate, ſerrated, hoary. Bracteas awl-ſhaped. Calyx obliquely truncate, membranous, with nine teeth."—Native of Arabia Felix, and the Eaſt Indies.—"*Root* annual. The plant reſembles *Ph. indica* of Linnæus (our *Leucas indica*), but the *ſtem*, as well as *leaves*, are not downy, but hoary with extremely minute hairs. The *leaves* are of the ſame colour on both ſides, deeply ſerrated, flat not rugged, downy underneath. *Calyx* rather ſmall."—We know this merely from the above authority.

5. L. *indica*. Eaſt Indian Leucas. (Phlomis indica; Linn. Sp. Pl. 820.)—Leaves ovate, ſerrated, very downy beneath. Bracteas linear, hairy. Whorls globoſe. Calyx oblique, with one three-toothed lip.—Native of the Eaſt Indies. The ſeeds were ſent to England by M. Thouin in 1789. *Root* annual. *Leaves* ſtalked, ovate, two inches long and one broad, ſerrated, downy above, but whiter and ſofter beneath. *Corolla* very hairy. *Calyx* much enlarged and elongated after flowering, its forepart extended into an upright, oblong, ribbed and reticulated lip, with three ſpinous teeth at the extremity; the oppoſite or upper ſide of the orifice being ſhort, with three or four very minute teeth.

6. L. *decemdentata*. Ten-toothed Leucas. (Stachys decemdentata; Forſt. Prodr. 91. Phlomis decemdentata; Willd. Sp. Pl. v. 3. 124.)—"Leaves oblong, ſerrated; contracted at the baſe. Whorls without bracteas. Calyx with ten teeth."—Native of the Society Iſlands. "*Stem* herbaceous, downy. *Leaves* ſtalked, an inch long, rather acute, ſerrated, downy. *Whorls* ſomewhat ſtalked, deſtitute of *bracteas*. *Calyx* bell-ſhaped, with ten furrows, and ten awl-ſhaped teeth, alternately ſmaller. Tube of the *corolla* rather longer than the calyx; upper lip erect, undivided, very hairy; lower ſmooth, in three deep ſegments." *Willdenow.*

7. L. *biflora*. Two-flowered Leucas. (L. foliis rotundis ſerratis, flore albo; Burm. Zeyl. 140. t. 63. f. 1. Phlomis biflora; Vahl. Symb. v. 3. 77. Willd. Sp. Pl. v. 3. 124.)—Leaves ovate, ſerrated. Flowers axillary, ſolitary, oppoſite. Calyx with ten regular teeth.—Native of the Eaſt Indies. A ſlender downy or rather hairy *plant*, with the habit of a *Stachys* or *Sideritis*. *Leaves* about half an inch long, ſtalked, ovate, bluntiſh, with five or ſix ſerratures at each ſide. *Flowers* nearly ſeſſile, without *bracteas*. *Calyx* funnel-ſhaped, hairy, ſtrongly ribbed, with ten ſharp taper teeth, of which the five intermediate ones are rather ſhorter than the others. *Corolla* twice the length of the calyx, white, downy.

8. L. *chinenſis*. Chineſe Leucas. (Phlomis chinenſis; Retz. Obſ. faſc. 2. 19. Willd. Sp. Pl. v. 3. 125.)—"Leaves ovate, ſerrated, clothed with ſilky down. Flowers whorled, ſtalked. Calyx with ten teeth."—Native of China. "The *ſtem* is ſhrubby, with ſquare hiſpid branches. *Leaves* oppoſite, ovate and ſomewhat heart-ſhaped, ſtalked, ſerrated, clothed with ſilky down. *Whorls* axillary, of five or ſix flowers, on ſtalks. *Calyx* funnel-ſhaped, with ten furrows and ten awned teeth. *Corolla* white, its upper lip compreſſed, hairy externally, eſpecially the margin; lower three-lobed, nearly naked."—*Retzius.*—It is to be preſumed the calyx-teeth are regular, probably five rather the ſhorteſt as in the laſt. We have never ſeen this ſpecies, and it ſtands here on Mr. Brown's authority. Retzius's account of the compreſſed upper lip ſhould, however, make it a *Phlomis*.

9. L. *moluccoides*. Wing-flowered Leucas. (Phlomis moluccoides; Vahl. Symb. v. 1. 42. t. 14. Willd. Sp. Pl. v. 3. 125. Clinopodium fruticoſum; Forſk. Ægypt.-Arab. 107.)—Leaves ovate, ſerrated, finely downy. Flowers whorled, ſtalked. Bracteas linear-lanceolate. Lower ſegment of the calyx dilated, rounded, membranous, ribbed, obſcurely toothed.—Gathered by Forſkall in Arabia, on the hills of Hadie. One of his ſpecimens in ripe ſeed, and Vahl's figure in flower, ſurely authoriſe us in referring this plant alſo to *Leucas*, though Mr. Brown has not mentioned it. The *ſtem* is ſhrubby, five or ſix feet high, with roundiſh downy branches. *Leaves* ſtalked, ſtrongly ſerrated; rough and punctate above; paler and very downy beneath; an inch or more in length. *Whorls* many-flowered, ſtalked, with downy *bracteas*, cut into many deep, linear, or ſomewhat lanceolate, ſegments. *Flowers* white, the ſize of *Lamium album*, hairy, their lower lip, according to Forſkall, convex, three-lobed, the middle lobe broad, long, and heart-ſhaped, which agrees with the generic character, but is not properly repreſented in Vahl's plate, though indicated in his deſcription. The *calyx* is very peculiar, and really two-lipped; the upper lip ſmall, ovate and acute; the lower very large, eſpecially when in ſeed, ſpreading, rounded, ſcarioſe, with ſeven or eight hairy ribs, and numerous reticulated veins; the margin wavy, or ſlightly toothed, not awned nor ſpinous; the tube is hairy, and has ten ſtrong ribs. We can ſee nothing of the lateral lobes mentioned by Vahl, and indeed he ſeems, in his deſcription and figure, to have been bewildered between the lower lip of the calyx and that of the corolla.

10. L. *glabrata*. Smooth Leucas. (Phlomis glabrata; Vahl. Symb. v. 1. 42. Willd. Sp. Pl. v. 3. 126.)—Leaves ovate, ſerrated, ſlightly hairy. Flowers whorled. Bracteas minute, briſtle-ſhaped, ſmooth. Lower ſegment of the calyx elongated, three-toothed. Hairs of the ſtem deflexed.—Gathered in Arabia by Forſkall, amongſt whoſe plants it was found without a name. Vahl deſcribes it as "herbaceous, the *ſtem* acutely angular, its angles and joints rough with reverſed hairs. *Leaves* ſtalked, ſpreading, ovate, bluntly ſerrated, entire at the baſe, acute, ſlightly hairy, about an inch long. *Whorls* remote, of ſix or eight flowers. *Bracteas* minute, in four deep, briſtle-ſhaped, rather pungent, ſmooth ſegments, yellowiſh at the extremity, but one-fourth ſo long as the *calyx*; which is bell-ſhaped, ſmooth, with ten furrows, its orifice oblique, the lower lip being elongated, with three equal briſtle-ſhaped teeth, the upper with ſeven teeth. *Corolla* like the laſt."

11. L. *flaccida*. Flaccid Leucas. Brown. Prodr. Nov. Holl. v. 1. 505.—"Leaves ovate, membranous, nearly ſmooth, as well as the calyx, which has ten equal teeth. Whorls many-flowered."—Gathered by ſir Joſeph Banks in the Tropical part of New Holland.

It will readily be perceived that the great diverſity and irregularity of ſhape in the calyx of the different ſpecies, directly militate againſt the Linnæan diviſion of *Didynamia Angioſpermia*, into genera whoſe calyx is more or leſs exactly five-cleft, and others in which it is two-lipped; but

Leucas is not on that account the leſs natural a genus, and this very irregularity is its ſtriking character. How far it might be poſſible or eligible to ſeparate from it the ſpecies with a ſtrictly regular calyx, may be worthy of future conſideration. Mean while it had beſt ſtand in the firſt of the above ſections, as not being regularly or properly two-lipped, as well as on account of its affinities.—*Phlomis alba*, Vahl. Symb. v. 1. 43, ſhould ſeem alſo to belong to *Leucas*, though the calyx has but five teeth, but we have never had an opportunity of examining it.

Leucas *Delphinus*. See Delphinus.

LEUCASJA, in *Ancient Geography*, an iſland of the Tyrrhenian ſea, upon the weſtern coaſt of Italy, in the gulf of Pæſtum, according to Strabo and Mela.

LEUCASPIS, a port of Africa, in the gulf of Libya. Ptolemy.

LEUCATA, a promontory of Gaul, in the Mediterranean; now called "Cap de la Franqui."

LEUCATE, or Leucatas, a promontory of Aſia, in Bithynia, and one of thoſe which formed the gulf called "Aſſacenus Sinus," according to Pliny.

Leucate, in *Geography*, a town of France, in the department of the Aude; ſituated on the N. ſide of a large lake of the ſame name; 17 miles S. of Narbonne. N. lat. 42° 54′. E. long. 3° 7′.

LEUCE, or Achillis Insula, in *Ancient Geography*, an iſland in the Euxine ſea, at the mouth of the Boryſthenes. Strabo ſays, that it was conſecrated to Achilles. Salluſt, in his Fragments, ſays that it was of ſmall extent and deſert; and that it was famous for a temple, and for the ſtatue and burying-place of Achilles.

Leuce, a ſmall iſland on the N. coaſt of the iſle of Crete; according to Diodorus Siculus.

Leucè, λευκη, in *Medicine*, a term nearly ſynonymous with the *vitiligo* of the Latins, ſignifies a leprous affection of the ſkin, of a white colour, with a loſs of ſenſibility in the parts affected, the hair at the ſame time becoming white, and falling off.

The lateſt Greek phyſicians conſider the *alphos* and *leucè* as the ſame diſeaſes eſſentially, differing only in degree, and not in kind. The *alphos* they deſcribe as a ſuperficial diſeaſe, in which the ſurface of the ſkin becomes white, but no farther change takes place: whereas the *leucè* penetrates below the ſurface, affecting the fleſh, and being much more difficult to heal. They aſcribe it to an error in the aſſimilatory powers, in conſequence of which a phlegmy or pituitous and viſcous blood is generated, which is incapable of being converted into a proper red fleſh, but produces a ſort of fleſh like that of locuſts, and other cruſtaceous animals: the hairs, at the ſame time, turn white, and fall off, and the ſkin becomes ſmooth and bright, and the parts loſe their ſenſibility; ſo that they may be pricked with needles, without ſuffering any uneaſineſs. In a word, the diſeaſe, thus deſcribed, is a ſpecies of *elephantiaſis*, and appears to have been the ſame thing with the leproſy of the Jews. The Arabians properly call it the *white albaras:* nevertheleſs, with the later Greeks, they conſider it as differing only in degree from the white *albohak*, (or *morphæa*, as it has been called by the Latin tranſlators,) which is the *alphos* of the Greeks. Hippocrates, however, ſeems to diſtinguiſh the leucè from the alphos: for he obſerves that the latter ſhould be conſidered as an external blemiſh, rather than as a diſeaſe; but he ſpeaks of the leucè as a diſtemper of the moſt fatal kind. (De Affection. ſect. 5.) It would appear, therefore, that the word alphos denotes a modification of the ſcaly diſeaſe, the *lepra Græcorum*, and perhaps alſo an incipient leucè; and that leucè is a variety, a precurſor, or a ſtage of the elephantiaſis. In this light Dr. Willan, in his able treatiſe on cutaneous diſeaſes, conſiders them. (See that work, p. 124—126.) Celſus has claſſed the alphos and leùcè, together with the *melas*, (which differs from the alphos only in the blackiſh colour of the ſcaly ſpots,) under one generic term, *vitiligo:* at the ſame time, he points out the affinity of the alphos and melas, and the peculiar and diſtinct features of the leucè. The two former, he ſays, are commonly a little rough, and not continuous, but diſperſed in drops, as it were, here and there: ſometimes, indeed, it ſpreads more extenſively, but leaves interſtices of the ſkin unaffected. They are the ſame in all reſpects, with the exception of colour. "The leucè," he adds, "has ſome reſemblance to the alphos; but it is whiter, penetrates deeper, and the hairs are white and downy. They all three ſpread, but with different degrees of rapidity in different individuals. The alphos and the melas appear and diſappear in ſome perſons at irregular periods; but the leucè does not readily quit a perſon whom it has once attacked. The two firſt are not very difficult of cure: but the laſt is ſcarcely ever removed; and if it is at any time alleviated, yet the natural colour of the ſkin is never entirely reſtored." (Celſus, de Re Med. lib. v. cap. xxviii.) He then ſtates the obſervations in regard to the prognoſis, which are repeated by the Greek phyſicians; namely, that if we would aſcertain whether the diſeaſe be curable or not, we ſhould prick or ſcratch the ſkin with a needle. "If blood iſſues, which generally happens in the two former, the caſe is remediable; but if a white humour appears, it will not admit of a cure, and therefore we muſt make no ſuch attempt." (Loc. cit. Compare alſo Aetius, Tetrabib. iv. ſerm. i. cap. cxxxiii. Actuarius, Meth. Med. lib. ii. cap. xi. Paul. Ægineta, de Re Med. lib. iv. cap. v.) The impaired ſenſe of feeling in the parts is mentioned as an additional ſymptom of the irremediable ſtate of leucè, by the laſt named authors. See alſo Foreſtus Obſ. Chirurg. lib. v. obſ. iii.

The appellation of leucè is derived either from λευκος, *leucos*, *white*, or from λευκη, *leuce*, the *white poplar* tree, the whiteneſs of the bark and leaves of which has perhaps been ſuppoſed to reſemble the condition of the ſkin in the diſeaſe above deſcribed. See Gorter. Definit. Med. See alſo Leprosy.

LEUCELECTRUM, a name given by ſome authors to that ſort of amber which is white and opaque, and uſually of a fatty look.

LEUCHARS, in *Geography*, a town of Scotland, in Fifeſhire, near the German ocean. In 1801 the number of inhabitants was 1687; 6 miles N. of St. Andrews.

LEUCHTENBERG, a town of Bavaria, and capital of a landgraviate, to which it gives name; 36 miles E. of Nuremberg. N. lat. 49° 35′. E. long. 12° 11′.

LEUCHTERSHAUSEN, a town of Germany, in the marggravate of Anſpach, on the Altmuhl; 7 miles W. of Anſpach.

LEUCI, in *Ancient Geography*, a long chain of mountains in the iſle of Crete, ſo called from their whiteneſs, being covered for a great part of the year with ſnow. They are now known by the names of Madura and Specia.

LEUCISCUS, in *Ichthyology*. See Dace.

LEUCITE, *Leuzit*, Wern. *Amphigène*, Haüy. *Veſuvian* or *white garnet*, Kirw. *Vulcanit*, *leucolite*, *granatine ſhorl* of ſome mineralogiſts.

Its colour is commonly greyiſh or yellowiſh-white, ſeldom aſh-grey, milk-white, or greeniſh and reddiſh-white, paſſing into fleſh and tile-red.

It occurs in grains, but moſt frequently in round cryſtals of twenty-four trapezoidal planes, (*Amphigène trapezoidal*, Haüy, p. 147. f. 62.) or, as the form is defined by Werner, low double eight-ſided pyramids, in which the lateral planes of the one are ſet on the lateral planes of the other, while the ſummits are flatly acuminated each by four planes placed on the alternate edges. They are more or leſs regular; ſometimes perfectly ſo, at other times rather rounded on the edges. They are cryſtallized all around, and imbedded. Their ſize varies from very ſmall to middle-ſized: cryſtals of more than one inch in diameter are, however, ſeldom ſeen. No other modification than the trapezoidal has been hitherto obſerved.

The ſurface of the grains is rough, and dull or weakly glimmering; that of the cryſtals gliſtening and ſmooth, not ſtriated, as in the garnets of the ſame form: there are, however, ſometimes minute rents ſeen to run parallel to the ſhort diagonal of the trapezoidal planes. Externally they are gliſtening, internally ſhining, with vitreous luſtre rather inclining to reſinous.

Fracture imperfectly and flat conchoidal, ſometimes inclining to foliated; fragments indeterminately angular, more or leſs ſharp-edged.

It occurs commonly ſlightly tranſlucent, but alſo nearly tranſparent, and rarely with perfect tranſparency.

The leucite is hard in a low degree, ſcratching glaſs with difficulty: it is brittle, and eaſily frangible. Specific gravity, 2,461, Karſten; 2,464, Kirwan; 2,468, Briſſon; 2,455 (from Veſuvius), and 2,490 (from Albano near Rome,) Klaproth.

It is infuſible before the blowpipe without addition: with borax it melts into a light brown, tranſparent glaſs.

The leucite was firſt analyſed by Klaproth, who diſcovered in it a conſiderable portion of vegetable alkali; a ſubſtance till then unſuſpected to form a conſtituent of mineral ſubſtances. Vauquelin's ſubſequent analyſis completely agrees with that given by Klaproth.

Mean of different Analyſes.	Klaproth.	Vauquelin.
Silica	54	56
Alumine	24	20
Potaſh	21	20
Lime		2
Loſs	1	2
	100	100

Leucite occurs particularly in lava, and alſo in rocks belonging to the fletz trapformation of Werner. It ſhould however be obſerved, that what has been deſcribed by ſeveral authors as leucite in baſalt, trapp, &c. is nothing but cubic zeolite (analcime of Haüy). Faujas, Eſmark, and others have fallen into this error.

Many places have been mentioned where leucite is found; but the beſt authenticated locality is that of the neighbourhood of Naples, and of Rome. They are found in immenſe quantities in the mountains of Albano, Tivoli, Caprarola, Viterbo, Aquapendente, Civita Caſtellana, and Borghetto, where they are ſeen enveloped in lava, often accompanied by mica, veſuvian, and hornblende.

Von Buch, Salmon, Patrin, and others, are of opinion, that the leucite cryſtals were formed in the lava when ſtill in a fluid ſtate; Dolomieu and Werner, on the other hand, conſider them as having pre-exiſted in the rocks that were afterwards converted into lava. The idea of other mineralogical writers, who look upon theſe cryſtals as being garnets altered by volcanic fire, is now deſervedly exploded.

Haüy's name of *amphigène* is derived from the *double origin* of the leucite, with regard to its primitive form, which may be either the cube or the rhomboidal dodecahedron.

LEUCOCROTTA, in *Natural Hiſtory*, the name given by many authors to a beaſt, ſuppoſed to be the ſwifteſt of all creatures in the world: others have called it leucrocotta, but the true name is leocrocotta.

LEUCOGÆA, a name by which ſome authors have called the ſubſtance, more uſually known by the name of morochthus, and called in Engliſh, French chalk, or Brianſon chalk.

LEUCOGRAPHIS, the name uſed by ſome of the ancient writers, for the ſubſtance commonly called morochthus, or French chalk.

LEUCOIUM, in *Botany*, a name adopted from the ancient Greek authors, who nevertheleſs differ about their λευκοιον. That of Theophraſtus appears to be the Linnæan *Galanthus*, whilſt that of Dioſcorides is doubtleſs, from his ſhort account, the *Cheiranthus*, or Stock. The preſent genus is nearly allied to *Galanthus*, and having been called *Narciſſo-Leucoium* by Tournefort, Linnæus adopted the above generic name. Snow-Flake.—Linn. Gen. 160. Schreb. 215. Willd. Sp. Pl. v. 2. 30. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 352. Ait. Hort. Kew. ed. 2. v. 2. 211. Juſſ. 55. Lamarck. Illuſtr. t. 230. (Narciſſo-Leucoium; Tournef. t. 208.)—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narciſſi*, Juſſ.

Gen. Ch. *Cal.* Spatha oblong, obtuſe, compreſſed, opening at the flat ſide, withering. *Cor.* bell-ſhaped, ſpreading; petals ſix, equal, ovate, flat, coaleſcing at the baſe; their tips thickiſh and ſtraight. *Stam.* Filaments ſix, briſtle-ſhaped, very ſhort; anthers oblong, obtuſe, quadrangular, erect, diſtant, burſting in the upper part. *Piſt.* Germen inferior, roundiſh; ſtyle moſtly club-ſhaped, obtuſe; ſtigma ſetaceous, erect, acute, longer than the ſtamens. *Peric.* Capſule turbinate, of three cells and three valves. *Seeds* numerous, roundiſh.

Obſ. *Leucoium autumnale* and *tricophyllum* have a thread-ſhaped ſtyle.

Eſſ. Ch. Corolla ſuperior, bell-ſhaped, of ſix equal petals, thickened at their ſummit. Stigma ſimple. Stamens equal.

1. L. *vernum*. Spring Snow-flake. Linn. Sp. Pl. 414. Curt. Mag. t. 46. Jacq. Fl. Auſtr. t. 312.—Spatha ſingle-flowered. Style club-ſhaped.—A native of moiſt woods and ſhady places in various parts of Italy, Switzerland, Germany, and the ſouth of France. It flowers in the early ſpring; its ſpecific name indeed is indicative of this circumſtance. *Bulb* oblong, ſmaller than that of the Daffodil. *Leaves* flat, darkiſh-green, about four or five in number, broader and longer than thoſe of the Snow drop. *Stalk* radical, angular, hollow and channelled, furniſhed towards the top with a whitiſh ſpatha, opening at the ſide, from whence the flower proceeds. *Corolla* rather large, its petals white, tipped with green. The plant has an agreeable fragrancy, ſomething like Hawthorn.

2. L. *æſtivum*. Summer Snow-flake. Linn. Sp. Pl. 414. Engl. Bot. t. 621. Curt. Lond. faſc. 5. t. 23. Jacq. Auſtr. t. 203.—Spatha many-flowered. Style club-ſhaped.—Firſt determined to be a native of this iſland by Mr. Curtis, who found it growing between Greenwich and Woolwich, as well as in the Iſle of Dogs. It has ſince been gathered in many other parts of England, particularly Weſtmoreland, Suffolk, and Berkſhire, flowering in May. *Root* a roundiſh bulb. *Leaves* numerous, erect, a foot and half in length, obtuſe, keeled, bright-green. *Stalk radical*, as long as the leaves, compreſſed. *Spatha* lanceolate, erect. *Partial ſtalk* ſolitary and ſingle-flowered. *Flowers* pendulous, white;

petals tipped with green. *Anthers* obtuſe, burſting by two pores at the ſummit. *Capſule* elliptical, three-celled. *Seeds* globular, large.

The plant is entirely without ſmell, but is extremely ornamental, and may be often ſeen in ruſtic gardens.

3. L. *autumnale*. Autumnal Snow-flake. Linn. Sp. Pl. 414. Curt. Mag. t. 960. Redouté Liliac. t. 150. f. 2.—Spatha many-flowered. Style thread-ſhaped.—A native of Spain and Portugal, flowering, as its name imports, in the autumn. *Bulb* thickiſh, of many glutinous coats, covered with a white membrane. *Stalk radical*, about ſix inches in height, reddiſh-brown, moſtly bearing two or three white, pendulous, inodorous *flowers*, red at their baſe. *Leaves* capillary, ſpringing up after the plant has flowered. Curtis however ſays that in ſpecimens which were ſent from Gibraltar, the *leaves* appeared at the ſame time with the *flowers*, though conſiderably ſhorter than they afterwards grew.

4. L. *trichophyllum*. Briſtle-leaved Snow-flake. Brot. Luſit. p. 1. 552. Redouté Liliac. t. 150. f. 1.—Spatha two-leaved, many-flowered. Style thread-ſhaped.—Gathered on the ſandy plains of Barbary, flowering in the midſt of winter. *Leaves* thread-ſhaped, membranaceous. *Stalk radical*, ſheathed by the leaves at its baſe, thread-ſhaped, five or ſix inches high. *Flowers* from two to four, pendulous, white, occaſionally tinted with red on the outſide.

Redouté regrets that he could not call this *hyemale*, as the name of *trichophyllum* had previouſly been applied by Renealmius to the laſt ſpecies, to which indeed this is cloſely allied. The ſpecific name of *hyemale* would have been particularly deſirable on account of carrying on the analogy of nomenclature with the three other ſpecies. It is greatly to be wiſhed that botaniſts who give new names to plants would well conſider ſuch analogies.

For *L. ſtrumoſum*, Ait. Hort. Kew. ed. 1. 407. t. 5, ſee Strumaria.

Leucoium, in *Gardening*, comprehends plants of the bulbous-rooted flowery or perennial kind, of which the ſpecies cultivated are the great ſpring ſnow-drop (L. vernum); the ſummer ſnow-drop (L. æſtivum); the autumnal ſnow-drop (L. autumnale); and the many-flowered Cape leucoium (L. ſtrumoſum). The firſt has an oblong bulb, ſhaped like that of the daffodil, but ſmaller; the leaves are flat, deep green, four or five in number, broader and longer than thoſe of the common ſnow-drop; the ſcape angular, near a foot high, hollow, and channelled; towards the top comes out a whitiſh ſheath, opening on the ſide, out of which come out two or three flowers, hanging on ſlender peduncles; the corolla is much larger than that of the common ſnow-drop; and the ends of the petals are green. They appear in March, and have an agreeable ſcent, not much unlike thoſe of the hawthorn.

The flowers, which at firſt ſight reſemble thoſe of the common ſnow-drop, are eaſily diſtinguiſhed by the abſence of the three-leaved nectary. They do not come out ſo ſoon by a month. The firſt is called by Mr. Curtis the ſpring ſnow-flake.

In order to diſtinguiſh the ſecond ſort from the galanthus, Mr. Curtis names it the ſummer ſnow-flake; and in gardens it is commonly known by the name of the great ſummer ſnow-flake, and the late or tall ſnow-drop.

Method of Culture.—Theſe plants are readily increaſed by off-ſets from the roots, which ſhould be ſeparated from the old roots about every third year, in the ſummer ſeaſon, as ſoon as their leaves begin to decay, in the ſame manner as other bulbous roots. See Bulbous *Roots*.

They are alſo capable of being increaſed by ſeeds, which ſhould be ſown in the latter end of Auguſt, in a border of light bog-earth. The plants ſhould remain in this ſituation till the ſecond ſummer, and be then taken up at the proper period, and planted in beds, till they begin to flower, when they ſhould be removed into the borders. In this way they are three or four years before they flower. But by much the beſt method is to procure the roots from the nurſerymen, and plant them in the beginning of the autumn, in an eaſtern or northern border, where the ſoil is of a boggy quality, in patches of three or four together, in the fronts, putting them in to the depth of about three or four inches.

The off-ſets ſhould be planted out in beds a year or two after being taken off, till fit to be ſet out for flowering.

A ſoft loamy ſoil, or a mixture of loam and bog-earth, are the moſt ſuited to their healthy growth. The laſt ſort requires protection in the houſe, with other Cape bulbs.

By planting them in the different aſpects mentioned, a longer ſucceſſion of flowers may be produced.

They are very ornamental in the fronts of the borders, or the ſides of the lawns, and other parts near the houſe, or other public ſituations.

Leucoium *Indicum et luteum*. See Stock *Gilly Flower*.

Leucoium *Bulboſum*. See Leucoium, *ſupra*.

LEUCOLIBANON, in the *Materia Medica of the Ancients*, a name given to the white olibanum, or frankincenſe, which they carefully diſtinguiſh from the reddiſh or yellowiſh olibanum. This was alſo called *argyolibanum*, or the ſilver-coloured olibanum; and the yellow one *chalcolibanum*. This latter word is uſed in the Apocalypſe of St. John, and is miſunderſtood ſo far, as to be tranſlated braſs, and ſuppoſed to be a kind of braſs from Mount Lebanon. See Chalcolibanon and Frankincenſe.

LEUCOLITHOS, in *Natural Hiſtory*, a name given by ſome of the Greek writers to the *pyrites argenteus*, or ſilvery pyrites. The ancients had a great opinion of theſe foſſils in diſeaſes of the eyes; they uſed all the kinds of pyrites, or marcaſite, after calcination, for this purpoſe; but as they diſtinguiſhed four kinds of them, they attributed theſe virtues, in different degrees, to the different kinds; therefore they had recourſe to ſo many peculiar names for diſtinguiſhing them; and the white kind was called leucolithos, to diſtinguiſh it from the duſky one called the iron pyrites, and the deeper and paler yellow kinds, called the gold and braſſy marcaſites.

LEUCOMA, Λευκωμα, among the Athenians, ſignified a public regiſter of the whole city, in which were written the names of all the citizens, as ſoon as they came to be of age to enter upon their paternal inheritance.

Leucoma (derived from λευκος, *white*,) ſignifies, in *Surgery*, a whitiſh opacity of the cornea. Profeſſor Scarpa, of Pavia, has made ſome intereſting remarks on this caſe in his "Oſſervaz. ſulle Principali Malatie degli Occhi." He informs us, that the albugo and leucoma are very different from what has gone under the name of the *nebula* of the cornea, ſince they are not the conſequence of a ſlow chronic inflammation of the eyes, accompanied by a varicoſe ſtate of the veins, and an extravaſation of a thin milky ſerum into the texture of the delicate layer of the conjunctiva ſpread over the cornea; but are either produced by a violent acute ophthalmy, wherein a denſe coagulable lymph is effuſed ſuperficially or deeply into the ſubſtance of the cornea itſelf, or elſe are occaſioned by wounds, or ulcers attended with loſs of ſubſtance. Albugo ſtrictly denotes the firſt of theſe caſes; leucoma the laſt, particularly when the ſcar, or opaque ſpot, occupies the whole or a conſiderable portion of the cornea.

A recent albugo, remaining after the ſubſidence of a violent acute ophthalmy, is of a clear milky colour ; but when inveterate, it puts on a chalky or pearl colour, and in this frequently appears to have no vaſcular connection with the reſt of the cornea, occaſioning no uneaſineſs, and being incapable of being abſorbed.

Provided the texture of the cornea be not diſorganized by the coagulable lymph extravaſated in a caſe of recent albugo, the opacity may often be diſperſed by employing, in the firſt ſtage, general and local bleeding, internal antiphlogiſtic medicines, and emollient applications ; and in the ſecond ſtage, mild aſtringents and corroborants. Theſe laſt, as ſoon as the inflammation is ſubdued, excite the action of the abſorbents, by which veſſels the opaque extravaſated lymph, forming the albugo, is to be removed.

But although a recent albugo may often be diſperſed, this object cannot be ſo eaſily effected when the diſeaſe has exiſted a long while, in which caſe the abſorbents have frequently loſt their activity, and the ſtructure of the cornea become ſo diſorganized, that this membrane muſt for ever remain opaque at the part affected. According to Scarpa, the circumſtances favourable to the cure are a recent ſtate of the diſeaſe without diſorganization of the cornea, or of the delicate layer of the conjunctiva ſpread over it, and the patient being young, as at this period of life the abſorbents are moſt capable of action. Scarpa aſſures us, that he has ſeen many examples in children, where the ſpecks, left on the eye after a violent ophthalmy, have ſpontaneouſly diſappeared in the courſe of a few months.

The following local remedies Scarpa has found moſt ſerviceable, both to recent and inveterate caſes of albugo. A collyrium, compoſed of two ſcruples of ſal ammon., four grains of ærugo, and eight ounces of aqua calcis. Theſe are to ſtand for twenty-four hours, and the liquor then be filtered for uſe. An ointment, conſiſting of the ſubſequent iengredients. ℞ Tutiæ ſ. p. ʒi Aloes ſ. p. Calom. ā ā grij. Butyr. recent. ℥ß. M. Janin's ophthalmia ointment, and the gall of ox, ſheep, pike, and barbel, applied to the cornea with a hair-pencil, are alſo favourably ſpoken of. When the eye was too irritable to bear the preceding application, Scarpa ſometimes uſed with advantage the oil of walnuts, ſomewhat rancid. Two or three drops were introduced into the eye every two hours, and the plan followed up for ſeveral months. He has likewiſe found the juice of the leſſer centaury, mixed with honey, a good application.

How unpromiſing ſoever things may ſeem, the ſurgeon is to perſiſt in the trial of remedies, at leaſt three or four months, before the caſe is to be ſet down as abſolutely incurable.

Scraping and perforating the cornea, and forming an artificial ulcer upon it, are all unavailing expedients in caſes where the albugo or leucoma is in a ſtate that Scarpa terms inveterate and coriaceous, ſuch meaſures being the invention of perſons quite ignorant of the ſtructure of the cornea, and the principles upon which its tranſparency is to be reſtored.

LEUCOMÆNAS, in *Ichthyology*, a name by which ſome have called the ſmaris, a ſmall fiſh caught in great plenty in the Mediterranean.

LEUCOPETALOS, in *Natural Hiſtory*, the name of a beautiful ſtone deſcribed by Pliny, as being of a fine gold yellow, variegated with white.

LEUCOPETRIANS, in *Eccleſiaſtical Hiſtory*, the name of a fanatical ſect which ſprang up in the Greek and Eaſtern churches towards the cloſe of the twelfth century : the fanatics of this denomination profeſſed to believe in a double Trinity, rejected wedlock, abſtained from fleſh, treated with the utmoſt contempt the ſacraments of baptiſm and the Lord's ſupper, and all the various branches of external worſhip, placed the eſſence of religion in internal prayer alone, and maintained, as it is ſaid, that an evil being, or genius, dwelt in the breaſt of every mortal, and could be expelled from thence by no other method than by perpetual ſupplication to the Supreme Being. The founder of this enthuſiaſtical ſect is ſaid to have been a perſon called Leucopetrus, and his chief diſciple Tychicus, who corrupted, by fanatical interpretations, ſeveral books of ſcripture, and particularly St. Matthew's goſpel. Moſheim.

LEUCOPHÆA ANTELOPE, in *Zoology*. See ANTELOPE *Leucophæa*.

LEUCOPHAGIUM, a name given by ſome phyſicians to a ſort of medical aliment good in conſumptions, and other general decays. It is compoſed of ſweet almonds macerated in roſe-water with the tender fleſh of a capon, all being finally boiled together to a pulp, capable of being paſſed through a ſieve.

LEUCOPHLEGMATIA, in *Medicine*, from λευκος, *white*, and φλεγμα, *pituita*, *phlegm*, a term applied to the dropſy of the ſkin, or *anaſarca*, in conſequence of the very pallid hue of the ſkin and complexion under ſuch circumſtances.

Dr. Cullen remarks, that the terms *anaſarca* and *leucophlegmatia* have been commonly conſidered as ſynonymous ; but ſome authors have propoſed to conſider them as denoting diſtinct diſeaſes. The authors who are of this laſt opinion, employ the name of *anaſarca* for that diſeaſe which begins in the lower extremities, and thence gradually extends upwards ; while they term that *leucophlegmatia*, in which the ſame kind of ſwelling appears, even from the beginning, very generally over the whole body, and in which there appears to be a greater deficiency of the blood ; ſuch as occurs after profuſe hæmorhagies, or other great evacuations. The diſtinction, however, is principally verbal. See ANASARCA, and DROPSY.

LEUCOPHRA, in *Zoology*, a genus of the claſs Vermes, and order Infuſoria : this worm is inviſible to the naked eye, and every where ciliate. There are eight ſpecies, of which four are found in the waters or marſhes of our own country.

Species.

CONFLICTOR. Spherical, ſub-opaque, with moveable inteſtines ; it is found in clear water ; is of a yellowiſh colour, with dark edges, and filled with very minute molecules in perpetually violent agitation. This animalcule is deſcribed and figured in Adams' Eſſays on the Microſcope. It is ſaid to be rather a heap of animalcules than a ſingle individual, is larger than moſt ſpecies of the vorticella, perfectly ſpherical, and ſemi-tranſparent. It rolls at intervals from right to left, but ſeldom removes from the ſpot where it is firſt found. In proportion to the number of molecules above-mentioned, which are accumulated on one ſide or the other, the whole maſs rolls either to the right or left ; it is then tranquil for a ſhort time, but the conflict becomes more violent, and the ſphere moves the contrary way in a ſpiral line. It is a fine object for the microſcope, but requires to be obſerved with much attention. When the water begins to fail, the little creatures aſſume an oblong, oval, and even cylindrical figure ; the hind part of ſome being compreſſed into a triangular ſhape, and the tranſparent part eſcaping as it were from the inteſtines, which continue to move with the ſame violence till the water wholly fails, when the molecules are ſpread into a ſhapeleſs maſs, which ſoon vaniſhes, and the whole ſhoot into a form, having the appearance of cryſtals of ſal-ammoniac. See Adams, p. 500.

VESICULIFERA is ovate with veſicular inteſtines. This animalcule is a ſort of mean between the orbicular and oval, very pellucid, with a defined dark edge, and inſide containing ſome very bright veſicles or bladders. The middle frequently appears blue, and the veſicles ſeem as if ſet in a ground of that colour. The accounts given of this animalcule by Spallanzani and Müller differ in ſome reſpects; the latter, however, admits that he once ſaw an individual like thoſe deſcribed by Spallanzani.

ACUTA. The oval leucophra, which is round, with a black point at the edge.

FLUXA. Sinuate, kidney-ſhaped; body oblong, yellowiſh, obtuſe on one part, the other produced into a cone, and generally filled with molecules.

ARMILLA. Round, annular; body thickened above and bent like a ring.

CORNUTA. Inverſely conic, green, opaque. This animalcule has a reſemblance to certain ſpecies of the vorticella, and requires to be obſerved ſome time before its peculiar characters can be aſcertained: the body is compoſed of molecular veſicles, of a dark green colour, for the moſt part it is like an inverted cone, the fore-part being wide and truncated, with a little prominent horn, or hook, on both ſides; the hind-part is conical, ciliated, the hairs exceedingly minute; thoſe in the fore-part are three times longer than the others, and move in a circular direction. The hinder part is pellucid, and ſometimes terminates in two or three obtuſe pellucid projections. The animalcule will at one moment appear oval, at another reniform, and ciliated at the fore-part; but at another time the hairs are concealed. When the water which contains it evaporates, it breaks and diſſolves into molecular veſicles. It is found late in the year in marſhy grounds. See Adams, Pl. 25.

HETEROCLITA. Cylindrical, obtuſe on the fore-part, the hind-part furniſhed with a double creſted organ, which it can thruſt out and draw in at pleaſure. To the naked eye it appears like a white point; inteſtines viſible by a microſcope, when it ſeems a cylindrical body; the fore-part obtuſely round, the middle rather drawn in, the lower part round, but much ſmaller than the upper part. With a lens of pretty high power the whole body is found to be ciliated.

NODULATA. Ovate-oblong; depreſſed, with a double row of tubercles. This ſpecies is found in the inteſtines of the Lumbricus terreſtris, and Nais littoralis; it is very pellucid, ſhining like ſilver, and is propagated by a tranſverſe diviſion; it is of an oval ſhape when young, and growing more oblong with age; it is truncate at the tip.

LEUCOPIPER, in the *Materia Medica*, a name by which ſome authors have diſtinguiſhed the white pepper.

LEUCOPOGON, in *Botany*, ſo named by Mr. Brown, from λευκος, *white*, and πωγων, *a beard*, on account of the white erect hairs on the upper ſide of the ſegments of the corolla, very conſpicuous even in dried ſpecimens. Brown. Prodr. Nov. Holl. v. 541. Ait. Hort. Kew. ed. 2. v. 1. 323. (Perojoa; Cavan. Ic. v. 4. 29.)—Claſs and order, *Pentandria Monogynia*. Nat. Ord. *Epacrideæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of ſeven leaves, erect, permanent; the five innermoſt equal, lanceolate, concave; two outer ones ovate, oppoſite, much ſhorter. *Cor.* of one petal, funnel-ſhaped, limb in five ſpreading equal ſegments, longitudinally bearded on the upper ſide, with denſe, erect hairs. Nectary glandular, ſurrounding the baſe of the germen. *Stam.* Filaments five, thread-ſhaped, equal, inſerted into the tube; anthers incumbent, oblong, burſting lengthwiſe, riſing juſt above the tube. *Piſt.* Germen ſuperior, roundiſh; ſtyle ſhort, columnar; ſtigma obtuſe. *Peric.* Drupa more or leſs ſucculent, or ſometimes dry when ripe, ſometimes cruſtaceous. *Nut* of from two to five cells, with one or two pendulous ſeeds in each.

Eſſ. Ch. Outer calyx of two leaves. Corolla funnel-ſhaped; its limb ſpreading, longitudinally bearded. Filaments included in the tube. Drupa of from two to five cells.

In the *Prodromus* of Mr. Brown, ſo rich in botanical novelties, we find the definitions of forty-eight ſpecies of this new genus, which he has ſeparated from the *Styphelia* of preceding writers; retaining in the latter ſuch plants only as have four or more leaves to their external calyx; a more elongated and cylindrical corolla, with five internal tufts of hair near the bottom, the limb revolute as well as bearded; filaments prominent; and a rather dry drupa, always of five cells.

Leucopogon is divided into five ſections, of each of which we ſhall give ſome examples.

1. *Spikes axillary, many-flowered. Drupa juicy.* Six ſpecies.

L. *lanceolatus.* Brown n. 1. (Styphelia lanceolata; Smith Bot. of New Holland, 49; excluding the ſynonyms from both authors.)—Spikes drooping, aggregate. Fruit oval, of two cells. Leaves lanceolate, flat; many-ribbed beneath; with three furrows above. Branches ſmooth.—Sent dried from Port Jackſon, New South Wales, by Dr. White, in 1793. The living plant we believe has never been brought to this country; *L. lanceolatus* of the new edition of Hort. Kew. being certainly *Styphelia parviflora* of Andr. Repoſ. t. 287; *S. Gnidium*, Venten. Malmaiſ. t. 23, which appears to us a very different ſpecies, rather agreeing with the characters of *L. apiculatus*, Brown n. 7.—The true *lanceolatus* is a larger ſhrub, with copious, ſlender, leafy, round *branches*, uſually quite ſmooth, ſometimes very minutely downy; the young ones reddiſh, becoming angular and ſtriated when dried. *Leaves* ſcattered, ſlightly ſpreading, ſeſſile, lanceolate, flat, ſharp-pointed, entire, ſmooth, above an inch, but rarely approaching to two, in length, a quarter of an inch broad; of a full rather glaucous green above, and marked with three fine, often obſolete, furrows, from the baſe to the middle; the under ſide paler, with numerous, branching, parallel ribs. *Stipulas* none. *Spikes* cluſtered about the ends of the branches, ſpreading or drooping, nearly the length of the leaves, ſlender, looſe, many-flowered, the common ſtalk ſlightly downy. *Flowers* ſmall, white, ſeſſile. *Bracteas* ſolitary under each flower, ovate, concave, ribbed, downy-edged, of the ſize and exact appearance of the two outer calyx-leaves, placed contrary to them, permanent. Inner *calyx-leaves* twice as long as the outer, and ſmoother, rather ſhorter than the tube of the *corolla*, whoſe limb is reflexed, with a tolerably denſe, but not very white beard, at leaſt in the dried ſpecimen. *Drupa* of two cells, oval, twice as long as the inner calyx-leaves, crowned by the *ſtyle*, which is about a third of its length.

L. *verticillatus.* Brown n. 6.—Spikes moſtly terminal, aggregate; drooping when in fruit. Drupa of five cells, five-ſided. Leaves interruptedly cluſtered, ſomewhat whorled, oblong-lanceolate, taper-pointed. Gathered by Mr. Brown on the ſouthern coaſt of New Holland. We have what anſwers to his deſcription from King George's ſound, on the weſt coaſt, communicated by Mr. Menzies. It is much larger than the preceding. *Leaves* from two to three or four inches long, and three quarters or more broad, ſomewhat roughiſh to the touch, marked on both ſides with five ribs, beſides innumerable oblique lateral ones beneath;

four or five growing together in a ſort of whorls. The lateral *branches* are alſo often whorled. *Spikes* much as in the laſt, but longer. *Bracteas* ribbed, ſmooth, twice as large as the outer calyx-leaves.

2. *Spikes axillary, ſometimes terminal, of three or more flowers. Calyx and bracteas coloured. Drupa rather dry. Leaves not heart-ſhaped.* Fourteen ſpecies.

L. *apiculatus*. Brown n. 7. (Styphelia parviflora; Andr. Repoſ. t. 287? S. Gnidium; Venten. Malmaiſ. t. 23?)—Spikes terminal, ſomewhat aggregate, of five to ſeven flowers. Bracteas lanceolate, rather larger than the outer calyx-ſcales. Leaves lanceolate-oblong, erect, ſlightly concave, callous-tipped, ſmooth at the edges. Drupa cruſtaceous, turbinate, depreſſed, ſhorter than the calyx.—Gathered by Mr. Brown on the ſouth coaſt of New Holland. He obſerved a ſmooth variety and a downy one, which he ſuſpects may be diſtinct ſpecies.—The above characters moſt minutely anſwer to the above plant of Andrews, raiſed from New Holland ſeeds, and to be ſeen in ſeveral greenhouſes, flowering in May. It is a ſmall *ſhrub*, with apparently deciduous, rather glaucous *leaves*, hardly an inch long, ſmooth, with little, denſe, upright, uſually ſolitary, terminal ſpikes, of pretty ſnow-white *flowers*.

L. *revolutus*. Brown n. 13.—Spikes moſtly terminal, aggregate, of four or five flowers. Calyx and bracteas minutely downy, the latter half the ſize of the outer calyx-ſcales. Leaves rather ſpreading, linear-oblong, obtuſe, with a blunt callous point; convex and rough above; ſmooth and furrowed beneath; the edges reflexed and naked. Branches finely downy. Drupa dry, obovate, with five cells.—Found by Mr. Brown on the ſouth coaſt of New Holland, and by Mr. Menzies at King George's ſound. It is not very unlike the laſt, but the *leaves* are ſmaller, more ſpreading, and rough on the upper ſide with minute points. The *flowers* are larger, and very conſpicuous for the long white hairineſs of their ſegments.

L. *ericoides*. Brown n. 17. (Styphelia ericoides; Smith Bot. of New Holl. 48. Epacris ſpuria; Cavan. Ic. v. 4. 27. t. 347. f. 1.)—Spikes copious, axillary, ſolitary, of three or four flowers. Leaves oblong-linear, ſpreading, ſharp-pointed; recurved at the edges; roughiſh above. Bracteas pointleſs. Inner calyx-leaves membranous. Drupa dry, angular.—Native of New South Wales, and of Van Diemen's land. A buſhy *ſhrub*, with *leaves* ſcarcely half an inch long, almoſt every one of which is accompanied by a much ſhorter axillary *ſpike* of three or four flowers. The ſegments of the *corolla* are ſtraight and ſharp, looking reddiſh (as Cavanilles deſcribes them) when dry, elegantly bearded with white hairs, which, as the flowers open, ſeem to form a denſe web in the mouth of each.

To this ſection alſo belong, among others, the *Styphelia*, tab. 64, 65, 66, 67, of Labillardiere.

3. *Spikes axillary or terminal. Leaves heart-ſhaped. Calyx and bracteas membranous or leafy.* Five ſpecies.

L. *amplexicaulis*. Brown n. 21. (Styphelia amplexicaulis; Rudge Tr. of Linn. Soc. v. 8. 292. t. 8.)—Spikes axillary and terminal, ſpreading, ſtalked, longer than the leaves, which are heart-ſhaped, pointleſs, claſping the ſtem; minutely downy beneath; recurved and fringed at the edge. Branches hairy. Drupa lenticular, of two cells.—Found near Port Jackſon. The *ſtems* are ſeveral from one root, moſtly ſimple, round, reddiſh, clothed with fine horizontal hairs. *Leaves* ſpreading, near an inch long, half an inch wide, with many ribs. *Calyx* and *bracteas* ſmooth, acute. Segments of the *corolla* recurved, very hairy. *Drupa* compreſſed, oblique.

L. *diſtans*. Brown n. 23.—Spikes terminal, aggregate, zigzag. Flowers diſtant. Leaves ovate, ſomewhat heart-ſhaped, deflexed, pointleſs, minute; convex above; downy beneath. Drupa cruſtaceous, obovate, flat-topped, of five cells.—Gathered at King George's ſound by Mr. Menzies, to whom Mr. Brown, like ourſelves, was indebted for ſpecimens. The *branches* are long, clothed with numerous little reflexed convex *leaves*. *Spikes* very peculiar, being long, ſlender, with remarkably zigzag, downy ſtalks. *Bracteas* heart-ſhaped, concave, ribbed, permanent. *Calyx-leaves* very broad. Segments of the *corolla* recurved, very denſely bearded.

4. *Spikes terminal. Calyx and bracteas rather leafy. Drupa dry. Leaves not heart-ſhaped.* Eight ſpecies.

L. *microphyllus*. Brown n. 26. (Perojoa microphylla; Cavan. Ic. v. 4. 29. t. 349. f. 2.)—Spikes cluſtered, of few flowers. Leaves of the calyx pointed, half membranous. Bracteas leafy, ribbed. Leaves oval, flat, obtuſe, pointleſs; of the ſame colour on both ſides. Drupa cruſtaceous, of one or two cells.—Native of the neighbourhood of Port Jackſon. A pretty little *ſhrub*, with minute, rather imbricated, ſmooth, thickiſh *leaves*. The little *ſpikes* of *flowers*, cluſtered about the ends of each branch, form round heads. The inner leaves of the *calyx* are narrow, acute, ſmooth, and thin. *Segments* of the corolla thick, recurved, very denſely covered with white hairs, as in *L. diſtans*, and indeed the generality of the ſpecies.

5. *Stalks axillary, two-flowered; here and there only ſingle-flowered; in which caſe there are ſeveral bracteas. Drupa dry.* Fifteen ſpecies.

L. *acuminatus*. Brown n. 37.—Stalks very ſhort, erect, moſtly two-flowered. Leaves nearly upright, linear-lanceolate, very ſharp, flat, with a briſtly point; their margins rough, finely toothed.—Found by Mr. Brown in the tropical part of New Holland, as are ſix others of this ſection, one of them, *L. ruſcifolius*, having been diſcovered there by ſir Joſeph Banks. Moſt of the reſt are natives of Port Jackſon, but none of them have come under our inſpection.

This is, on the whole, a very elegant as well as natural genus, and it is to be regretted that only one of the ſpecies has hitherto been made known to our cultivators of curious plants. The plumy whiteneſs of the flowers gives a ſtriking and peculiar aſpect to the whole.

LEUCOPSIS, in *Zoology*, a genus of the Hymenoptera order, of the claſs Inſecta. The mouth is horny with ſhort jaws; the mandible thick and three-toothed at the tip; the lip, which is longer than the jaw, is membranaceous, and emarginate at the tip; it has four feelers, ſhort, equal, and filiform; antennæ ſhort and clavate; thorax with a long lanceolate ſcale beneath; wings folded; ſting reflexed and concealed in a groove of the abdomen. There are four ſpecies, all foreign inſects; three found in the ſouth of Europe, and one in Tranquebar.

Species.

Gigas. Black; thorax with two dorſal yellow dots; abdomen ſeſſile, with four yellow bands. It inhabits France; the wings are duſky; hind-thighs with numerous teeth.

Dorsigera. Abdomen ſeſſile, black, with two yellow bands, and a dot between them. It is found in Italy, Switzerland, France, and ſome parts of Germany. Head is black; thorax gibbous, black with a double tranſverſe yellow line; abdomen compreſſed and grooved on the back; ſting double, as long as the abdomen, and reflexed back into the abdominal groove; legs yellow, ſpotted with black; hind legs toothed, with a black ſpot. This beautiful inſect is figured in Adams' work on the microſcope; the drawing was taken from a ſpecimen in her preſent majeſty's cabinet of inſects.

There is one alſo in the cabinet of Linnæus, now in the poſſeſſion of our very able coadjutor, Dr. Smith, P. L. S. It appears at firſt ſight like a waſp, to which genus the folded wings would have referred it, had not the remarkable ſting or tube on the back have prevented it. It is thought to be a ſpecies between, and uniting the ſphex and waſp, in ſome degree partaking of the characters of both. The antennæ are black and cylindrical, increaſing in thickneſs towards the extremity; the joint neareſt the head is yellow; the head is black; ſo alſo is the thorax, encompaſſed with a round yellow line, and furniſhed with a croſs one of the ſame colour near the head. The ſcutellum is yellow; the abdomen black, with two yellow bands, and a ſpot of the ſame colour on each ſide between the bands. The anus and the whole body, when viewed with a low magnifier, appear punctuated, and the points, when examined carefully, ſeem to be hexagonal, and in the centre of each hexagon a ſmall hair is ſeen.

PETIOLATA. Black; abdomen petiolate ferruginous; the petiole with a yellow dot each ſide. It is found in Tranquebar. The thorax is elevated, with two yellow ſtreaks before; under the ſcutel is a yellow dot; the ſecond ſegment of the abdomen is edged with yellow, and the tail is black; legs black edged with yellow; wings black.

CŒLOGASTER. Abdomen ſeſſile; ſcale of the thorax half as long as the abdomen. It is found in ſome parts of Germany. The thorax has a yellow band behind, and the eyes are black.

LEUCORRHÆA, in *Medicine*, λευκόῤῥοια, literally ſignifying *fluor albus*, or *white flux*, is a diſorder of the uterus or its paſſages, from which a whitiſh or pale coloured fluid is diſcharged, accompanied by pain in the loins, conſiderable loſs of ſtrength, and a wan ſickly aſpect. It is commonly expreſſed by the appellation of "*the whites*" by the patients, or is ſimply called "a weakneſs."

Every ſerous or puriform diſcharge from the vagina has been comprehended under this appellation: it is obvious, however, that ſuch diſcharges may be various, and may proceed from various ſources. They may proceed more eſpecially from the veſſels of the uterus itſelf, or from thoſe of the vagina only. In the latter caſe, which is probably not a very common occurrence, the cauſe of the excretion muſt be purely local: it ſometimes happens during the period of pregnancy. In theſe inſtances, there muſt be either a local weakneſs and relaxation of the parts, or ſome irritation may exiſt or have been applied, ſo as to excite the mucous glands, the ſecretion from which ſerves to lubricate the parts, to pour out their fluids in an unuſual quantity. The exiſtence of little aphthous ulcerations within the labia ſometimes gives riſe to ſuch a diſcharge, in which caſe there is alſo a conſiderable degree of ſoreneſs and tenderneſs in the parts; and the uſe of thoſe inſtruments, called peſſaries, has been ſaid to produce a fluor albus, from the pain and irritation which they occaſion.

In general, however, the diſcharge of leucorrhæa proceeds from the ſame veſſels of the uterus itſelf which pour out the catamenia. This inference may be deduced from the following circumſtances. In the firſt place, the leucorrhæa is moſt common in thoſe women who are ſubject to an immoderate flow of the menſes. Secondly, it appears principally, and often excluſively, a little time preceding, and again poſterior to the menſtrual diſcharge; the latter diminiſhing in proportion as the leucorrhæa is increaſed, or ſeeming to be converted into the leucorrhæa. Thirdly, the leucorrhæa often continues after the period when the catamenia have altogether ceaſed, and frequently ſhews a conſiderable tendency to a periodical recurrence. And laſtly, it is commonly accompanied with the ſame local and conſtitutional ſymptoms as an exceſſive flow of the menſes; ſuch as paleneſs of the countenance, a feeble pulſe, an unuſual debility on taking exerciſe, a hurry of the breathing from even moderate exertion; and at the ſame time the back becomes pained by any continuance in the erect poſture, the extremities are frequently cold, and ſome œdema affects the feet in the evening. The debility alſo manifeſts itſelf by affections of the ſtomach; ſuch as loſs of appetite, flatulence, and other ſymptoms of indigeſtion; by palpitations of the heart, with frequent ſenſations of ſinking and fluttering about the epigaſtric region, and even actual ſyncope; and by a depreſſion of ſpirits, and a weakneſs of mind liable to ſtrong emotions from ſlight cauſes, eſpecially when operating ſuddenly; in a word, by all the train of diſtreſſing ſymptoms which have been denominated *nervous*. The inference, that the diſcharge is uterine, is farther confirmed, when it is obſerved, that it had neither been preceded nor accompanied by any ſymptoms of a local affection of the vagina; and that it had not appeared ſoon after communication with a perſon who might be ſuſpected of giving infection; nor had, from the firſt appearance, been accompanied with any inflammatory affection of the pudenda.

The laſt obſervation applies particularly to the diagnoſis between the diſcharge of leucorrhæa and that ariſing from venereal infection; a point which is worthy of more particular conſideration. It is very eaſy to diſtinguiſh a ſimple leucorrhæa from a recent gonorrhæa; for beſides the general debility, and the nervous ſymptoms above-mentioned, which frequently accompany the former, the colourleſs nature of the diſcharge, which only ſtiffens, without ſtaining the linen, and the abſence of all heat and ſcalding on paſſing the urine, together with the ceſſation of the diſcharge at the time of menſtruation, ſufficiently characterize the leucorrhæa; whilſt in the gonorrhæa there is itching, inflammation, and heat of urine, the orifice of the urinary paſſage is prominent and painful, there is frequent irritation to make water, and the diſcharge ſtains the linen of a yellow or greeniſh colour. But it muſt be remembered, that the diſcharges from the vagina, which have been denominated leucorrhæa, are ſometimes opaque and of a yellowiſh colour, and ſometimes accompanied with a degree of ardor urinæ and inflammation of the external labia. This may happen in women of bad habit of body, or where there is ulceration in the vagina or uterus; but in both theſe caſes the diſcharge is of a ſanious nature, and very offenſive; and in the latter is commonly accompanied with ſevere pains in the region of the uterus, and extending from the loins round the pelvis to the groins, and even down the thighs. The diſcharge is ſometimes ſo acrimonious, in theſe inſtances, as to inflame and excoriate the paſſages. In the herpetic or aphthous affection of the orifice of the pudendum, there is heat of urine with the diſcharge; but the diſcharge is very ſcanty, and the labia extremely tender and ſore, ſo as ſcarcely to admit of ſitting, except upon a ſoft ſeat; which does not take place either in proper leucorrhæa, or in gonorrhæa in general. In many caſes, the circumſtances of the patient, which render it either impoſſible or in the higheſt degree improbable that any infectious connection can have taken place, will of courſe admit of no heſitation in the deciſion; and it is often upon theſe circumſtances alone that the practitioner is obliged to depend in forming his opinion.

The *cauſes* of leucorrhæa are chiefly to be ſought for among thoſe agents and circumſtances, which tend to produce a debility of the ſyſtem in general, or of the uterus in particular. Of the former kind, are imperfect diet, fatigue, anxiety, and much watching; the practice of ſuckling

ling children too long; damp, cloſe, and uncleanly habitations; cauſes which chiefly operate among women of the lower claſs. To theſe may be added, the almoſt total want of proper exerciſe, living too much in warm chambers, and drinking much of warm enervating liquors, ſuch as tea and coffee, which influence principally women of better ſtations. The ſources of local debility to the uterine ſyſtem itſelf are many; ſuch as blows, bruiſes, and falls; frequent abortions, or frequent child-bearing without nurſing, difficult and tedious labours, profuſe diſcharge of the catamenia, or of the lochia after delivery; venus immodica; &c.

On the other hand, the effect of leucorrhœa, eſpecially when it has continued long, is, in many caſes, to prevent conception and occaſion barrenneſs; or, if conception take place, to produce a ſucceſſion of miſcarriages: not to mention the conſtitutional and nervous derangement already deſcribed. However, if the leucorrhœa be moderate, and be not accompanied with any conſiderable overflow of the catamenia, it may often continue long without inducing any great degree of debility; and it is only when the diſcharge has been very copious, as well as conſtant, that its effects in that way are very remarkable.

The means of cure will conſiſt of thoſe expedients which contribute to ſtrengthen the general habit, and the uterine ſyſtem locally. The ſyſtem generally is to be ſupported by all thoſe means which regimen, diet, and medicine contribute; namely, by light and nutritious diet; by moderate exerciſe, by ſome means of geſtation, as in a carriage, on horſeback, or ſailing (the exerciſe of walking, both from the conſtant erect poſture, and the action of the muſcles, being liable to produce irritation, and to augment the uterine diſcharge); by the uſe of the tepid or cold bath, according to the ſtrength of the patient, and the ſeaſon of the year; by drinking the chalybeate mineral waters; or by taking ſome of the preparations of iron in the way of medicine, eſpecially the muriated tincture, or the ſulphate, together with the cinchona, or other vegetable tonics. The mineral acids are ſometimes beneficial under the ſame circumſtances.

The uterus itſelf and its connections may be ſtrengthened either by direct local applications, or by internal medicines, which are commonly determined to the urinary paſſages, and from the vicinity of theſe are often communicated to the uterus. Theſe laſt mentioned medicines are cantharides, turpentine, and balſams of a ſimilar nature; by which the diſeaſe has often been relieved or even cured. The former claſs includes a variety of aſtringent lotions and injections, by which the diſcharge may alſo be often diminiſhed, and in young women, when the complaint is recent, entirely cured. Thus the parts may be waſhed twice or three times a day with a weak ſolution of the acetite of lead, or of alum, in roſe water; or an infuſion of roſe leaves, or of green tea, or the chalybeate mineral waters, make very proper lotions: or theſe liquors may be thrown into the vagina twice a day, through an ivory pipe, by means of the elaſtic gum. But in general injections are unwillingly uſed, unleſs when the diſeaſe is inveterate. When the matter diſcharged is acrimonious, and inflames and exeoriates the parts, or excites very troubleſome and painful itching, the greateſt relief is obtained by keeping the parts clean and cool, removing the acrimonious matter frequently by bathing with cold water, or with any of the above-mentioned aſtringent liquors.

Dr. Hamilton remarks, that women have, in many inſtances, been cured of the moſt obſtinate habitual *fluor albus* by giving ſuck. See his Treatiſe on Midwifery, pt. i. chap. i. p. 68. See alſo Cullen, Firſt Lines, § 985. Leake on the Chron. Diſ. of Women.

LEUCORODIUS, in *Ornithology*, a name by which ſome have called the platea, or ſpoonbill, a very remarkable kind of ſtork or heron.

LEUCORYX, Antilope or *Antelope leucoryx*, in *Zoology*, the Gazella Indica, having ſingular horns, of Nov. Com. Petrop. xiii. 470. l 10. f. 5. Oryx of Oppian, Cyneg. ii. v. 445, leucoryx of Pennant, is a ſpecies of Antelope, which has very long, ſlender, upright, taper, ſharp-pointed horns, very ſlightly bent backwards and annulated at the baſe; the body being of a milk-white colour. It inhabits the iſland of Gow Bahreia, in the bottom of the Perſian gulf, near Baſſora. It is about the ſize of a Welſh runt or ſmall cow; the head is large and broad, with a thick broad noſe, like that of a cow, and ſomewhat ſlouching ears; the body is thick and clumſy, and the whole is of a pure white except the middle of the face, the ſides of the cheeks, and the limbs, which are tinged with red: the tail is longiſh, and is tufted at the end with a bruſh of hairs; the horns are of a black colour. Dr. Pallas mentions a horn, apparently belonging to this animal, or ſome ſpecies nearly reſembling it, which was found in a foſſile ſtate, in Siberia. The female comes into ſeaſon in autumn, and brings forth in ſpring.

LEUCOSCEPTRUM, in *Botany*, a new genus named by Dr. Smith, is derived from λευκος, *white*, and σκηπτρον, *a ſceptre*, on account of its elegant ſceptre-ſhaped ſpike of white flowers. The author of this genus remarks that "it has the habit of a *Buddleia*, but belongs to the ſecond ſection of *Vitices* in Juſſieu, near *Verbena*; and ſhould, along with *Verbena*, ſtand near *Mentha* in the Linnæan ſyſtem."—Sm. Exot. Bot. v. 2. 113.—Claſs and order, *Didynamia Gymnoſpermia*. Nat. Ord. ſee above.

Eſſ. Ch. Corolla unequal, in four ſegments; the uppermoſt deeply cloven. Calyx five-cleft. Stamens declining, much longer than the corolla, parallel. Seeds four.

1. *L. canum*. Hoary Leucoſceptrum. Sm. Exot. Bot. t. 116.—This is the only ſpecies known, and was gathered by Dr. Buchanan in the woods of Upper Nepal, where it flowers in December, and is called *Mutſola* by the Nawars. The *branches* are obtuſely quadrangular, compreſſed, clothed with fine, denſe, whitiſh pubeſcence. *Leaves* on ſhortiſh, downy footſtalks, oppoſite, elliptical, pointed and tapering at both ends, bluntly ſerrated, veiny; green and naked above; white and downy beneath. *Spike* terminal, ſolitary, ſeſſile, erect, cylindrical, denſe, many-flowered. *Bracteas* ſmall, in four rows, oppoſite, each common to many flowers. *Calyx* tubular, downy; its margin obtuſe, unequally five-cleft. *Corolla* longer than the calyx, with a ſhort tube; the limb in four, very unequal, obtuſe ſegments, of which the uppermoſt is deeply divided; the lowermoſt, or lip, large, concave, and entire. *Stamens* declining, parallel, thread-ſhaped, ſmooth; the two longeſt double the length of the lip. *Anthers* roundiſh, two-lobed, yellowiſh. *Germen* ſuperior, four-lobed. *Style* declining, as long as the longer ſtamens, with a cloven, acute ſtigma. *Seeds* four, truncated, naked, in the bottom of the calyx.

This is one of the numerous ſplendid plants ſent by Dr. Buchanan, from the mountains of Nepal, to Dr. Smith, which ſo greatly enrich the work whence the above deſcription is chiefly taken.

LEUCOSPERMUM, ſo named by Mr. Brown, from λευκος, *white*, and σπερμα, *the ſeed*. Brown Tr. of Linn. Soc. v. 10. 95. Ait. Hort. Kew. ed. 2. v. 1. 195. (Leucadendron; Saliſ. Parad. t. 116. Proteæ, ſect. 3, piſtillis capitatis; Linn. Mant. 2. 191.)—Claſs and order, *Tetrandria Monogynia*.

Monogynia. Nat. Ord. *Aggregatæ*, Linn. *Proteæ*, Juſſ. *Proteaceæ*, Brown.

Gen. Ch. *Cal.* Common Perianth of numerous ſingle-flowered ſcales, collected into a head, either permanent and hardened, or membranous and deciduous. *Cor.* Petals four, irregular, linear; three of them cohering by their lower part; the fourth ſeparate and narrower. *Stam.* Filaments four, ſhort, inſerted into the petals; anthers linear, concealed by the petals, of two cells, burſting lengthwiſe. *Piſt.* Germen ſuperior, ſeſſile, roundiſh; ſtigma cylindrical, rigid, deciduous; ſtigma ſwelling, ſmooth, ſomewhat oblique. *Peric.* Nut tumid, ſmooth, ſingle-ſeeded.

Eſſ. Ch. Petals four, unequal, three of them cohering by their lower part. Anthers ſunk in the hollows of the upper part of the petals. Style deciduous. Stigma ſwelling, ſmooth. Nut ſuperior, ſeſſile, tumid, ſmooth.

Eighteen ſpecies are defined by Mr. Brown, all natives of ſouthern Africa, about the Cape of Good Hope, growing for the moſt part in dry, ſandy, rather elevated ſituations. Eight of them are cultivated in the Royal Garden at Kew. The whole are divided into two ſections; the firſt having a rounder head of flowers, whoſe calyx-ſcales are permanent, becoming ſomewhat hardened, of which deſcription are fourteen ſpecies; the remaining four have a flatter common receptacle, with narrow deciduous ſcales, of which the innermoſt are very thin and chaffy. All are *ſhrubs* of rather humble growth, rarely arboreſcent; many of them downy or hairy. *Leaves* either entire, or furniſhed with callous teeth at the extremity. *Flowers* yellow, in terminal heads.

An intereſting ſpecimen of this genus is

L. *tomentoſum*. Brown. n. 13. Ait. Hort. Kew. n. 7. (Protea tomentoſa; Willd. Sp. Pl. v. 1. 514. Linn. Suppl. 118. P. candicans; Andr. Repoſ. t. 294.)—Style nearly the length of the corolla. Stem erect. Leaves linear or wedge-ſhaped, downy, three-toothed. Calyx-ſcales lanceolate, nearly equal to the tube of the corolla.—This is ſaid to be very rare in England. Mr. Maſſon ſent it from the Cape to Kew in 1789, and Meſſrs. Lee and Kennedy raiſed it from ſeed the year following. The whole *ſhrub* is clothed with fine ſhort down of a glaucous hue, the *ſtem* rather hairy. *Leaves* two inches long, various in breadth, ſpreading, coriaceous, dilated outwards, bluntly and unequally three-toothed at the end. Heads of *flowers* produced in Auguſt and September, terminal, ſolitary, ſeſſile, about the ſize of a walnut, variegated with orange and yellow, their ſcales tipped with dark brown. Few of the Proteaceous tribe are more difficult to increaſe by cuttings.

LEUCOSTAPHYLOS, a name given by ſome authors to the water-elder, or opulus.

LEVE', *Fr.* in *Muſic*, the *up*, an unaccented part of a bar in beating time. See ARSIS, and ACCENT, in *Muſic*.

LEVEL, a mathematical inſtrument uſed for drawing a line parallel to the horizon, and continuing it out at pleaſure; and, by this means, for finding the true level, or the difference of aſcent or deſcent between ſeveral places, for conveying water, draining fens, placing the ſurfaces of floors, &c. level, and for various other purpoſes in agriculture, architecture, hydraulics, ſurveying, &c.

The word comes from the Latin *libella*, the croſs beam that forms the brachia of a balance, which, to be juſt, muſt ſtand horizontally.

There is a great variety of inſtruments of this kind, differently conſtructed, and conſtituted of different materials, according to the particular purpoſes to which they are applied, as the carpenters' level, maſons' level, balance level, mercurial levels, ſurveying and ſpiral levels. But, however their conſtruction may vary, they may be all referred to the following three claſſes: *viz.* 1. Thoſe in which a vertical line is determined by a ſuſpended plumb-line, or a balance weight, and the horizontal poſition is ſhewn by a line perpendicular to it. 2. Thoſe which determine a level line by the ſurface of a fluid. 3. Spirit-levels, which point out the horizontal direction by a bubble of air floating in a fluid contained in a glaſs tube. For the purpoſes of agriculture, thoſe of the improved water, air, ſpirit, and foot kinds are moſt commonly uſed.

Thoſe of the firſt kind, depending upon the plumb-line, are very common, but not very accurate: the ſimpleſt form is that of two rulers, united together in the form of the letter L; they muſt be exactly perpendicular to each other: then if a plumb-line is ſuſpended from the top of the vertical ruler, and the edge thereof be made to coincide with the plumb-line, the other ruler muſt be horizontal. This, when applied to the top of a wall, a beam, or floor, will ſhew if they are horizontal. This is the kind of level uſed by artificers: ſometimes it is found like the letter A, of three rulers, the plumb-line being ſuſpended from the vertex, and the two legs ſet on the ſurface to be levelled. The line hangs oppoſite to a mark, made on the middle of the croſs ruler, when the feet are on the ſame level. Beſides theſe there are many other forms. For an inſtrument of this kind, ſee *Plate* IV. *Surveying*, *fig.* 5.

LEVEL, *Plumb*, or *Pendulum*, that which ſhews the horizontal line by means of another line perpendicular to that deſcribed by its plummet, or pendulum.

It conſiſts of two legs, or branches, joined together at right angles, whereof that which carries the thread or plummet is about a foot and a half long. This thread is hung towards the top of the branch, at the point 2. The middle of the branch where the thread paſſes is hollow, that it may hang free every where but towards the bottom, where there is a little blade of ſilver, whereon is drawn a line perpendicular to the teleſcope. The ſaid cavity is covered by two pieces of braſs, making, as it were, a kind of caſe, leſt the wind ſhould agitate the thread; for which reaſon the ſilver blade is covered with a glaſs G, to the end that it may be ſeen when the thread and plummet play upon the perpendicular. The teleſcope 1 is faſtened to the other branch, or leg, of the inſtrument, and is about two feet long, having a hair placed horizontally acroſs the focus of the object-glaſs, which determines the point of level, when the ſtring and plummet hang againſt the line on the ſilver blade.

All the accuracy of this inſtrument depends on the teleſcope's being fitted at right angles to the perpendicular. It has a ball and ſocket, by which it is faſtened to its foot: and is ſaid to have been the invention of M. Picard.

Here we may introduce an account of other levels conſtructed on the ſame general principle. For the *foot-level*; ſee FOOT-*level*.

LEVEL, *Artillery-foot*, is in form of a ſquare, having its two legs, or branches, of an equal length; at a juncture of which is a little hole, whence hangs a thread and plummet, playing on a perpendicular line in the middle of a quadrant; it is frequently divided into 90 degrees, or rather into twice 45 degrees from the middle. See *fig.* 6.

This inſtrument may be uſed on other occaſions, by placing the end of its two branches on a plane; for when the thread plays perpendicularly over the middle diviſion of the quadrant, that plane is aſſuredly level.

To uſe it in gunnery, place the two ends on the piece of artillery, which you may raiſe to any propoſed height by means of the plummet, whoſe thread will give the degree above the level.

Level, *Carpenters' and Paviors'*, conſiſts of a long ruler, in the middle whereof is fitted, at right angles, another ſomewhat bigger, at the top of which is faſtened a line with a plummet; which, when it hangs over a fiducial line at right angles with the baſe, ſhews that the ſaid baſe is horizontal.

This and the maſons' level, though very common, are eſteemed the beſt for the practice of building, though the operations by them can only be ſhort.

Level, *Gunners'*, for levelling cannons and mortars, is an inſtrument repreſented in *Plate* IV. *Surveying*, *fig*. 7, conſiſting of a triangular braſs plate, about four inches high: at the bottom of which is a portion of a circle, divided into 45°, which number is ſufficient for the higheſt elevation of cannons and mortars, and for giving ſhot the greateſt range. On the centre of this ſegment of a circle is ſcrewed a piece of braſs, by means of which it may be fixed, or moved, at pleaſure. The end of this piece of braſs is made ſo as to ſerve for a plummet and index, in order to ſhew the different degrees of elevation of pieces of artillery. This inſtrument has alſo a braſs foot to ſet upon cannon or mortars, ſo as when thoſe pieces are horizontal, the whole inſtrument will be perpendicular.

The uſe of this level is obvious, and conſiſts in placing the foot thereof on the piece to be elevated; in ſuch manner as that the point of the plummet may fall on the proper degree: this is what they call *levelling* the piece.

The moſt curious inſtrument for the uſe of the artilleriſt, was lately invented by the very ingenious colonel Congreve, of the royal artillery; having the following qualifications *viz*. 1. It will find the inclination of any plane, whether above or below the horizon. 2. By applying it either to the cylinder, or outſide of any piece of ordnance, angles of elevation or depreſſion may be given to the 60th part of a degree, with leſs trouble than the common gunners' quadrant, which only gives to the 4th part of a degree. 3. It will give the line of direction for laying either guns or mortars to an object above or below the horizon. 4. It will find the centre of metals of any piece of ordnance. 5. With it, a point may be found in the rear of a mortar-bed, in the vertical plane of the mortar's axis; conſequently a longer line of ſight is given for directing them to the object than the uſual way. 6. It anſwers all the purpoſes of a pair of callipers, with the advantage of knowing (to the 100th part of an inch) diameters, whether concave or convex, without the trouble of laying the claws upon a diagonal ſcale. 7. On the ſides of the inſtrument are the following lines, *viz*. equal parts, ſolids, planes, and polygons, logarithms, tangents, verſed ſines, ſines and numbers, plotting ſcales, and diagonal ſcale of inches for cutting fuzes by. 8. In the lid of the inſtrument-caſe is a pendulum to vibrate half ſeconds. It is likewiſe of ſingular uſe in ſurveying; as, 1. It takes horizontal angles to the 60th part of a degree. 2. Vertical angles. 3. Levels. 4. Solves right-angled plane triangles. 5. Oblique-angled plane triangles. 6. Anſwers all the purpoſes of a protractor, with the advantage of laying down angles exactly as taken in the field. N. B. Captain Jordane's ingenious inſtrument anſwers nearly the ſame purpoſes.

Level, *Maſons'*, is compoſed of three rules, ſo joined as to form an iſoſceles triangle, ſomewhat like a Roman A; at the vertex whereof is faſtened a thread, from which hangs a plummet, which paſſes over a fiducial line marked in the middle of the baſe, when the thing to which the level is applied is horizontal; but declines from the mark when the thing is lower on one ſide than the other.

Level, *Balance, for Surveying*, conſiſts of a teleſcope or ruler with ſights, and another ruler fixed perpendicularly to the middle of it, in the form of T, with a weight at the lower end. The whole is ſuſpended by a thread, or upon centres, ſimilar to a ſcale beam, and the weight of the vertical leg makes the ſights or teleſcope aſſume the horizontal poſition. Its advantage is, that it adjuſts itſelf to the level line, which can be transferred to any diſtant object, by obſerving it through the ſights or teleſcope. It is neceſſary to encloſe it in a box or caſe to avoid oſcillation from the wind. This inſtrument is convenient, *but* not very accurate.

Another balance level, called the "reflecting level," is of French invention, aſcribed to M. Caſſini. A teleſcope or ruler, with plain ſights, is ſuſpended vertically; a mirror is fixed juſt before the object glaſs, being inclined at an angle of 45° with the axis of the teleſcope. Now as the teleſcope hangs vertical, and the mirror bends the rays at a right angle, they will of courſe be horizontal. The teleſcope muſt be provided with a diagonal eye-piece, to bend the rays again horizontal, for the convenience of obſervation. Other modifications of this principle by Meſſrs. Grandjean and Geuſſanes may be found, in the volumes of the Machines approuvés par l'Academie. They are to be conſidered as more ingenious in theory, than applicable to practice.

A balance level, invented by Mr. Richard Drew, is deſcribed in the 25th volume of the Tranſactions of the Society of Arts. It conſiſts of a tube, provided with ſights at both ends, and ſuſpended from a point conſiderably above its centre of gravity. It has a ſliding weight, adjuſtable by a ſcrew, to place the tube truly horizontal. This is, perhaps, the beſt kind of balance level which has appeared.

To the ſecond claſs of levels belongs the *water level*. This ſhews the horizontal line by means of a ſurface of water, or other liquid: founded on this principle, that water always naturally places itſelf *level*.

The moſt ſimple is made of a long wooden trough, or canal, whoſe ſides are parallel to its baſe; ſo that being equally filled with water, the ſurface thereof ſhews the line of level. This is the *chorobates* of the ancients, deſcribed by Vitruvius, lib. viii. cap. 6.

The maſons frequently employ this, where they would make the top or courſes of a wall truly level: they form the trough by a ridge of mortar or clay ſtuck round on all ſides on the top ſurface of the wall; and filling the trough, thus formed, with water, they can meaſure if it is equally deep in all parts.

This ſort of level is alſo made with two cups fitted to the two ends of a pipe three or four feet long, about an inch in diameter; by means of which the water communicates from the one to the other cup; and this pipe being moveable on its ſtand, by means of a ball and ſocket, when the two cups become equally full of water, their two ſurfaces mark the line of level.

This inſtrument, inſtead of cups, may alſo be made with two ſhort cylinders of glaſs, three or four inches long, faſtened to each extreme of the pipe with wax or maſtic. Into the pipe is filled ſome common or coloured water, which ſhews itſelf through the cylinders, by means of which the line of level is determined; the height of the water, with reſpect to the centre of the earth, being always the ſame in both cylinders.

linders. This level, though very ſimple, is yet very commodious for levelling ſmall diſtances.

Another water level is a glaſs tube, bent into the form of U, having a cup at the top of each leg. This being mounted on a pedeſtal, and filled with water, or other fluid, it will, from the principles of hydroſtatics, ſtand at the ſame level in both cups; and by looking through the glaſs, any diſtant objects which appear to coincide with the ſurface of the water, in both cups, will be on the ſame level with them.

A *reflecting level* is that made by means of a pretty long ſurface of water, repreſenting the ſame object inverted, which we ſee erect by the eye; ſo that the point where thoſe two objects appear to meet, is in a level with the place where the ſurface of water is found. This is the invention of M. Mariotte.

Of a ſimilar nature are the mercurial levels, but they are furniſhed with two ſmall ſights, provided with croſs-hairs: theſe float upon the ſurfaces of the fluid in the cups, the croſs-hairs of each being equally diſtant from the ſurface. A line ſeen through the ſights will be parallel thereto, and conſequently horizontal. One of theſe by Alexander Keith, eſq. is deſcribed and illuſtrated by drawings in the 2d volume of the Edinburgh Tranſactions, p. 14, &c. from which we ſhall here ſubjoin the following extract. *Fig.* 8. (*Plate* IV. *Surveying*,) is a ſection of the inſtrument formed of mahogany or boxwood. A, A, are two oblong ſquare cavities connected together by a narrow cloſe channel, running from the bottom of the one to the other. B, B, are two grooves hollowed out of the wood, in order to contain the ſights, &c. They are ſhut up by a lid, which turns upon a ſcrew-nail at the centre C, as may be ſeen more diſtinctly from *fig.* 11.

Fig. 9. D, D, are the two ſights, the one with a ſmall hole, the other with a croſs-hair. Theſe ſights are erected upon two pieces of ivory or hard wood, which are ſhaped nearly of the dimenſions of the cavities A, A, but ſo much ſmaller as to enter without touching or rubbing on the ſides. Mercury is poured into the two holes A, A, till they are about half full; the two pieces of ivory which ſupport the ſights are put into the cavities, and float on the ſurface of the mercury.

Fig. 10. is a perſpective view of the inſtrument when the ſights are floating upon the mercury; and *fig.* 11. is another view of it, when the ſights are taken out and the lid is open.

As the two cavities communicate with each other, the ſurface of the mercury in both is always upon the ſame line of level; and conſequently, if the two ſights are once accurately adjuſted, they will ever after point out the true level, without requiring any after adjuſtment.

When this inſtrument is to be uſed, it may be laid on any horizontal ſurface, and the ſights will immediately become an exact level. It may alſo be fixed on a tripod as the ſpirit-level; or it will anſwer equally well, if it is affixed to the top of a ſingle ſtake, which is ſharpened at the point ſo as to be puſhed into the ground. If it is to be uſed as a pocket-inſtrument, it may be made of ſeven inches length, being about double the dimenſions of the annexed draught. A common walking cane forms a very convenient ſupport. It is affixed to the cane by means of a braſs pin E, which paſſes through the hole G, and through the eye or hole of the walking ſtick; and a braſs nut F, ſcrewing to the male-ſcrew of the braſs pin, keeps them firm together. The two grooves B, B, contain the two ſights and braſs pin, when not in uſe. Two corks, covered with thin leather, fitted into the holes A, A, confine the mercury, when the inſtrument is to be tranſported; or, in caſe the mercury is found to eſcape, it may be poured into a ſmall caſe, made of lignum vitæ, like a tooth-pick caſe; and this may be ſtopped with a cork, and made to fit into one of the grooves.

The advantages of this inſtrument over the ſpirit-level are: 1ſt, It requires no adjuſtment, conſequently two obſervers, though otherwiſe not equally accurate, muſt make the ſame obſervation. 2dly, With this, the level of twenty different places may be taken during the time required to adjuſt the ſpirit-level for one obſervation. 3dly, The nicety of the ſpirit-level depends upon the ſmall curve of the glaſs-tube, in the choice of which no rule can be laid down; neither is any thing gained, in point of exactneſs, by lengthening the ſpirit-tube above three or four inches. But every inſtrument of this kind is of one ſtandard; and the further the two ſights are removed from one another, the more any error is diminiſhed. 4thly, This inſtrument can be made perfectly juſt, without taking any obſervation, or comparing it with another level. In order to do this, let the floats on which the ſights reſt, be of the ſame dimenſion and weight, and let the croſs-hair and eye-hole be of one height, and without farther adjuſtment, they will point out the true level.

To the third claſs of levels belongs the *ſpirit level*, called alſo the "*air level*," which is more accurate than any other kind, and is moſt extenſively uſed. The invention of this inſtrument has been aſcribed to M. Thevenot. Others have attributed this application of a bubble of air to Dr. Hooke. The inſtrument conſiſts of a cylindrical glaſs tube filled with ſpirits of wine, except leaving in it a ſmall bubble of air: its ends are hermetically ſealed to keep in the fluid. This bubble, being the lighteſt of the contents of the tube, will, by the laws of hydroſtatics, always run towards that end of the tube which is moſt elevated; but when the tube is perfectly horizontal, the bubble will have no tendency towards either end. The tube is not ſtrictly cylindrical withinſide, though it bears that appearance; it is ſlightly curved, the convex ſide being upwards, and by this means the bubble will reſt in the middle of the tube when it is horizontal, but approaches either end which is elevated above the other. The ſimpleſt form of a ſpirit level for fixing any plane truly horizontal, conſiſts of a glaſs tube of the above deſcription, called a bubble tube, fixed into a block of wood, as at A B, *fig.* 1. of *Plate* V. *Surveying*. The lower ſurface D E of the block is made flat; and when the bubble C ſtands between two ſcratches marked on the glaſs at *a b*, the line D E is horizontal. The method of making it correct is this; the tube is firſt fitted into the block, the lower edge, D E, of which is placed on a bench or table as nearly horizontal as can be determined, ſo that the bubble ſtands between the ſcratches *a*, *b*. The level is now reverſed, that is, the end D is put where E was at firſt. In this poſition, if the bubble ſtands in the middle, it proves the level to be correct, and the table horizontal; but if it runs to either end of the tube, it ſhews that end to be too much elevated: ſuppoſe it B, for inſtance; this end of the tube muſt therefore be let deeper into the wood, or the ſurface D E rectified to produce the ſame effect: one-half the error muſt be compenſated by this means, and the other half by rectifying the table or ſupport; for D E, the level, muſt now be reverſed again to verify theſe corrections; and when they are ſo made that the bubble ſtands at *a b*, either way, the level is correct.

To illuſtrate this more plainly, ſee *fig.* 2, which repreſents a ſection of a bubble tube; but, for elucidation, is ſhewn as if curved much more than they are ever made. Suppoſe the convex or upper ſurface of the tube to be a ſegment of a large circle B C D, from the laws of hydroſtatics it is plain, that the bubble of air, being the lighteſt body in the tube, will certainly occupy the higheſt point of the circle at C; and the two points B, D, being equally diſtant therefrom, will be in the ſame horizontal line B E D. The larger the radius of the circle D B, ſo will the level be the more ſenſible of any deviation from the horizontal, becauſe the bubble will have to traverſe a greater diſtance along the tube, in proportion to any partial elevation of either end. The numerous ſpirit levels applied to the delicate aſtronomical inſtruments made by Mr. Troughton, and deſcribed in our articles Circle, Equatorial, Transit, &c. are, in general, formed by grinding the inſide of the tube to a circle of near 400 feet radius. In a level of this kind, the elevation of one minute of a degree, of the line B E D, will produce a motion of three inches of the bubble; therefore a ſecond will be 1-20th of an inch, and may be determined to the greateſt preciſion. For common purpoſes, the bubble tubes have a much more rapid curvature, and are proportionably leſs ſenſible, which is very proper, becauſe the bubbles of ſuch delicate levels can never, in common uſe, be brought to ſtand at all ſteady, from the bending of the floors, and tremors of the ſupports they are applied to. The application of the bubble tube has been ſhewn in numerous inſtances in the articles above-mentioned; but the inſtrument denominated the ſpirit-level, for ſurveying, remains to be deſcribed here. The moſt ſimple form is a ruler of braſs, having a bubble tube fixed down upon the middle of it; at each end of the ruler a ſight is erected, through which the obſerver views any diſtant object, whoſe level is to be aſcertained. This inſtrument is fitted upon a ſupport with three legs, and has a ball and ſocket, by which the ruler and ſights can be turned about in all directions, until the bubble ſhews it to be horizontal. The inſtrument in this form, which is the original, is ſo extremely inconvenient for uſe, that it is totally unfit for the delicate obſervations neceſſary for ſetting out canals, and other works, where the conveyance of water is concerned, and is therefore but very little uſed, except in levelling for roads, where an error is of ſlight importance. After having deſcribed ſome progreſſive improvements in this inſtrument, we ſhall proceed to the deſcription of the level with teleſcopic ſights, which is univerſally employed for the above purpoſes.

The *air-level*, with ſights, is an improvement of the ſimple *air-level* already deſcribed; which, by the addition of more apparatus, becomes more commodious and exact.

It conſiſts of an air-level (*Plate* VI. *Surveying*, *fig.* 1.) about eight inches long, and ſeven or eight inches in diameter, ſet in a braſs tube, with an aperture in the middle. The tubes are carried in a ſtrong, ſtraight ruler, a foot long, at whoſe ends are fixed two ſights, exactly perpendicular to the tubes, and of an equal height, having a ſquare hole, formed by two fillets of braſs, croſſing each other at right angles; in the middle whereof is drilled a very little hole, through which a point on a level with the inſtrument is deſcribed. The braſs tube is faſtened on the ruler by means of two ſcrews; one whereof, marked 4, ſerves to raiſe or depreſs the tube at pleaſure, for bringing it towards the level. The top of the ball and ſocket is rivetted to a little ruler that ſprings; one end whereof is faſtened with ſcrews to the great ruler, and the other end has a ſcrew 5, ſerving to raiſe and depreſs the inſtrument, when nearly level.

This inſtrument is yet leſs commodious than the following one, becauſe, though the holes be ever ſo ſmall, yet they will ſtill take in too great a ſpace to determine the point of level preciſely.

Level, *Air, with teleſcopic ſights.* This level, repreſented in *Plate* VI. *Surveying*, *fig.* 2, is like the laſt; with this difference, that, inſtead of plain ſights, it carries a teleſcope, to determine exactly a point of level at a good diſtance.

The teleſcope is in a little braſs tube, about fifteen inches long, faſtened on the ſame rule as the level. At the end of the tube of the teleſcope marked 1, enters the little tube 1, carrying the eye-glaſs and a hair horizontally placed in the focus of the object-glaſs 2; which little tube may be drawn out, or puſhed into the great one, for adjuſting the teleſcope to different ſights. At the other end of the teleſcope is placed the object-glaſs; the ſcrew 3 is for raiſing or lowering the little fork carrying the hair, and making it agree with the bubble of air when the inſtrument is level; and the ſcrew 4 is for making the bubble of air agree with the teleſcope. The whole is fitted to a ball and ſocket.

M. Huygens is ſaid to have been the inventor of this level; which has this advantage, that it may be inverted, by turning the ruler and teleſcope half round; and if then, the hair cut the ſame point that it did before the turn, it is a proof the operation is juſt.

It may be obſerved, that one may add a teleſcope to any kind of level, by applying it upon, or parallel to, the baſe, or ruler, when there is occaſion to take the level of remote objects.

For the method of adapting a level to the meridian teleſcope, ſee Telescope.

Mr. Hadley has contrived a ſpirit-level to be fixed to a quadrant for taking a meridional altitude at ſea, when the horizon is not viſible. See the deſcription and figure of it in the Phil. Tranſ. N° 430, p. 167, &c. or Martyn's Abridg. vol. viii. p. 358, &c. See alſo the method of preparing and uſing a water level, and a mercurial level, annexed to Davis's quadrant, for the ſame purpoſe, by Mr. Leigh, in Phil. Tranſ. N° 451. p. 413. or Abr. vol. viii. p. 360, &c.

Level *of M. Huygens's Invention* conſiſts of a teleſcope, *a*, (*Plate* VI. *Surveying*, *fig.* 3.) in form of a cylinder; going through a ferril, in which it is faſtened by the middle. This ferril has two flat branches, *b b*, one above and the other below; at the ends of which are faſtened little moving pieces, which carry two rings, by one of which the teleſcope is ſuſpended to a hook at the end of the ſcrew 3; and by the other, a pretty heavy weight is ſuſpended in order to keep the teleſcope in equilibrio. This weight hangs in the box 5, which is almoſt filled with linſeed oil, oil of walnuts, or other matter that will not eaſily coagulate, for more aptly ſetting the balance of the weight and teleſcope. The inſtrument carries two teleſcopes, cloſe and very parallel to each other, the eye-glaſs of the one being againſt the object-glaſs of the other, that one may ſee each way without turning the level. In the focus of the object-glaſs of each teleſcope, muſt a little hair be ſtrained horizontally, to be raiſed or lowered as occaſion requires, by a little ſcrew. If the tube of the teleſcope be not found level when ſuſpended, a ferril or ring, 4, is put on it, and is to be ſlid along till it fixes to a level. The hook on which the inſtrument is hung, is fixed to a flat wooden croſs; at the ends of each arm of which there is a hook, ſerving to keep the teleſcope from too much agitation in uſing, or in carriage. To the ſaid flat croſs is applied another hollow croſs, that ſerves as a caſe for the inſtrument; but the two ends are left open, that the teleſcope may be ſecured from the weather,

ther, and always in a condition to uſe. The foot of this inſtrument is a round braſs plate, to which are faſtened three braſs ferrils, moveable by means of joints, wherein are put ſtaves: and on this foot is placed the box.

In the portable *ſpirit-level*, the tube is properly ſet in braſs, and fixed by means of ſcrews in a ſmall braſs trough, the bottom of which is ground very ſtraight. The ſcrews are uſeful to place the bubble in ſuch a poſition that the lower ſurface of the trough may be parallel to a tangent ſuppoſed to be applied to the middle point of the curve of the level. The adjuſtment is effected without much difficulty, by placing the level on an adjuſtable plane, and then reverſing it. If the bubble ſtand accurately in the ſame poſition between two marks made on the tube in both ſituations of the level, it follows, that neither end of the plane nor of the lower ſurface of the frame of the level is elevated; or, in other words, that every ſurface to which the level may be applied, and on which the bubble ſtands in the poſition here mentioned, is horizontal.

This eaſy praxis may be effected in various ways, according to the nature and figure of the inſtrument of which the poſition is to be determined; but the accuracy of the reſult will depend upon the ſenſibility of the level; that is to ſay, the ſpace paſſed over by the bubble for every minute or ſecond of the quadrant, and the certainty with which, under circumſtances preciſely ſimilar, it ſhall arrive at the ſame poſition. In the beſt levels the curve muſt be circular; for in ſuch the bubble will move with more activity, ſettle itſelf with more certainty, and deſcribe equal ſpaces by equal changes of inclination. An ordinary good ſpirit-level will exhibit a movement of upwards of half an inch for each minute of inclination, and alter the poſition of its bubble by a change of five ſeconds, or leſs. In ſuch a tube the radius of the curve will be about 150 feet. But extraordinary levels are much more delicate. De Lalande ſpeaks of a level filled with ether, the bubble of which paſſed over fourteen inches by equal ſpaces of one-tenth of an inch for every ſecond. The radius of this curve was conſequently 1719 feet, or near one-third of a mile.

The tubes of ſpirit-levels are ſelected by trial. If a long piece of tube be nearly filled with ardent ſpirit, and corked at the ends, the run of the bubble may be tried with a ſuitable inſtrument called the level-trier, throughout the whole length on all ſides. By this means it may be known whether, and in what parts, it may be deſirable to divide the tube for the purpoſes of filling and cloſing. It is remarkable that theſe tubes in general prove either good throughout, or good for nothing; for it ſeldom happens, where one good level can be taken, that the remainder is unſerviceable. A reſpectable mathematical inſtrument-maker aſſures us, that he finds it a good practice to go to the glaſs-houſe and cauſe the tubes to be drawn without ſuffering them to be turned round.

But the moſt regular and accurate levels are obtained by grinding the inſide of the tube. For this purpoſe, a cylindrical piece of wood is turned ſo as to go eaſily through the portion of tube intended to be ground. It is then worked in the tube with water and fine emery in the uſual way. As ſoon as the poliſh has by this means diſappeared on one ſide, the tube is cleaned, filled, and tried; and accordingly as its figure proves to be more or leſs ſtraight or curved, the grinding is either repeated or diſcontinued. Some operators poliſh the inſide again after grinding; but this has not been found to increaſe their ſenſibility.

From the great delicacy of the ſpirit-level, compared with the few obſervations here preſented on the plumb-line, the former inſtrument may appear greatly to deſerve the preference. Aſtronomers are not however agreed on this point. When a ſpirit-level is adjuſted by reverſing, at a certain temperature, and both ends of the bubble marked, it may be allowed that the inſtrument may be ſucceſsfully applied to uſe. But if the temperature be raiſed, the ſpirit will expand, and of courſe the bubble will become ſhorter. Whence it appears neceſſary that a diviſion and adjuſting piece ſhould be applied, from experiment, to aſcertain the true ſtation of the bubble at different temperatures; and even this application ſeems ſcarcely adequate to ſupply the place of repeated adjuſtments. The variation of the bubble will differ according to the quantity of ſpirit contained in the tube. In two good levels, of nearly the ſame magnitude and figure, we found it amount to one-fifth of an inch for every ten degrees of Fahrenheit. The bubble therefore may be one inch longer in winter than in ſummer, which in theſe individual levels amounts to near one-third of the ſummer length. The curvature of a ſpirit-level will alſo vary from unequal temperature; ſuch, for example, as may ariſe from one end of the tube being touched or breathed upon, while the other end is left at the original temperature. The error from each of theſe cauſes may amount to ſeveral minutes, as is eaſily ſhewn by trial; but we do not find that the preſence or abſence of ſunſhine cauſes any perceptible difference. It is probable that the rays may not ſpeedily alter the temperature, on account of the tranſparency. And with regard to theſe three laſt ſources of error, it muſt be allowed that they are eaſy to be avoided, and indeed not likely to be preſent in the operations of accurate obſervers.

We have, in *Plate* V. *Surveying*, given figures of two levels by the moſt celebrated makers, the late Mr. Jeſſe Ramſden, and another by Mr. Troughton: of the former, A B, *fig.* 3, is the teleſcope, having the ſpirit-level C D fitted in a braſs tube, fixed beneath it. The teleſcope is ſupported at its ends by reſting on angular notches in two pieces of braſs, Y 1, Y 2, called the *wyes*, from their reſemblance to that letter. It is held in the angles of the wyes by a clip *r r*, ſhutting down over each and pinned faſt. The wyes are ſupported on a braſs bar E E, the middle of which has a large circular aperture in it, to receive a compaſs needle. A bottom plate *a a*, being ſcrewed under this aperture in the bar, and a glaſs cover fitted over it, forms the compaſs-box F, in which the magnetic needle turns round. The bottom *a a* of the compaſs-box has a long axis faſtened to it, which is fitted into the dome of the circular plate G, and alſo paſſes through a ſpherical ball, ſhewn by the dotted lines to be ſcrewed faſt to the underſide of the dome of the plate. Upon this axis, the teleſcope-level and compaſs-box turn round horizontally: the ball, juſt mentioned, is received in a correſponding cavity in the ſocket R, which is part of the plate H. By this ball and ſocket the two plates G and H are united, but not confined to be parallel, though they are called the parallel plates. Four ſcrews (two of which are ſeen at I K) paſs through the plate H, and their heads ſupport the plate G, which can, by means of them, be placed horizontal, (and conſequently the axis fixed in it vertical,) though the lower plate is not horizontal, which will depend upon accident, as it is ſupported on three legs ſet on the ground, and may therefore partake of its inclination. The legs are not ſhewn in *fig.* 1, but are the ſame as thoſe ſeen in *fig.* 3, at L M N: they are all jointed into the ſame piece of braſs O, which has a large ſcrew on the top of it, entering a female ſcrew in the interior of the projecting part R, *fig.* 3, of the plate H. When ſhut up, the three legs form one round ſtaff, and are ſecured for carriage by rings put on them: when opened out, they make a very firm ſtand on the ground, though it be ever ſo uneven. Theſe being the chief parts of the inſtrument, we have only to notice the contrivances for adjuſting every part to perform accurately. The mill-headed nut *d*, at the top of the teleſcope, being turned, thruſts forth a tube *e*, contained within the external tube of the teleſcope, and carrying the object glaſs, which is by this means adjuſted to its focal diſtance, ſo as to ſee an object diſtinctly at any diſtance. The teleſcope has two wires in the eye-end at *f g* croſſing each other perpendicularly: it is by interſecting theſe the object is viewed. The eye-piece, L, of the teleſcope ſlides in its tube to adjuſt the focal diſtance of the eye-glaſſes. That theſe wires may be ſeen diſtinctly, the level is ſuſpended from the teleſcope at one end by a ſcrew D, which adjuſts it parallel to the axis or line of ſight of the teleſcope. At the oppoſite end C is another ſcrew adjuſtment, to make it parallel in the direction ſideways, that is, in the ſame vertical plane with the axis of the teleſcope. The Y 2 is ſupported in a ſocket M, and can be raiſed or lowered by the ſcrew N, to make the level and teleſcope truly perpendicular to the vertical axis repreſented by the dotted lines. The ſcrew O is for turning the axis about to direct the teleſcope to any object: it operates upon a ring or clump of braſs P, which encloſes, and is fixed to, the axis when the ſcrew S is turned, but when this ſcrew is ſlack, the clump releaſes the axis, that the teleſcope may be turned round readily, to bring the deſired object into the field of view: then by ſcrewing S the teleſcope is made faſt, but may ſtill be turned a ſmall quantity by the ſcrew O to direct it exactly to the object.

The compaſs contained in the bar E E is for taking bearings of any object; but as its uſe is not connected with the operations of levelling, and has been fully deſcribed under the article CIRCUMFERENTOR, we refer to that article.

Previous to taking any levels by this inſtrument, the adjuſtments ſhould all be verified by the obſerver; for though they are ever ſo accurately done by the maker, they are not to be depended upon after the inſtrument has been carried about, or uſed; and for this reaſon they are all ſo contrived, as to be done with care in the open air. The proceſs is as follows: open the three legs, and ſet them firmly upon the ground, placing the parallel plates G and H as nearly horizontal as can be gueſſed.

1ſt. *Adjuſt the level* C D *to be parallel to the teleſcope* in the following manner: Open the clips *r, r*, which confine the teleſcope in the wyes, and turn the ſcrew N till the bubble comes into the middle, as is ſhewn by two ſcratches on the glaſs tube. Now lift the teleſcope gently out of the wyes, and reverſe or turn it end for end, and if the bubble ſtands where it did before, all is right; if it goes to either end, obſerve how much it is from the centre, and by turning the ſcrew N depreſs the end towards which the bubble runs, (or, what has the ſame effect, elevate the other end,) until the bubble returns one-half the quantity of its error. Now by the ſcrew D alter the level the other half the error; if theſe halves were correctly eſtimated, it will be right, as is proved by the bubble ſtanding right on returning the teleſcope to its original poſition. If not right now, the adjuſtment muſt be repeated till the bubble ſtands right either way, which proves the level and the teleſcope to be exactly parallel; the two cylindrical parts of the teleſcope, where the wyes receive it, being made preciſely the ſame diameter.

2dly. *To make the croſs-wires in the teleſcope interſect each other in the axis or line of collimation thereof.*—The eye-piece L being drawn out to ſee the wires diſtinctly, direct the teleſcope to any diſtant object, and by the nut *d* adjuſt the focal diſtance to ſee it clearly: ſelect ſome ſtraight line in the diſtant object, as the ſide of a window, &c. Then by the ſcrews N or O, one elevating the teleſcope, the other moving it ſideways, and by turning the teleſcope in its wyes, bring one of the croſs-wires to coincide with the ſtraight line of the diſtant object, without regarding the level. Now turn the teleſcope half round on its own axis, as it lies in the wyes; and if the croſs-wire is truly in the axis it will not appear to have changed its poſition; but if it has, the wire muſt be moved, by turning an oppoſite hair of the four ſcrews at *f g*: by theſe move the wire acroſs the field of view one-half of the error, and by the ſcrews N or O turn the teleſcope back the other half. The other wire is now done in the ſame manner, by obſerving its coincidence with a diſtant object, and then turning the teleſcope half round on its own axis; and both wires may be proved by obſerving a ſmall object, as a circular chalk mark, &c., to be in the interſection of both wires; and turning the tube round on its axis, it will, if right, appear in the interſection in all poſitions. The inſtrument is now prepared for taking levels in the manner explained under LEVELLING; and, if carefully uſed, need not be re-adjuſted for many days.

The level above deſcribed, is that which is in the moſt general uſe, great numbers having been made by Mr. Ramſden, and ſince his deceaſe by his numerous pupils. It is certainly an excellent inſtrument in the hands of thoſe who are ready and expert in the manupilation of the adjuſtments juſt deſcribed, and who are careful to repeat them when neceſſary.

The inſtrument delineated in *fig.* 4. has lately been brought forwards by Mr. Edward Troughton. Its conſtruction is ſo compact, that the parts are little liable to derangement, and therefore do not need ſo many proviſions for adjuſting, by which the inſtrument is ſimplified and rendered more portable. A B is the teleſcope, and D E the level; its braſs tube being partly received into the teleſcope, and ſoldered faſt thereto, ſo as to be in no danger of altering its poſition: the teleſcope is ſcrewed to a ſtrong braſs bar F F, which ſcrews faſt to the top of a conical ſocket G, that turns upon a vertical axis faſtened to the plate H: this is united to the lower plate I by a ball and ſocket, and the four ſcrews ſcrewing through the upper plate, and reſting on the lower, give the means of always ſetting the axis vertical: the joints O for the three legs L, M, N, are fixed to the lower ſide of the plate H: the compaſs-box P is ſupported over the level by four ſmall pillars; by this means it is more readily obſerved than when beneath, and gives the means of laying the teleſcope ſo cloſe to the braſs bar F, that it is much more firm than the former inſtrument. The bubble of the level is ſo long, that its ends appear on both ſides of the compaſs-box, and is ſhewn to be in the middle by ſcratches on the glaſs at *a b*, as uſual.

The ſcrews which hold the teleſcope to the plate F are covered by caps of braſs, which defend them from accidental alteration, but admit their adjuſtment when neceſſary. To make the teleſcope exactly perpendicular to the vertical axis, the only adjuſtment the inſtrument requires beſides this is the eye-piece. It has, in lieu of croſs-wires, a ſmall micrometer or divided ſcale, of mother-of-pearl, fixed perpendicularly acroſs the field of view, the divided edge interſecting the line of collimation: the central diviſion of the ſcale has a ſmall hole through it for diſtinction. It is this by which the levels of objects are obſerved, and it therefore croſſes the axis of the teleſcope. It can be adjuſted exactly to this by a ſcrew *d* at top, and another *e* beneath the tube. The manner of adjuſting this inſtrument is as follows: the legs being ſet on firm ground, the vertical axis is adjuſted, in the ſame manner as every other level is preparatory to making obſervations, *viz.* by ſetting the teleſcope over any oppoſite two of the four ſcrews in the parallel plates, and turning theſe ſcrews, one in and the other out, till the bubble comes right; then turn it half round, by applying the finger and thumb to the large milled nut on the top of the ſocket G. If it is level when thus reverſed, all is right; if not, it ſhews the level is not perpendicular to the axis, and one-half the error muſt be corrected by the ſcrews under the ends of F, and the other half by the ſcrews of the parallel plates, the teleſcope being turned over the other pair of ſcrews; and they are adjuſted in the ſame manner. Now the axis is vertical, as is ſhewn by the bubble ſtanding ſtill while the teleſcope is turned all round. The plate F, being once adjuſted in this manner, will not ſoon be deranged, and when it is will immediately diſcover itſelf, and be as eaſily reſtored. The line of ſight, or line of collimation of the teleſcope, is made parallel to the level, by an actual trial in the field, which indeed is the moſt accurate method, and is reſorted to for very delicate purpoſes. In the inſtrument before deſcribed, to verify the adjuſtments after making them, the method of trial is applicable to a level of any kind, and is deſcribed under Levelling. The micrometer ſcale in the eye-piece is very uſeful in levelling; it gives the means of roughly eſtimating equal diſtances from the inſtrument in any direction. A man who attends the obſerver holds up a ſtaff of ſix feet, or any other length, perpendicular, and the obſerver, looking at it through the teleſcope, notices how many diviſions of the micrometer ſcale the ſtaff appears to ſubtend; then, if the man recedes from the inſtrument until the ſame ſtaff reaches the ſame number of diviſions, he will be at the ſame diſtance from the inſtrument. This property is extremely convenient in many inſtances which occur in the uſe of a level.

Level, *American*, is an inſtrument which is formed of two pieces of thin wood of equal length, joined together at top, and connected below by a croſs bar; from the angle at top a lead plummet is ſuſpended by a ſmall cord, which, when the inſtrument ſtands level on both legs, ſtrikes upon a mark in the centre of the connecting bar, as repreſented by *a*, *fig.* 4. in *Plate* VI. *Surveying*. The manner of uſing it is ſimply this: At the place from which the level is to be taken, drive a wooden peg in the ground, cloſe in to the top, upon which one of the legs of the frame may reſt; then bringing round the other leg till it touch the ground, there drive in a ſecond peg, turning round the other leg as before; and where it touches the ground again, drive in another peg, and ſo on along the whole line to be levelled. Thus, with very little trouble, and with as much accuracy as with the fineſt ſpirit-level, will the courſe of the drain be eaſily aſcertained. But as it is neceſſary the drain ſhould have as much declivity as to allow the water to run freely, it will be requiſite, in taking the level, to regulate the direction of the line accordingly. Half an inch fall in the length of the frame will be ſufficient, and ſometimes even leſs. For this purpoſe, it will be expedient to have, beſides a number of wooden pegs, one iron pin, with inches and halves marked regularly upon the ſides of it from the top downwards. After having drove in the firſt wooden peg at the point from whence you mean to conduct the drain, and having reſted the one leg of the frame upon it, turn round the other till it be level with the firſt peg; there put in the iron pin, ſo that this leg of the frame may reſt on the top of it when level; then drive in a wooden peg ſo far, as that the top of it may be half an inch lower than that of the iron pin. Place the leg of the frame again upon this ſecond peg, turn it round to a level, putting in the iron pin till the top of it be equal with the foot of the frame; then drive in another wooden peg cloſe by the ſide of it, till the top of the wooden one be half an inch lower than that of the iron pin. Proceed in this manner ſo far as you mean to carry the drain, which will have the ſame degree of declivity all the way along. A line thus ſet off is marked from *c* to *d* in the figure. When made on a ſmaller ſcale, it is uſeful in aſcertaining the proper deſcent along the bottom of a drain, while the workmen are laying it; but when made for this purpoſe, the croſs bar muſt be fixed to the bottom of the legs, as marked with dotted lines in the plate.

There is a watering level which is much uſed in ſome places, which is formed of different pieces of wood, &c.; the uſual length given it being five feet and a half, and the height from four feet to four feet and a half, according to the height of the perſon who is to make uſe of it.

The *object ſtaff*, *fig.* 5, *Plate* VI. *Surveying*, ſhould be made exactly of the ſame height with the level. The croſs piece, *fig.* 6, ſhould be ſufficiently large to be ſeen diſtinctly at a diſtance, and muſt be painted white for the purpoſe.

This level, in the experience of Mr. Marſhall, has been found "preferable to any other level now in uſe, as being equally accurate in aſcertaining the relative heights of diſtant objects, as in minutely tracing ſtep by ſtep the required line of communication, ſo as to give every part of it an equal and uniform deſcent." In its uſe in ſetting out a level, ſo as to fix the fall accurately at one inch, foot, or yard, in a hundred of any of them, on the face of the level, which is found in general to be the moſt proper; it is directed to meaſure out one hundred feet on level ground, placing the level at one end, the object-ſtaff at the other, and then adjuſting their tops to a dead level, by a dead level line exactly drawn on the face of the implement (*viz.* a line drawn at right angles with the upper edge of the top rail,) as ſhewn at *a*, in the figure, then meaſuring one foot downward on the ſtaff, and there holding a rule or other ſtraight edge level acroſs the ſtaff; bringing the top of the level, by raiſing its hinder foot, to range accurately with the upper ſide of the rule, and while they remain at reſt in this poſition, a mark muſt be made where the plummet-line reſts againſt the face of the level. After this meaſure out a hundred yards, and proceed in the ſame manner, in order to prove or rectify the firſt mark, on which a permanent line muſt be ſunk on the face of the level *b*, in the figure, which in water-work is better than the plumb-line. Where the ground to which the water is to be conducted can be ſeen from the place whence it is to be taken, the ſtaff ſhould be ſet upon the higheſt part to which it is deſirable to raiſe the water, and the level at the ſource, and after having correctly adjuſted the top of the latter to that of the former mark, where the plummet reſts on the face of the level, where it reſts between *a* and *b*, it is neceſſary to conſider the caſe, as, where the extent of land is ſmall, and that of the water unlimited, little fall may be ſufficient; but in the contrary circumſtances, it would be improper to let it waſte by the way more than is neceſſary; of courſe where the plummet reſts much within the water-line, the ſtaff muſt be moved and ſet lower down on the ſlope till the requiſite fall is gained. But where the plummet is found to reſt on the right-hand ſide of the water-line, mark the plan and draw a pencil line, (which will be ſufficiently durable for a ſingle work, and may afterwards be eaſily rubbed out on the face of the level,) correſponding to the line of the plummet, as the dotted line *c*, and thus fix the fall in this caſe, always making due allowance, in tracing and ſtaking out the line with the level thus ſet, for the crookedneſs of the courſe; as from this lengthening the line, the declination of the channel is proportionally leſſened.

It is ſuppoſed further, that "many ingenious additions" might be made to this level; but that "they would be injurious to its preſent ſimplicity." Any country carpenter may be eaſily inſtructed to conſtruct it in its preſent form, and "any common labourer be eaſily taught to uſe it, either in forming roads or water-courſes." It is, however, beſt adapted to the latter uſe.

Dr. Deſaguliers contrived an inſtrument, by which the difference of level of two places, which could not be taken in leſs than four or five days with the beſt teleſcope levels, may be taken in as few hours. The inſtrument is as follows:

To the ball C (*Plate* VI. *Surveying*, *fig.* 7.) is joined a recurved tube B A, of a very fine bore, with a ſmall bubble at the top A, whoſe upper part is open. From the conſtruction of this inſtrument, it is evident, that if it be inclined in carrying, no prejudice will be done to the liquor, which will always be right both in the ball and the tube, when the inſtrument is ſet upright. If the air at C be ſo expanded by heat, as to drive the liquor to the top of the tube, the cavity A will receive the liquor, which will come down again, and ſettle at D, or near it, according to the level of the place where the inſtrument is, as ſoon as the air at C returns to the ſame temperament as to heat and cold. For preſerving the ſame degree of heat, when the different obſervations are made, the machine is fixed in a tin-veſſel, E F, filled with water up to *g h*, above the ball, and a very ſenſible thermometer has alſo its ball under water, that one may obſerve the liquor at D, in each experiment, when the liquor in the thermometer ſtands at the ſame height as before. The water is poured out when the inſtrument is carried, which may be done conveniently by means of the wooden frame (*fig.* 8.), which is ſet upright by three ſcrews, S, S, S, and a line and plummet P P (*fig.* 9.) At the back part of the wooden frame (*fig.* 10.) from the piece at top, K, hangs the plummet P, over the braſs point at N. M, *m*, are brackets for keeping the upright board, K N, at right angles with the horizontal one at N. The machine ſeen in front is repreſented *fig.* 11, ſuppoſing the fore-part of the tin veſſel tranſparent; and here the braſs ſocket of the recurved tube, into which the ball is ſcrewed, has two wings at I I, fixed to the bottom, that the ball may not break the tube by its endeavour to emerge, when the water is poured in as high as *g h*.

After Dr. Deſaguliers had contrived this machine, he conſidered, that as the tube is of a very ſmall bore, if the liquor ſhould riſe into the ball at A (*fig.* 7.) in carrying the inſtrument from one place to another, ſome of it would adhere to the ſides of the ball A, and upon its deſcent in making the experiment, ſo much might be left behind, that the liquor would not be high enough at D to ſhew the difference of the level; therefore, to prevent that inconveniency, he contrived a blank ſcrew, to ſhut up the hole at A, as ſoon as one experiment is made, that in carrying the machine, the air in A may balance that in C, ſo that the liquor ſhall not run up and down the tube, whatever degree of heat and cold may act upon the inſtrument, in going from one place to another. Now becauſe one experiment may be made in the morning, and the water may be ſo cold, that when a ſecond experiment is made at noon, the water cannot be brought to the ſame degree of cold it had in the morning; therefore, in making the firſt experiment, warm water muſt be mixed with the cold, and when the water has ſtood ſome time before it comes to be as cold as it is likely to be at the warmeſt part of that day, obſerve and ſet down the degree of the thermometer at which the ſpirit ſtands, and likewiſe the degree of the water in the barometer at D; then ſcrew on the cap at A, pour out the water, and carry the inſtrument to the place whoſe level you would know; then pour in your water, and when the thermometer is come to the ſame degree as before, open the ſcrew at top, and obſerve the liquor in the barometer.

The doctor's ſcale for the barometer is ten inches long, and divided into tenths; ſo that ſuch an inſtrument will ſerve for any heights not exceeding ten feet, each tenth of an inch anſwering to a foot in height.

The doctor made no allowance for the decreaſe of denſity in the air, becauſe he did not propoſe this machine for meaſuring mountains (though with a proper allowance for the decreaſing denſity of the air, it will do very well,) but for heights to be known in gardens, plantations, and the conveyance of water; where an experiment that anſwers to two or three feet in a diſtance of twenty miles, will render this a very uſeful inſtrument. Deſaguliers's Exp. Phil. vol. ii. p. 372, &c.

LEVEL is a term uſed to denote a length or pound of a canal, and alſo the adit or ſough to a mine or engine-pit.

LEVEL-*pegs*, are ſmall ſtakes uſed in levelling out an intended canal; and they are uſually placed at the level of the top bank, as at *d*, *Plate* I. *Canals*, *fig.* 7 and 8.

LEVELLING, the art or act of finding a line parallel to the horizon, at one or more ſtations, in order to determine the height of one place with reſpect to another; for the laying grounds even, regulating deſcents, draining moraſſes, conducting waters, for the irrigation of land, &c.

The firſt proceſs, preparatory to taking any levels, is to prove the correctneſs of the inſtrument you employ for that purpoſe. Some inſtruments are contrived to prove themſelves, as deſcribed in LEVEL; but others require an actual trial in the field, which is a general method, and applicable to a level of any kind. If the level is made with plain ſights, the proof is very ſimple: firſt ſet it level, and obſerve ſome diſtant object; then turn the level, end for end, and obſerve the ſame object through the other ſight. If it is the ſame both ways, all is right; if not, the level muſt be altered one-half of the error thus diſcovered, which is doubled by this method of trial. For inſtance, if the line of ſight pointed down the firſt time, it will point as much upwards when uſed at the other end. A level with a teleſcope cannot be uſed at either end, and therefore this method is inadmiſſible, and the following may be adopted.

Chooſe a ſpot of ground where it is tolerably level for about twenty chains; ſet up the inſtrument at the point B, *fig.* 1. *Plate* VII. *Surveying*, and, levelling the teleſcope by the parallel plates, that the bubble will ſtand while it is turned all round, direct the teleſcope to a target held up by an aſſiſtant, upon a ſtake driven in the ground at D, at 20 chains diſtant. Your aſſiſtant muſt, according to your ſignals, elevate or depreſs the vane of the target, till it appears in the interſection of the croſs wires; now meaſure and write down the height B *b* of the centre of the teleſcope above a ſtake driven into the ground at B, ſuppoſe it four feet; and alſo write down the height D *d* at which the vane of the target ſtands, which ſuppoſe ſix feet; the difference between them, two feet, ſhews that B is two feet higher than D; but the line *b d*, being a tangent to the earth's ſurface at the point B, will be the apparent level; and the true level will be found, by deducting the allowance for 20 chains, ſhewn by the table of the earth's curvature to be .041 of a foot. Making, therefore, the true difference of level between B and D to be 1 959 feet, to prove this, level it the other way, removing the inſtrument to D, and the target to the ſtake at B. Obſerve in the ſame manner as before, and if it gives the ſame difference of level as before, after deducting the allowance, the inſtrument is correct; if, on the other hand, the reſults by the two methods do not prove the ſame, take half the difference between the two, and elevate or depreſs the target that quantity, according as the laſt obſervation was greater or leſs than the firſt, and adjuſt the inſtrument, either by the ſcrew under the level, or the ſcrews of the croſs wires, until they appear to cut the vane of the target ſo corrected, when the bubble is in the middle. The inſtrument is now corrected, but the trial ſhould be repeated to make it certain.

The following method of adjuſting a ſpirit-level is rather preferable, as it does not require the inſtrument to be removed; but it is only applicable to thoſe inſtruments where the teleſcope lies in wyes, and can be removed. Set up the level, as at A in *fig.* 2, ſo that you can ſee both ways for about 100 yards; fix up a ſtaff in each direction at B and C, 100 yards diſtant, ſo that the two ſtaves and the teleſcope are in a line. Now give your aſſiſtant two circular pieces of card, about twice the diameter of the teleſcope where it lies in the wyes, with a hole through the centre of each, large enough to receive the tube of the eye-piece of the teleſcope; now level the teleſcope, and your aſſiſtant applies one of the cards againſt one of the ſtaves, B for inſtance, and moves it up and down, till its centre appears to the obſerver to interſect the wires. The aſſiſtant now faſtens it to the ſtaff at *a*, by two pins, but ſo that the centre hole can be ſeen clear through by the ſide of the ſtaff. The teleſcope is now turned half round, and directed to the other ſtaff C, which is fitted with a card at *b*, the ſame as the former. This being done without diſturbing the inſtrument, take the teleſcope out of its wyes, and ſhut down the clips again; carry the teleſcope to one of the ſtaves B, and applying its eye-piece to the hole in the centre of the card at *a*, direct the teleſcope to the wyes of the level, and, looking through them, if the card *b* on the diſtant ſtaff C appears to fit in the wyes, the level is proved correct; if it does not, mark the place where the card *a* is fixed to the ſtaff B, unpin it, and ſlide it up or down, till the diſtant card appears to fit in the wyes. Mark this poſition of the card, *viz.* at *d*, and pin it on in its firſt poſition; repeat this operation at the ſtaff C, and the card *b* will be removed to E. The figure explains the principle of this proceſs: in the firſt operation the teleſcope ſet out the inclined line A *a*, inſtead of a horizontal line; the next operation was obſerving the inclined line A *b*; the third operation at the ſtaff B formed a continuation of the inclined line *b* A to *d*; and the fourth operation continued *a* A as far as *e*. In this ſtate it is evident, if the ſpaces *a, d, b, c*, each of which are double the error of the inſtrument, are divided into two equal parts at the points *f, g*, that the line *f* A *g* will be truly horizontal, and the inſtrument may be adjuſted by the ſcrews under the level, ſo as to point to *f* or *g* when the bubble is in the middle.

One place is ſaid to be higher than another, or *out of level* with it, when it is more remote from the centre of the earth; and a line equally diſtant from the centre of it in all its points, is called the *line of true level:* whence, becauſe the earth is round, that line muſt be a curve, and make a part of the earth's circumference, or an arc concentrical with it, as the line B C F G, *Plate* VII. *Surveying*, *fig.* 3, all the points whereof are equally diſtant from the centre of the earth A.

But the line of ſight, which the operations of levels give, is a tangent, or a right line perpendicular to the ſemi diameter of the earth; one extreme of which tangent being the point of contact, the other will be that of a ſecant drawn from the centre of the earth: and the point which determines it, will be above the ſurface of the earth, and of the true level, as much as that ſecant exceeds the radius, or ſemidiameter of the earth.

This extremity of the tangent is ſaid to be in the apparent level, as being that given by the ſight; but is eaſily reduced to the *true* level, becauſe we know by trigonometry, how much each ſecant exceeds the radius; and becauſe by meaſuring, we have diſcovered the preciſe length of that radius. Or, ſince the apparent level between the places B and C is B D, and the true level is the arc B C; it is plain that the former riſes above the latter by the line C D. But by a well known property of the circle $\overline{2\,A\,C + C\,D} \times C\,D = B\,D^2$, and the diameter of the earth being ſo great with reſpect to the line C D at all diſtances to which the operation of levelling commonly extends, that 2 A C may be ſafely taken for 2 A C + C D without any ſenſible error, we ſhall have $2\,A\,C \times C\,D = B\,D^2$, and $C\,D = \frac{B\,D}{2\,A\,C}$, *i. e.* the difference between the true and apparent level is equal to the ſquare of the diſtance between the places divided by the diameter of the earth, or the riſe of the apparent above the true level is proportional to the ſquare of the diſtance. It was for want of the knowledge of this, that the ancients were not able to reduce the apparent level to the true one; and accordingly, to prevent falling into an error, never levelled above twenty feet at once, where ſuch reduction was not neceſſary.

By the table ſince made, it appears, that at the diſtance of 100 yards the apparent level is raiſed above the true one about one-third of a line; ſo that the ancients, in this reſpect, were more ſcrupulous than needful. By means of this reduction, we are now able to level diſtances of one or two miles at a ſingle operation, which the ancients could not do in leſs than three hundred.

The following table, for ſhewing the height of the apparent level above the true, was calculated by Mr. Ferguſon, to the extent of a whole degree of a great circle on the earth's ſurface, and it agrees ſo nearly with one of the ſame ſort in Dr. Long's Aſtronomy, as not to differ quite two inches from it at the end of the whole degree, which contains 60 geographical miles, equal to $69\frac{1}{4}$ Engliſh miles. The uſe of this table is as follows: If the quantity of an arc of a great circle on the earth's ſurface is given in minutes or ſeconds of a degree, its meaſure may be found in feet and inches. Thus, ſuppoſe the arc contains ten ſeconds, which is the ſixth part of a geographical mile, its meaſure is 1015 feet 8 inches. So an arc of one minute of a degree, which is one geographical mile, contains 6094 feet, or 2031 yards 1 foot; which is 271 yards 1 foot longer than an Engliſh mile. To find how far one can ſee in a true horizon (as at ſea) when the eye is raiſed to any given height above the horizon: ſuppoſe the eye of an obſerver upon a ſhip at ſea to be 23 feet two inches above the ſurface of the water, he will then ſee 30,470 feet all around him, or to the diſtance of 5 geographical miles.

Suppoſe the top of a mountain in the ſea to be ſeen at the diſtance of 60 geographical miles, or one degree, by an obſerver, whoſe eye is cloſe at the ſurface of the ſea; the height of that mountain is 3191 feet 1 inch, nearly, above the ſurface of the ſea. An Engliſh mile is 5280 feet, a geographical mile 6094.

Suppoſe a ſpring to be on one ſide of a hill, and an houſe on an oppoſite hill, with a valley between them; and that the ſpring ſeen from the houſe appears, by a levelling inſtrument, to be on a level with the foundation of the houſe, and is a mile from it; the apparent level of the ſpring is 10$\frac{6}{10}$ inches above the true level of the houſe: and this difference would be ſufficient for the water to be brought in pipes from the ſpring to the houſe; the pipes being laid all the way in the ground.

If the diſtance of the object be greater than 60 minutes, or geographical miles, its height above the true level may be found thus. Suppoſe an eye at the ſurface of the ſea ſees the top of a mountain, which he knows to be 90 geographical miles, or a degree and a half diſtant from him: take half that number of miles, and multiply the height of the apparent level above the true, anſwering to that half diſtance, by 4; and the product will give the perpendicular height of that mountain. Thus, the half of 90 is 45, againſt which (in the table) ſtands 1794 feet 11,763 inches; which being multiplied by 4, gives 7179 feet 11 inches for the perpendicular height of the mountain above the level of the ſea.

According to theſe meaſures, the earth's circumference is 131,630,400 feet, or 24,930 Engliſh miles.

At the diſtance of 1 ſecond of a degree (or $\frac{1}{60}$th of a geographical mile) the height of the apparent level above the true is .0029547 parts of an inch; at two ſeconds diſtance it is four times as much; at three ſeconds, nine times; at four ſeconds, 16 times as much; and ſo on, always increaſing in proportion to the ſquare of the diſtance.

A TABLE, ſhewing the Height of the apparent Level above the true, at any Diſtance within a Degree of a great Circle on the Earth's Surface; calculated to the 1000dth Part of an Inch.

Seconds.	Feet.	Inches.	Inches.	Minutes.	Feet.	Feet.	Inches.
If the diſtance of the object from the place of the ſpectator be	which meaſured in a great circle upon the earth, amounts to		the height of the apparent level above the true will be	If the diſtance of the object from the place of the ſpectator be	which meaſured in a great circle upon the earth, amounts to	the height of the apparent level above the true will be	
1	101	6.8	0.003	1	6094	0	10.637
2	203	1.6	0.012	2	12188	3	6.548
3	304	8.4	0.027	3	18282	7	11.732
4	406	3.2	0.047	4	24376	14	2.191
5	507	10.0	0.074	5	30470	22	1.923
6	609	4.8	0.106	6	36564	31	10.929
7	710	11.6	0.145	7	42658	43	5.209
8	812	6.4	0.189	8	48752	56	8.763
9	914	1.2	0.239	9	54846	71	9.591
10	1015	8.0	0.295	10	60940	88	7.692
11	1117	2.8	0.357	11	67034	107	3.067
12	1218	9.6	0.425	12	73128	127	7.716
13	1320	4.4	0.499	13	79222	149	10.025
14	1421	11.2	0.579	14	85316	173	8.836
15	1523	6.0	0.665	15	91410	199	5.307
16	1625	0.8	0.756	16	97504	226	11.052
17	1726	7.6	0.854	17	103598	256	2.070
18	1828	2.4	0.947	18	109692	287	2.362
19	1929	9.2	1.067	19	115786	319	11.928
20	2031	4.0	1.182	20	121880	354	6 768
21	2132	10.8	1.303	21	127974	390	10.882
22	2234	5.6	1.420	22	134068	429	0.267
23	2336	0.4	1.563	23	140162	468	10.931
24	2437	7.2	1.702	24	146256	510	6.866
25	2539	2.0	1.847	25	152350	554	0.075
26	2640	8.8	2.001	26	158444	599	2.558
27	2742	3.6	2.154	27	164538	646	2.315
28	2843	10.4	2.316	28	170632	694	11.345
29	2945	5.2	2.485	29	176726	745	5.649
30	3047	0.0	2.659	30	182820	797	9.228
31	3148	6.8	2.839	31	188914	851	10.080
32	3250	1.6	3.026	32	195008	907	8.206
33	3351	8.4	3.218	33	201102	965	3.606
34	3453	3.0	3.416	34	207196	1024	8.280

TABLE *continued.*

Seconds.	Feet.	Inches.	Inches.	Minutes.	Feet.	Feet.	Inches.
If the diſtance of the object from the place of the ſpectator be	which meaſured in a great circle upon the earth, amounts to		the height of the apparent level above the true will be	If the diſtance of the object from the place of the ſpectator be	which meaſured in a great circle upon the earth, amounts to	the height of the apparent level above the true will be	
35	3554	10.0	3.619	35	213290	1085	10.227
36	3656	4.8	3.829	36	219384	1148	9.448
37	3757	11.6	4.045	37	225478	1213	5.943
38	3859	6.4	4.267	38	231572	1279	11.712
39	3961	1.2	4.494	39	237666	1348	2.755
40	4062	8.0	4.728	40	243760	1418	3.072
41	4164	2.8	4.967	41	249854	1490	0.663
42	4265	9.6	5.212	42	255948	1563	7.527
43	4367	4.4	5.463	43	262042	1638	11.655
44	4468	11.2	5.720	44	268136	1716	1.077
45	4570	6.0	5.983	45	274230	1794	11.763
46	4672	0.8	6.252	46	280324	1875	7.723
47	4773	7.6	6.527	47	286148	1958	0.956
48	4875	2.4	6.808	48	292512	2042	3.464
49	4976	9.2	7.094	49	298606	2128	3.245
50	5078	4.0	7.387	50	304700	2216	0.300
51	5179	10.8	7.685	51	310794	2305	6.629
52	5281	5.6	7.989	52	316888	2396	10.232
53	5383	0.4	8.300	53	322982	2489	11.108
54	5484	7.2	8.616	54	329076	2584	9.259
55	5586	2.0	8.938	55	335170	2681	4 683
56	5687	8.8	9.266	56	341264	2779	9.381
57	5789	3.6	9.660	57	347358	2879	11.353
58	5890	10.4	9.940	58	353452	2981	10.598
59	5992	5.2	10.285	59	359546	3085	7.119
60	6094	0.0	10.637	60	365640	3191	0.912

Ferguſon's Tables and Tracts, p. 243, &c. See DEPRESSION *of the Horizon.*

The operation of levelling is as follows: Suppoſe the height of the point A (*Plate* VII. *Surveying*, *fig.* 4.), on the top of a mountain, above that of the point B, and at the foot thereof, required: place the level about the middle diſtance, between the two points, as in D, and ſtaffs in A and B; and let there be perſons inſtructed with ſignals for raiſing and lowering, on the ſaid ſtaffs, little marks of paſteboard, or other matter. The level being placed horizontally by the bubble, &c. look towards the ſtaff A F, and cauſe the mark ſo raiſed to be lowered, till the middle, upper edge, or other moſt conſpicuous part, appear in the viſual ray. Then meaſuring exactly the perpendicular height of the point E, above the point A, which ſuppoſe 6 feet 4 inches, ſet that down in your book: then turn the level horizontally about, that the eye-glaſs of the teleſcope may be ſtill next the eye when you look the other way (if you have only plain ſights, the inſtrument need not be turned); and cauſe the perſon at the ſtaff B to raiſe or lower his mark, till ſome conſpicuous part of it fall in the viſual ray, as at C; then meaſure the perpendicular height of C above B, which ſuppoſe 16 feet 8 inches; ſet this alſo down in the book above the other number of the firſt obſervation; ſubtract the one from the other, the remainder will be 10 feet 4 inches, which is the difference of level between A and B, or the height of the point A above the point B.

Note, If the point D, where the inſtrument is fixed, be in the middle between the two points A and B, there will be no neceſſity for reducing the apparent level to the true level; the viſiual ray, in that caſe, being raiſed equally above the true level.

If it be farther required to know whether there be a ſufficient deſcent for conveying water from the ſpring A to the point B, *Plate* VII. *Surveying*, *fig.* 5.—Here, in regard the diſtance from A to B is conſiderable, it is required that ſeveral operations be made. Having then choſen a proper place for the firſt ſtation, as at I, ſet up a ſtaff in the point A, near the ſpring, with a proper mark to ſlide up and down the ſtaff, as L; and meaſure the diſtance from A to I, which ſuppoſe 2000 yards. Then the level being adjuſted in the point I, let the mark L be raiſed and lowered till ſuch time as you ſpy ſome conſpicuous part of it through the teleſcope, or ſights of the level, and meaſure the height A L, which ſuppoſe 13 feet 5 inches. But in regard the diſtance A I is 2000 yards, you muſt have recourſe to your table for a reduction, ſubtracting 10 inches 3 lines, which will leave the height A L, 12 feet 6 inches 9 lines; and this note down in your book. Now turn the level horizontally about, ſo as the eye-glaſs of the teleſcope may be towards the ſtaff at A; and fixing up another ſtaff at H, cauſe the mark G to be moved up and down, till you ſpy ſome conſpicuous part through the teleſcope, or ſights. Meaſure the height H G, which ſuppoſe 6 yards, 4 feet, 2 inches. Meaſure likewiſe the diſtance of the points I, H, which ſuppoſe 1300 yards; for which diſtsnce, according to the table, 4 inches 3 lines muſt be ſubtracted from the height H G, which, conſequently, will but leave 6 yards, 3 feet, 9 inches, 9 lines, to be taken down in your book.

This done, remove the level forwards to ſome other eminence, as E, whence the ſtaff H may be viewed ; as alſo another ſtaff at D, near the place whither the water is to be conveyed. The level being again adjuſted in the point E, look back to the ſtaff H ; and managing the mark as before, the viſual ray will give the point F. Meaſure the height H F, which ſuppoſe 11 feet 6 inches. Meaſure, likewiſe, the diſtance H E, which ſuppoſe 1000 yards ; for which diſtance the table gives 2 inches, 5 lines of abatement ; which being taken from the height H F, there will remain 11 feet, 3 inches, 7 lines, which enter in your book. Laſtly, turning the level to look at the next ſtaff D, the viſual ray will give the point D. Meaſure the height of D from the ground, which ſuppoſe 8 feet 3 inches. Meaſure alſo the diſtance from the ſtation E to B, which ſuppoſe 900 yards ; for which diſtance the table gives 2 inches, 1 line of abatement ; which being taken from the height B D, there will remain 8 feet 11 lines, which enter as before.

For the manner of entering down obſervations in your book, obſerve, that when a proper place or ſtation for the level, between the two points, has been pitched upon, you muſt write down the two heights obſerved at that ſtation in two different columns, *viz.* under the firſt column, thoſe obſerved in looking through the teleſcope when the eye was from the ſpring, or towards the point, which we may call *back-ſights;* and under the ſecond column thoſe obſerved when the eye was next the ſpring, which we call *fore-ſights*, in the manner following:

Back-ſights.	feet.	inch.	line.	Fore-ſights.	feet.	inch.	line.
Firſt height correċted	12	6	9	Second height	21	09	9
Third height	11	3	7	Fourth height	8	00	11
	23	10	4		29	10	8

Having ſummed up the heights of each column ſeparately, ſubtract the leſſer from the greater, the remainder will be the difference of level between the points A and B ; as in this example ;

feet.	inch.	line.	
29	10	08	
23	10	04	
6	00	04	—The difference of height, or level, between the points A and B.

If the diſtance of the two points be required, add all the diſtances meaſured together ; and dividing the difference of height by the yards of the diſtances ; for each 200 yards you will have a deſcent of about 2 inches 9 lines. This problem may be otherwiſe ſolved in the following manner: let the line *f g*, *Plate* VII. *Surveying*, *fig.* 6. repreſent the line of ſight of the teleſcope drawn from *f*, the interſection of the croſs-hairs, through *g* the centre of the object-glaſs ; and the points *b*, *b*, be the marks on the glaſs tube, or ſpirit-level, *a b c*. While theſe parts of the inſtrument are immutably fixed, with reſpect to each other, it is manifeſt, that as often as the air-bubble is exactly reduced to the marks *b*, *b*, the line of ſight will be always reduced to the ſame poſition, with reſpect to the horizon, or to a plumb-line. Nor is it at all neceſſary, in the buſineſs of levelling, that the line of ſight and plumb-line ſhould be exactly at right angles ; but only that the angles they make ſhall be always the ſame. Let *p* and *q*, *fig.* 7, be two given points in two remote places, and let it be required to find which is the lower, and how much. Let *p a* and *q b* repreſent two ſtraight ſtaffs, or poles, fixed upright by means of a plumb-line. Having placed the teleſcope by the ſide of the pole *p a*, and directed the line of ſight to the pole *q b*, alter its elevation by the ſcrew adapted to this purpoſe, till the air-bubble reſts exactly at the marks upon the tube. Then let an aſſiſtant mark the point *b*, which appears to be covered by the croſs-hairs ; and alſo the point *a* exactly upon a level with the croſs-hairs ; which is eaſily done by a common ſquare applied to the ſide of the pole *p a*. Then remove the teleſcope to the pole *b q*, and here let the ſame things be repeated ; that is, let *d* be the place upon a level with the croſs-hairs, and *e* the point upon the other pole *p a*, that appears to be covered by them while the air-bubble reſts at the ſame mark as before. Biſect the interval *a e* in *g*, and the interval *b d* in *h*, and the points *g*, *h*, will be upon a level ; that is, if we ſuppoſe *g p q h* to repreſent a long canal full of ſtagnating water, the points *g*, *h*, will both be in its ſurface ; and, conſequently, taking the leſſer depth *p g* from the greater *q h*, their difference *q r* ſhews how much the point *q* is below the point *p* or *r*.

If the places *p*, *q*, cannot be ſeen from each other, or if the difference of their heights be greater than the length of any common poles, then one or more intermediate ſtations muſt be choſen ; and by repeating the ſame practice between every two ſucceſſive ſtations, we ſhall find the level of the extremes.

When the points *g*, *h*, are once found upon two poles not far aſunder, it will be convenient, by moving the croſs-hairs, to rectify the line of ſight, ſo as to be nearly coincident with the line *g h*, or with a line parallel to it, for then in future levellings, at greater diſtances, the marks *b*, *e*, will be leſs ſubject to fall above or below the poles.

This reciprocal way of levelling ſeems to be the moſt exact of any, eſpecially if it be performed by two inſtruments made to agree together before-hand; which may be done by placing them together, and by altering the croſs-hairs in either of them, till the ſame mark upon a remote object is covered by both the croſſes, while both the bubbles reſt at their marks upon the tubes. Then may two obſervers find the marks upon the oppoſite poles at the ſame time ; and, conſequently, the refractions of the rays in the air, whatever be their quantities, will be equal as near as poſſible: and then the reſult of the practice will be as accurate as if there had been no refractions at all. For let the curve *b i a*, *fig.* 8, repreſent the courſe of the viſual ray from *b* to *a* ; and let the lines *a k*, *b l*, touch it at *a* and *b*. Then, becauſe the points *a*, *b*, are very nearly upon a level, the denſity and conſtitution of the air and vapours at the ſame inſtant will be nearly the ſame in each place ; and by conſequence the curve *a i b* and its tangents at *a* and *b*, will be equally inclined to the chord *a b*. For the ſame reaſons the curve *e m d* will be ſimilar and equal to the curve *a i b*, being ſituated ſo very near to it. Therefore, the angle *e d n*, under the chord *e d* and tangent *d n*, will be equal to the angle *a b l*, or *b a k* ; and, conſequently, ſince the angles *q d n*, *p a k*, are made equal in the two obſervations, by taking away the equal angles *e d n*, *b a k*, cauſed by the equal refractions, the remaining angles *q d e*, *p a b*, will be equal to each other, as if there were no refractions at all.

If the reciprocal obſervations be made about the middle of the ſame day, when the air is the pureſt, there will ſcarcely be any occaſion for two inſtruments: but if they be made near the morning or evening, even on the ſame day, an equality of refractions cannot be depended upon, unleſs they are made at the ſame inſtant. The members of the Royal Academy of Sciences at Paris tell us, in their Account of the Meaſure of the Earth, they often found that an object, which at break of day appeared in the level, and ſometimes a little above it, did afterwards, when the ſun was up, appear below it. And, on the contrary, after the ſetting of the ſun, objects far diſtant appeared to be raiſed ſo ſenſibly, that in leſs than half an hour their apparent height was augmented more than three minutes. As to the cauſe of theſe appearances, they add, that the coolneſs of the night condenſes the vapours, which deſcend to a lower place, leaving the air in the higher ſtations more pure than in the day time. And on the contrary, when the heat of the ſun has made a part of the vapours to mount to more elevated ſtations, there muſt be leſs difference of the mediums, and conſequently a leſs refraction.

Setting aſide the curvity of a ray, which Mr. Picard tells us is ſcarcely ſenſible about noon, when the diſtance of the object does not exceed 1000 toiſes, the line of ſight through the teleſcope may be ſet perpendicular to a plumb-line, or parallel to the horizon, in this manner. Having found two points *g*, *h*, *fig.* 9, upon a level as before, let *g i* be perpendicular to *g c*, and cut *c h* in *i*, and having computed the line *h i* (as follows), and made a mark at *i*, place the level at *g*, and alter the place of the croſs-hairs in the focus, till they appear to cover the point *i*, when the air-bubble is at its marks, and the buſineſs is done. Now the line *h i* is equal to the ſquare of *g h* applied to 2 *g c*, and, conſequently, may be found by meaſuring the diſtance *g h*, and dividing its ſquare by the diameter of the earth, which may be ſuppoſed equal to 2 *g c*, though it is not exactly ſo, the earth being not exactly ſpherical. For biſecting *g h* in *k*, draw *c k* cutting *g i* in *l*; and ſince the triangles *k g l*, *k c g* are ſimilar, we have *k l* : *k g* : : *k g* : *k c*, and by doubling them all, we have *k i* : *g h* : : *g h* : 2 *k c*. Mr. Picard computes that when the diſtance *g h* is 300 toiſes, or 1800 Paris feet, the line *h i* is one inch: and hence any other *h i* may be found for any other known diſtance; it being as the ſquare of the diſtance *g h*.

Hence, when the inſtrument is thus rectified, the point *h* upon the level with *g*, may be found by one obſervation; that is, by marking the point *i* covered by the croſs-hairs, and by computing *i h* by the rule above. As the intervals between the ſtations muſt be but ſmall in this method, becauſe of refractions, as was ſaid above, the readieſt way is to make them all equal; which may be known exact enough for this purpoſe, by obſerving whether the pole be removed to ſuch a diſtance, that its image (or the image of any given part of it) in the focus of the teleſcope ſhall be always of the ſame length, being meaſured by the diſtance between two parallel hairs in the focus: and then the ſame allowance muſt always be made for the depth of the point *h* below *i*.

Laſtly, by means of theſe parallel hairs, it is eaſy to find when the teleſcope is placed in the middle between two ſtations; and then the points upon a level at each pole are preſently found, by directing the teleſcope firſt to one pole and then to the other, and by marking the points covered by the croſs-hairs. And theſe points will be upon a level, notwithſtanding any refractions of the viſual rays, becauſe the refraction of each ray will be equal. Smith's Optics, book iii. chap. 14.

Dr. Halley ſuggeſts a new method of levelling, which has been put in practice by ſome of the French academy: this is performed wholly by means of the barometer, in which the mercury is found to be ſuſpended to ſo much the leſs height as the place is farther remote from the centre of the earth. Hence it follows, that the different heights of the mercury, in two places, give the difference of level.

Mr. Derham, from ſome obſervations he made at the top and bottom of the Monument, found that the mercury fell one-tenth of an inch at every 82 feet of perpendicular aſcent, when the mercury was at 30 inches. Dr. Halley allows of one-tenth of an inch for every 30 yards; which, conſidering how accurately the barometers are now made, an inch, in ſome of them, being divided into an hundred, or more parts, all very ſenſible, he thinks this method ſufficiently exact to take the levels for the conveyance of water, and leſs liable to errors than the common levels.

The ſame author found a difference of three inches eight-tenths, between the height of the mercury at the top and bottom of Snowdon-hill, in Wales.

Mr. Ferguſon has calculated the following table, for ſhewing how much the mercury would ſink in a barometer at given heights above the earth's plane ſurface; and conſequently, how the perpendicular height of any hill may be found thereby.

At the height of	Merc. ſinks.		At the height of	Merc. ſinks.		At the height of	Merc. ſinks.		At the height of	Merc. ſinks.	
Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.
100	0	11	3900	4	02	7700	7	38	11500	10	30
200	0	22	4000	4	12	7800	7	46	11600	10	37
300	0	33	4100	4	21	7900	7	58	11700	10	44
400	0	44	4200	4	30	8000	7	63	11800	10	52
500	0	54	4300	4	39	8100	7	71	11900	10	59
600	0	65	4400	4	49	8200	7	79	12000	10	66
700	0	76	4500	4	58	8300	7	87	12100	10	73
800	0	87	4600	4	67	8400	7	95	12200	10	80
900	0	98	4700	4	77	8500	8	03	12300	10	87
1000	1	09	4800	4	86	8600	8	11	12400	10	94
1100	1	19	4900	4	95	8700	8	19	12500	11	01
1200	1	30	5000	5	04	8800	8	27	12600	11	08
1300	1	40	5100	5	13	8900	8	35	12700	11	15
1400	1	51	5200	5	22	9000	8	43	12800	11	22
1500	1	61	5300	5	31	9100	8	51	12900	11	39
1600	1	72	5400	5	40	9200	8	58	13000	11	40
1700	1	82	5500	5	49	9300	8	66	13100	11	43
1800	1	93	5600	5	58	9400	8	74	13200	11	50
1900	2	03	5700	5	67	9500	8	82	13300	11	56
2000	2	14	5800	5	76	9600	8	89	13400	11	63
2100	2	24	5900	5	85	9700	8	97	13500	11	70
2200	2	34	6000	5	94	9800	9	05	13600	11	77
2300	2	44	6100	6	02	9900	9	12	13700	11	84
2400	2	54	6200	6	11	10000	9	20	13800	11	90
2500	2	64	6300	6	20	10100	9	27	13900	11	97
2600	2	75	6400	6	28	10200	9	34	14000	12	04
2700	2	85	6500	6	37	10300	9	42	14100	12	11
2800	2	95	6600	6	45	10400	9	50	14200	12	17
2900	3	05	6700	6	54	10500	9	57	14300	12	24
3000	3	15	6800	6	63	10600	9	64	14400	12	30
3100	3	25	6900	6	71	10700	9	72	14500	12	37
3200	3	34	7000	6	80	10800	9	79	14600	12	44
3300	3	44	7100	6	88	10900	9	87	14700	12	50
3400	3	54	7200	6	97	11000	9	94	14800	12	57
3500	3	63	7300	7	05	11100	10	01	14900	12	63
3600	3	73	7400	7	13	11200	10	08	15000	12	70
3700	3	82	7500	7	22	11300	10	16	15100	12	76
3800	3	92	7600	7	30	11400	10	23	15200	12	83

At the height of	Merc. ſinks.		At the height of	Merc. ſinks.		At the height of	Merc. ſinks.		At the height of	Merc. ſinks.	
Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.	Feet.	Inches.	100 parts.
15300	12	89	17500	14	27	19700	15	59	21900	16	86
15400	12	96	17600	14	33	19800	15	64	22000	16	91
15500	13	02	17700	14	39	19900	15	70	22100	16	97
15600	13	09	17800	14	45	20000	15	76	22200	17	02
15700	13	15	17900	14	51	20100	15	82	22300	17	08
15800	13	21	18000	14	57	20200	15	88	22400	17	14
15900	13	28	18100	14	63	20300	15	94	22500	17	19
16000	13	34	18200	14	69	20400	15	99	22600	17	25
16100	13	40	18300	14	75	20500	16	05	22700	17	30
16200	13	47	18400	14	81	20600	16	11	22800	17	36
16300	13	53	18500	14	87	20700	16	17	22900	17	42
16400	13	59	18600	14	93	20800	16	23	23000	17	47
16500	13	65	18700	14	99	20900	16	29	23100	17	53
16600	13	71	18800	15	05	21000	16	34	23200	17	58
16700	13	78	18900	15	11	21100	16	40	23300	17	64
16800	13	84	19000	15	17	21200	16	46	23400	17	69
16900	13	90	19100	15	23	21300	16	51	23500	17	75
17000	13	96	19200	15	29	21400	16	57	23600	17	80
17100	14	02	19300	15	35	21500	16	63	23700	17	86
17200	14	08	19400	15	41	21600	16	68	23800	17	91
17300	14	15	19500	15	47	21700	16	74	23900	17	97
17400	14	21	19600	15	53	21800	16	80	24000	18	02

By this table, and a common barometer tube, the perpendicular height of any hill may be found in the following manner.

The lower end of the tube being immerſed in quickſilver in the common way, and the tube fixed to a board, let a ſcale, eighteen inches in length, be divided into inches, and each inch into a hundred equal parts, by diagonal lines, the diviſions to be numbered downward from the top. This ſcale muſt be made to ſlide in a groove on the board, and have a croſs index to ſlide upon it to any diviſion.

Then, at the bottom or foot of the hill, place the ſcale ſo as the beginning of the diviſions at its top may be juſt even with the top or ſurface of the mercury in the tube. This done, carry the machine up to the top of the hill; then ſet the index to the ſurface of the mercury, and it will ſhew how much the mercury has ſunk in the tube, at the top of the hill, from the point where it ſtood when at the bottom; and the number of feet expreſſed in the table, againſt the like ſinking of the mercury, will be the perpendicular height of the hill.

Thus, ſuppoſing the mercury had ſunk eight inches and three hundredth parts of an inch, the height of the hill muſt be 8500 feet, or a mile, and ſomewhat more than a quarter. Proportionable allowance is eaſily made for intermediate heights in the table, which are only to whole hundredths of feet.

As Mr. Derham found the difference of height of the mercury at the bottom and top of Snowdon-hill, in Wales, to be three inches eight-tenths (the ſame as three inches eighty hundredths) it ſhews, that the height of that hill is 3700 feet, or almoſt three quarters of a mile.

N. B. 660 feet make an eighth part of a mile, 1320 feet a quarter of a mile, 2640 feet half a mile, 3960 feet three quarters of a mile, and 5280 feet make a whole mile. See BAROMETER and ATMOSPHERE.

For the common occaſion of levelling to be performed, without much apparatus of inſtruments, time, or trouble, the following method may ſerve: ſet a pole upright in a ſpring, pond, river, or other place, whence water is to be brought, and mark how many feet and inches are above water. Then ſet up another pole, of equal length with the other, in the place to which the water is to come. Place the centre of a quadrant on the top of this laſt pole, the plummet hanging freely; ſpy through the ſights the top of the pole that is in the water, and if the thread cuts any degree of the quadrant, the water may be conveyed by a pipe laid in the earth. If you cannot ſee from one extreme to the other, the operation may be repeated in the manner already directed.

LEVELLING *Staves*, are inſtruments uſed in levelling; ſerving to carry the marks to be obſerved, and at the ſame time to meaſure the heights of thoſe marks from the ground. They uſually conſiſt each of two long ſquare wooden rulers, made to ſlide over one another, and divided into feet, inches, &c.

The levelling ſtaff is repreſented in *Plate* VII. *Surveying*, *fig.* 10. It is compoſed of two pieces which ſlide on each other, as *a a* and *b b*: they are each of about five feet in length, ſo as to form, when fully extended, a rod of ten feet. They have a graduated line of feet into hundredth parts. The index, *c*, ſlides firmly on them; and is moved up or down (by ſignal) by the attendant who carries the ſtaff, till the obſerver finds it coincide with the interſecting wires of his teleſcope. Its height on the ſtaff, of courſe, marks the difference of the level; and it has two horizontal and parallel black ſtripes, which, at conſiderable diſtances, are of uſe to direct the eye more readily to the fiducial edge at *x*.

With regard to the manner of directing its application in the buſineſs of draining, it has been obſerved, that after it has been properly adjuſted, and the ſtaff about ten feet in length, with the moveable vane or ſight, has been affixed to it, the inſtrument ſhould be ſet up in a ſituation between the object from whence the level is to be taken, and that to which it is to be directed, provided the diſtance from the inſtrument to each of them is not too great. The ſituation of it ſhould alſo be no higher than the length of the ſtaff will anſwer, and ſo as it may be ſeen from it both ways; then the man with the ſtaff ſhould be directed to hold it at the main ſpring, or place from whence you mean to carry the drain; and after directing the teleſcope to the ſtaff, and adjuſting it to a level, make a ſign to him to move the ſight up or down, till it be exactly oppoſite the croſs hair in the teleſcope. This done, without ſhifting the inſtrument from its firſt poſition, and cautioning the man to fix the ſight to the ſtaff at the point directed, he may proceed forty or fifty yards farther; and after having again adjuſted the level, make a ſign to him to move to higher or lower ground, till the ſight on the ſtaff coincide exactly with the croſs-hair or wire on the teleſcope. He may then leave a peg at the place where he held the ſtaff, and proceed in like manner to other ſtations, till the whole line is finiſhed; leaving pegs, or making pits, at the places where the ſtaff is held during the operation.

But if the length of the line to be levelled requires the inſtrument to be ſhifted from its firſt poſition, the level muſt again be taken from the laſt ſtation where the ſtaff was held, and the ſight on it fixed in the proper place, as before directed; proceeding in the ſame manner at every forty or fifty yards in length, till the whole is accompliſhed. After the line is thus levelled, and aſcertained by marks left at every ſtation where the ſtaff was fixed, it may again be examined, and other pegs put in between the firſt, the better to direct the workmen in cutting the drain; giving the line ſuch turnings, and even ſmall deviations from the courſe of the level, as may ſhorten or ſtraighten it, and humour the ſituation of the ground. And for the ſake of accuracy, where the work requires it, eſpecially if the water is to be conveyed to any conſiderable diſtance, or wanted to ſupply a houſe, or for the purpoſe of irrigation, the levels may be proved by reverſing the former line of direction. The ſpirit level is alſo neceſſary for aſcertaining how ſuch fall can be obtained from the drain to the neareſt outlet where the water can be diſcharged; the ſhorter that diſtance the better, provided fall enough can be gotten. It is often neceſſary to level a much longer diſtance than the length of the drain may require to be cut, in order to come at the true level.

Levelling *of Land*, in *Agriculture*, the method of filling up the holes, hollows, or other depreſſions and inequalities that are met with in lands, whether they are in the ſtate of ſward, or in that of tillage. It ſhould always be performed in ſuch a manner, as the parts thus filled up may at firſt be ſomewhat higher than the common ſurface round them, in order to allow for the ſettling, which neceſſarily takes place; and ſhould be done with ſuch materials as can be moſt conveniently procured, and which are proper for the purpoſe, being filled in an even and regular manner, and well trodden down at the time. The ridges of ſuch lands as have been long under the plough alſo ſometimes require to be levelled down, the proper methods of doing which, under different circumſtances, will be taken notice of under that head. Care is, however, conſtantly to be taken in the execution of this ſort of buſineſs. See Ridge.

Levelling *Poles*, long wooden rulers, divided into feet and inches, made to ſlide over each other, ſerving to carry the marks to be obſerved in levelling, as well as to meaſure the heights from the ſurface of the ground. They are likewiſe termed ſtaves occaſionally. See Levelling *Staves*, *ſupra*.

LEVEN, in *Natural Hiſtory*, a term uſed by Boccone for the milky juice contained in the globules placed at the tops of the ſtalks of red coral. Theſe round buttons are the only part of the coral which are ſoft while under water, and from theſe the milky juice is eaſily expreſſed by a gentle ſqueezing between the fingers. The globules are each made up of five or ſix little cells, not communicating with one another, and each containing its own ſeparate quantity of this white and thick fluid. When the coral is newly taken up out of the ſea, this juice is of a ſharp, acrimonious, and aſtringent taſte; but when it has been ſome time expoſed to the air, it loſes the acrimony, and the aſtringency of the taſte only remains. This change in the taſte is made in ſix or eight hours, in hot weather, and the juice, in the ſame time, loſes its colour and conſiſtence, growing hard and brown. Philoſ. Tranſ. N 100.

LEUENFIORDE, in *Geography*, a town of Weſtphalia, in the principality of Calenberg, on the Weſer; 25 miles W.N.W. of Gottingen.

LEVENHOOKIA, in *Botany*, named in memory of the celebrated microſcopic philoſopher Anthony Van Leeuwenhoek, whoſe works, as Mr. Brown obſerves, abound with excellent obſervations on the ſtructure of vegetables. Brown. Prodr. Nov. Holl. v. 1. 572—Claſs and order, *Gynandria Diandria*. Nat. Ord. *Stylideæ*, Brown.

Eſſ. Ch, Calyx ſuperior, two-lipped, in five deep ſegments. Corolla tubular; limb irregular, in five deep ſegments; the fifth (or lip) unlike the reſt, vaulted, longer than the column, articulated with the tube, and moveable. Column erect, attached below, like the lip, to the ſide of the tube. Lobes of the anthers one above the other, divaricated. Stigmas two, capillary. Capſule of one cell.

L. *puſilla*, the only known ſpecies, found on the ſouthern coaſt of New Holland by Mr. Brown. A little ſmooth herb, with nearly the aſpect and ſtature of *Radiola*. *Leaves* alternate, ſtalked; thoſe about the tops of the branches crowded, intermixed with cluſtered *flowers*. The moveable joint of the lip is analogous to the irritability in the column of *Stylidium*, and anſwers the ſame end, which is the preſervation of the organs of impregnation; for this lip, which is deflexed in the expanded flower, when affected by any irritating cauſe, is turned upwards with violence, ſo as to cover the upright and immoveable column with its concave part. *Brown.*

LEVENS, Leva, or *Levenez*, a town of Hungary, near the river Gran, where the Turks were defeated, after a deſperate engagement, in the year 1664, with the loſs of 12,000 men killed, and 1500 taken priſoners, with their artillery, &c.; 24 miles N.N.E. of Gran.

LEVENTAN, a lake of Pruſſia; 56 miles S.E. of Konigſberg.

LEVENTI. See Lawend.

LEVER, *Sir* Ashton, in *Biography*, was the ſon of ſir D'Arcy Lever of Alkington, near Mancheſter. He finiſhed his education at Corpus Chriſti college, Oxford; and on leaving the univerſity he went to reſide with his mother, and afterwards ſettled at his family-ſeat, which he rendered famous by the beſt aviary in the kingdom. He next extended his views to all branches of natural hiſtory, and became at length poſſeſſed of one of the fineſt muſæums in the world, ſparing no expence in procuring ſpecimens from the moſt diſtant regions. This muſæum was diſpoſed of by lottery in 1785, but to the great loſs of the proprietor. It was, for ſome years after this, exhibited to the public at a ſmall charge, but is now diſperſed, the articles having been ſold ſeparately by auction. Sir Aſhton died in 1788. Europ. Mag.

Lever, or *Leaver*, in *Mechanics*, an inflexible ſtraight bar, ſupported, in a ſingle point, on a fulcrum, or prop, and uſed for the raiſing of weights.

The word is formed of the French *levier*, which ſignifies the ſame; formed of the verb *lever*, or Latin *levare*, *to raiſe*.

The lever is the firſt of thoſe called mechanical powers, or ſimple machines, as being, of all ſuch, the moſt ſimple; and is chiefly applied for raiſing weights to ſmall heights.

In a lever there are three things conſidered: the weight to be raiſed, or ſuſtained, as O, *Plate* XXX. *Mechanics*, *fig.* 4.; the power by which it is to be raiſed, or ſuſtained, as B; and the fulcrum, or prop, D, on which the lever is ſuſtained, or rather on which it moves round, the fulcrum remaining fixed.

Levers are of three kinds: ſometimes the fulcrum, or centre of motion, is placed between the weight and the power, as in *fig.* 4. This we call a *lever of the firſt kind*, or *vectis heterodromus;* to which may be reduced ſciſſars, pincers, ſnuffers, &c. Sometimes the weight is between the fulcrum and the power, which is called a *lever of the ſecond kind*, as in *fig.* 5. Of this kind are the oars and rudder of a boat, the maſts of ſhips, cutting knives fixed at one end, and doors whoſe hinges are as the fixed point. And ſometimes the power acts between the weight and the fulcrum, which is the *lever of the third kind*. Such is a ladder lifted by the middle to rear it up againſt a wall: theſe two are called *vectes homodromi*.

In this laſt, the power muſt exceed the weight in proportion as its diſtance from the centre of motion is leſs than the diſtance of the centre from the weight. And as the firſt two kinds of lever ſerve for producing a ſlow motion by a ſwift one, ſo the laſt ſerves for producing a ſwift motion of the weight by a ſlow motion of the power. It is by this kind of levers that the muſcular motions of animals are performed, the muſcles being inſerted much nearer to the centre of motion than the point where the centre of gravity of the weight to be raiſed is applied; ſo that the power of the muſcle is many times greater than the weight which it is able to ſuſtain. Though this may appear at firſt a diſadvantage to animals, becauſe it makes their ſtrength leſs: it is, however, the effect of excellent contrivance; for if the power was, in this caſe, applied at a greater diſtance than the weight, the figure of animals would be not only awkward and ugly, but altogether unfit for motion; as Borelli has ſhewn in his treatiſe "De Motu Animalium." The power of the lever is founded on the following theorem; *viz.* "That the ſpace, or arc, deſcribed by each point of a lever, and conſequently the velocity of each point of a lever, is as its diſtance from the fulcrum, or prop."

From hence it follows, that the action of a power, and the reſiſtance of the weight, increaſe in proportion to their diſtance from the fulcrum.

And hence alſo it follows, that a power will be able to ſuſtain a weight, if the diſtance of the point in the lever, to which it is applied, be to the diſtance of the weight, as the weight to the intenſity of the power; which, if it be ever ſo little increaſed, muſt raiſe the weight. See this doctrine demonſtrated under the word MECHANIC *Powers*; and farther illuſtrated under the word BALANCE; between which and the lever there is a great analogy; a lever of the firſt kind being a ſort of ſteelyard to raiſe weights.

The power and action of the lever will be fully illuſtrated by the following propoſitions:

1. If the power applied to a lever of any kind ſuſtain a weight, the power is to the weight in a reciprocal ratio of their diſtances from the fulcrum.

2. The weight of a lever of the firſt or ſecond kind, A B, *fig.* 4, the diſtance of the centre of gravity from the fulcrum C V, and the diſtances of the weight, and the power A C and C B, being all given, to find the power that will ſuſtain it. Suppoſe the lever void of gravity, but in lieu thereof a weight hung at V: if then A C be made to C V, as the gravity of the lever to a fourth number, we ſhall have the weight which the lever is able to ſuſtain; and this ſubtracted from the given weight, the remainder will be the weight to be ſuſtained by the power. Let C B then be to C A, as the remaining weight to a fourth weight, and we ſhall have the power to be applied in B, in order to ſuſtain the given weight with the given lever.

3. The gravity of a lever of the firſt or ſecond kind, A B, the diſtance of the centre of gravity from the fulcrum C V, the diſtances of the power, and the weight B C and C A, being all given, to find the weight to be ſuſtained. Find the part of the weight ſuſtained by the lever alone, as in the former problem: in the ſame manner find the other part of the weight, which the power applied in B is able to ſuſtain; add the two numbers together, and the ſum is the weight required.

4. The gravity, and centre of gravity F, of a lever of the ſecond kind C B, *fig.* 5, with the weight G, its diſtance from the fulcrum C A, and from the power C B, being given, to find the power capable of ſuſtaining the weight. Suppoſe the lever void of gravity, but in lieu thereof a weight equal thereto hung in F, the power required to ſuſtain the lever alone; then find the power requiſite to ſuſtain the given weight G; add the powers together, and the ſum will be the power required.

5. If a power applied to a lever of any kind lift a weight, the ſpace of the firſt is to that of the laſt, as is this laſt to a power able to ſuſtain the ſame weight; whence it follows, that the gain of force is always attended with the loſs of time, and *vice verſâ*.

When the two arms of a lever are not in a right line, but contain any invariable angle at C, *fig.* 6, the lever is called a bended lever; and is evidently of the firſt kind, and the law of the equilibrium is the ſame; *i. e.* if the power P be applied at B to the arm C B, and the weight W acts by means of a pulley M, in the direction A M, perpendicular to the arm A, the power and weight will ſuſtain each other, if P be to W, as C A to C B, or $P \times CB = W \times CA$. If ſeveral powers act upon the arm C A, find their centre of gravity, A, on the arm C A, and ſuppoſe all the powers to be united there; and if the power P be to their ſum as C A to C B, it will ſuſtain them. The ſum of the powers being given, it is manifeſt that the farther their centre of gravity A is removed from the centre of motion C, the greater reſiſtance they will oppoſe againſt the power P, and it will require the greater force in the power to overcome them. Hence Galileo juſtly concludes, that the bones of animals are the ſtronger for their being hollow, their weight being given; or if the arm C B F repreſents their length, the circle C H D a ſection perpendicular to the length P, any power applied along their length, tending to break them; then the ſtrength or force of all their longitudinal fibres, by which the adheſion of the parts is preſerved, may be conceived to be united in A, the centre of the circle C H D, which is the common centre of gravity of thoſe forces, whether the ſection be a circle or annulus. But it is plain that when the area of the ſection, or the number of ſuch fibres is given, the diſtance C A is greater when the ſection is an annulus than when it is a circle without any cavity: conſequently the power with which the parts adhere, and which reſiſts againſt P, that endeavours to ſeparate them, is greater in the ſame proportion. For the ſame reaſon, the ſtalks of corn, the feathers of fowls, and hollow ſpears, are leſs liable to accidents that tend to break them, than if they were of the ſame weight and length, but ſolid, without any cavity. In this inſtance, ſays Mr. Maclaurin, (View of Sir I. Newton's Phil. Diſc. book ii. chap. 3. § 13.) art only imitates the wiſdom of nature. See MECHANICAL *Powers*.

LEVER, or *Vectis*, in *Midwifery*, an inſtrument uſed to facilitate the birth of the head of the child, when it remains long fixed in the brim of the pelvis of the mother. It is uſually called the lever of Roonhuyſen, the name of a ſurgeon of Amſterdam, who has the credit of having invented, or firſt made uſe of it. Roonhuyſen is ſaid to have been inſtructed by Dr. Hugh Chamberlen in the method of uſing the *forceps*, (ſee that article,) for which he paid him a conſiderable ſum of money: but finding, in many caſes, great difficulty in introducing the ſecond blade of the forceps, he confined himſelf to the uſe of a ſingle blade; and procuring an inſtrument to be made upon that principle, he called it his lever. Ruyſch was alſo ſaid to participate with him in the uſe of this new contrivance. It was for a long time applied with great caution, and only ſhewn to ſuch of their pupils as paid them a ſpecific ſum for the purpoſe. At length De Viſcher and Van de Poll, two phyſicians of Amſterdam, purchaſed the ſecret of a deſcendant of Roonhuyſen, and publiſhed a deſcription of the inſtrument, and of the manner of uſing it, in the Dutch language. This account was, many years after, tranſlated into French by M. Preville, and affixed to his tranſlation of Smellie's Treatiſe of Midwifery, to which he added an engraving of the inſtrument.

The lever is a flat piece of iron, twelve inches in length, one inch in breadth, and a quarter of an inch in thickneſs. It is ſtraight in the middle for four inches, and moderately curved at each end. (See *Plate Surgery.*) In uſing it, one or two fingers of the right hand (the woman lying on her left ſide, as in a natural labour) muſt be introduced under the pubes, and ſo far, if practicable, as to reach an ear of the child, when the lever is to be ſlowly and gradually inſinuated between the fingers and the head of the child. The fingers are now to be withdrawn, and the handle of the lever to be raiſed towards the belly of the woman, and gently moved about, until the head of the child is lodged in its curve. The more completely the curve touches and embraces the head of the child, the more ſpeedily and eaſily the delivery will be effected. During every pain, the handle of the lever muſt be raiſed with the right hand, and its middle preſſed down with the left hand. This will prevent the ſoft parts of the woman covering the os pubis from being injured. When by this means the head of the child has been made to deſcend into the vagina, the left hand muſt be removed from the middle of the inſtrument, and applied over the anus and the perinæum, to guard thoſe parts, (which will be found to be much diſtended,) and to prevent their being lacerated; for which purpoſe, alſo, the whole of the operation (which will uſually be completed within between ten and twenty minutes) muſt be performed ſlowly and cautiouſly, imitating as much as poſſible a natural labour.

For further information on this ſubject, ſee Dr. Bland's Account of the Invention and Uſe of the Lever, publiſhed in the ſecond volume of Medical Communications, 1790.

LEVERANO, in *Geography*, a town of Naples, in the province of Otranto; 7 miles N. of Nardo.

LEVERET, amongſt *Sportſmen*, a young hare, in the firſt year of its age.

LEVERETT, in *Geography*, a townſhip of America, in Hampſhire county, Maſſachuſetts, near Connecticut river; 94 miles W. from Boſton; incorporated in 1774, and containing 711 inhabitants. A copper-mine has been lately diſcovered in this townſhip.

LEVERIDGE, Richard, in *Biography*, was a ſinger of Purcell's ſongs, in the time of Charles II. and in that of William and Mary. During the reign of queen Anne, he performed in 1706 the part of ſir Truſty, in Addiſon's Roſamond; and in the firſt attempts at opera on the Italian model, he ſung his part in Engliſh, in Camilla and Thomyris; while Nicolini, Valentini, and the Margarita, performed their parts in Italian.

He had a deep and powerful baſe voice; was a uſeful performer on the Engliſh ſtage on many occaſions, particularly at Covent Garden, where he attached himſelf to Rich, and his pantomime entertainments, to the end of his life. He was not, however, without genius for poetry and compoſition, as far as a ballad went. We remember his ſinging one written and ſet by himſelf, "Ghoſts of every Occupation," and ſeveral of Purcell's baſe ſongs occaſionally, which, fifty years ago, ſeemed antediluvian; but as he generally was the repreſentative of Pluto, Neptune, or ſome ancient divinity, it correſponded perfectly with his figure and character. As he was not only a celebrated ſinger of convivial ſongs, but the writer of many that were in great favour with ſingers and hearers of a certain claſs, who more piouſly performed the rites of Comus and Bacchus than thoſe of Minerva and Apollo, he had always a crowded houſe at his benefit; nor did he leave this ſublunary world, or the ſtage, till 1758, at 88 years of age.

LEVET, in *Geography*, a town of France, in the department of the Cher, and chief place of a canton, in the diſtrict of Bourges; 6 miles S. of Bourges. The place contains 645, and the canton 5263 inhabitants, on a territory of 232½ kiliometres, in 16 communes.

LEVI, Ben-Gershom, in *Biography*, a learned rabbi, who flouriſhed in the fourteenth century, was born in Provence about the year 1290. His celebrity is founded chiefly on his philoſophical and theological writings. He was a diſciple of Ariſtotle, and philoſophizes in the ſpirit of his maſter, when diſcuſſing ſubjects of ſacred literature. He died in 1370, when he was 80 years of age. He was author of "Commentaries" on all the books of the Old Teſtament, of which ſome are inſerted in the great bibles of Venice and Baſil; and others were ſeparately printed at Peſaro, Venice, and Paris. He was author of a philoſophical work, entitled "Millemot Haſchem," or "The Battles of the Lord," divided into treatiſes on the immortality of the ſoul, the knowledge of future events, prophecy, the interpretation of dreams, the omniſcience of God, &c.; and of various other treatiſes, which were formerly preſerved in MS. in the Vatican library, and in that belonging to the congregation of the fathers of the oratory at Paris.

Levi, *Iſle du Fort*, in *Geography*, an iſland in the river St. Lawrence, Upper Canada, in front of the townſhip of Edwardſburg. On this iſland are the ruins of a French fortification.

LEVIEION, a town of Perſia, in the province of Irak; 36 miles W.S.W. of Iſpahan.

LEVIER, a town of France, in the department of the Doubs, and chief place of a canton, in the diſtrict of Pontarlier; 10 miles W. of Pontarlier. The place contains 1065, and the canton 7727 inhabitants, on a territory of 310 kiliometres, in 15 communes.

LEVIGATION, the reduction of hard and ponderous bodies, as coral, tutty, precious ſtones, &c. into a fine ſubtil powder, by grinding them with water upon porphyry, or the like, as painters do their colours.

Levigation is much uſed in pharmacy and chemiſtry; but unleſs the grinding inſtruments be extremely hard, they will wear away, ſo as ſometimes to double the weight of the medicine thus managed.

LEVIRATE, in the *Jewiſh Cuſtoms*, a term uſed by authors who have written on the law and cuſtoms of the Jews, to denote particularly that law of Moſes, which obliges one brother to marry the widow of another, who died without children, to raiſe up ſeed to him.

The word is derived from *levir*, which ſignifies, in Latin, the huſband's brother, or the brother-in-law; and the word levirate has been hence formed, to expreſs the law whereof we have been ſpeaking.

This law, which is an exception to that which condemns marriages between brothers and ſiſters, and between brothers-in-law and ſiſters-in-law, ſeems to have been in uſe among the Hebrews and Canaanites before the time of Moſes; ſince Judah gave his firſt-born Er, and Onan his ſecond ſon, ſucceſſively to Tamar, and obliges himſelf to give her likewiſe to Selah his third ſon. Calm. Dict. Bibl.

LEVISANUS, in *Botany*, a name given by Petiver, who wrote it *Lewiſanus*, in honour of the Rev. Dr. Lewis, who ſent him ſeveral plants as well as ſhells from Madras. The Cape ſhrub to which this appellation was given, having been referred by Linnæus at one time to *Brunia*, at another to *Protea*, is now *Leucadendron Leviſanus*, Brown Tr. of Linn. Soc. v. 10. 55. (See Leucadendron.) Schreber in his Gen. Pl. 149, eſtabliſhed another *Leviſanus* out of *Brunia*;

Brunia; but this is now *Staavia* of Willdenow, Sp. Pl. v. 1. 1144, a name which we preſume will remain.

LEVITA, in *Geography*, an iſland in the Grecian Archipelago, about eight miles in circumference. N. lat. 37°. E. long. 26° 14′.

LEVITE, an inferior kind of miniſter in the Jewiſh tabernacle and temple, who had the care and management of the ſacred utenſils.

The word comes from the Greek λευιτης, the root of which is the name *Levi;* which was given to that patriarch by his mother Leah, from the Hebrew לוה, *lavah, to be tied*, or *united;* Leah hoping, by the birth of this ſon, to be more cloſely linked to her huſband Jacob; and, therefore, in a large ſenſe, the Levites were the poſterity of this patriarch, and conſtituted one of the twelve tribes of Iſrael. In a more reſtrained and peculiar ſenſe, they were a lower order of eccleſiaſtical perſons, inferior to the prieſts, and their aſſiſtants in the ſacred ſervice. The ſons of Levi were appointed to this office, in conſequence of the extraordinary zeal they diſcovered againſt idolatry, in the caſe of the golden calf. Exod. xxxii. 26. 28.

When God miraculouſly deſtroyed all the firſt born of the Egyptians (Exod. xii. 29.), he ſpared the firſt born of the Iſraelites; and in order to preſerve the remembrance of the miracle, and of that great deliverance from their bondage in Egypt, which that miracle occaſioned, he was pleaſed to appoint that for the future all the firſt-born males "ſhould be ſet apart unto himſelf." (Exod. xiii. 12. 16. Numb. viii. 17.) But afterwards, on the occaſion above mentioned, the whole tribe of Levi had the honour aſſigned them, inſtead of the firſt-born of Iſrael. And that it might appear there was a juſt ſubſtitution of the Levites for the firſt-born, number for number, he ordered an eſtimate to be made of both; and when, on caſting up the poll, the firſt-born were found to exceed the Levites by 273, the ſurplus was redeemed at the price of five ſhekels a head, which was paid to the prieſts for the uſe of the ſanctuary. (Numb. iii. 14, ad fin.) We may here obſerve, as a circumſtance worthy of notice, that the poſterity of Moſes were no more than common Levites, while the deſcendants of his brother Aaron were advanced, by the appointment of his law, to the dignity of the prieſthood. (1 Chron. xxiii. 13, 14.) This is a plain evidence that Moſes was not influenced by any worldly or ambitious views, or rather that he was not the contriver and author of the law which he gave to Iſrael, but received it from God: for if he had framed it, it is natural to ſuppoſe that he would have made ſome better proviſion than he did for his ſons, and for the grandeur of his houſe, and not have advanced his brother's above his own.

The Levites were originally divided into three claſſes, or families, from the three ſons of Levi, Kohath, Gerſhon, and Merari; but afterwards by David into twenty-four courſes. 1 Chron. xxiii. 6. ch. xxviii. 11—13.

The Levites, in the Jewiſh church, were an order inferior to the prieſts; and anſwered, in ſome meaſure, to deacons, in the Chriſtian church. On their firſt inſtitution, a great part of the ſervice that was aſſigned them was peculiar to the ſtate of the Iſaaelites at that time; and it was ſervile and laborious. But when they were ſettled in the land of Canaan, and the tabernacle was no longer carried about as before, the ſervice of the Levites was, of courſe, changed, and became much more eaſy. On which account, in the time of David, they were thought fit to enter on their office at the age of 20 years; whereas, by the original appointment of Moſes, they were not admitted till they were 25 or 30 years of age, and were diſcharged at 50. (Numb. iv. 3. 13. 43. ch. viii. 24, 25.) It is an opinion among the Jews, that the Levites paſſed through four different degrees. From one month old to their twentieth year they were inſtructed in the law of God; from twenty to twenty-five, in the functions of their miniſtry; from that period to thirty, they ſerved a kind of apprenticeſhip, beginning to exerciſe themſelves in ſome of the lower branches of the ſacred ſervice; and laſtly, when they attained their thirtieth year, they were fully inſtituted in their office. A ſimilar gradation, probably borrowed from that of the Jewiſh Levites, has been obſerved among the veſtal virgins; and ſome have ſuppoſed that this gradation is referred to by the apoſtle, when he tells Timothy, that they who perform the office of a deacon well purchaſe to themſelves a good degree, καλον βαθμὼν. 1 Tim. iii. 13.

We have already obſerved, that the Levites were originally diſtributed into three families; and in David's time, they were diſtinguiſhed into three claſſes, to each of which a different ſervice was aſſigned; and probably each was divided into twenty-four courſes. The firſt claſs was appointed to aſſiſt the prieſts in the exerciſe of their miniſtry; the ſecond claſs formed the temple choir; the third claſs had the charge of the ſeveral gates of the courts of the ſanctuary aſſigned them by lot. (1 Chron. xxvi. 1. 15. 19. 2 Chron. xxxv. 15. viii. 14.) The Levites exerciſed the office of magiſtrates, which office belonged to them, not as Levites, but as perſons who generally addicted themſelves more to the ſtudy of the law, and had more leiſure to attend on the duties of the magiſtracy, than others who were employed in ſecular buſineſs. The magiſtrates of different ranks, both the "ſhophetim" and "ſhoterim," were very generally, though not always, choſen out of the tribe of Levi. Thus the prophetic curſe, denounced by Jacob againſt Levi, (Gen. xlix. 7.) was remarkably accompliſhed, (though in effect converted into a bleſſing,) not only in reſpect to the appointment of their habitation, but likewiſe of their offices and employments; more of them, than perhaps of all the tribes taken collectively, being officers and judges throughout the whole country; and probably, as the rabbies tell us, ſome of them were generally directors of their ſeminaries of learning. Of the conſecration of the Levites, and of the ceremonies attending it, we have an account in Numb. viii. 10, 11.

As to the reſidence and ſubſiſtence of the Levites, we may obſerve that they had no ſettled lands allotted them for their maintenance, as the other tribes had, but lived chiefly on the offerings made to God. (Deut. xxiii. 1, 2.) They were diſtributed through all the tribes, each of which gave ſome of their cities to the Levites, amounting in all to the number of thirty-five, with grounds in their neighbourhood for the ſubſiſtence of their flocks. (Numb. xxxv. 4, 5.) In the weeks of their attendance at the ſanctuary, they were maintained by the dues ariſing from the ſacrifices; beſides theſe dues, the firſt fruits, which were brought to the temple, and the money paid for the redemption of the firſt-born, contributed to their ſubſiſtence. But, when they were out of waiting, their maintenance partly aroſe from the glebes belonging to their cities, and chiefly from the tithes of the produce of the whole country, which the law allotted to the tribe of Levi, (Numb. xviii. 21.) a tenth of which they paid to the prieſts. See Tithe.

According to the numeration made by Solomon, from the age of twenty there were thirty-eight thouſand Levites capable of ſerving: twenty-four thouſand of theſe he appointed for the daily miniſtry under the prieſts; ſix thouſand to be inferior judges in the cities, and to decide matters relating to religion, and of no great conſequence to the ſtate; four thouſand to be door-keepers, and to take care of the riches of the temple; and the reſt to do the office of chantors, or ſingers.

LEVITICAL Degrees, in *Law*. See Marriage.

LEVITICI, in *Church Hiſtory*, a ſect of heretics, who ſprung from the Gnoſtics and Nicolaitans.

LEVITICUS, a canonical book of the Old Teſtament, ſo called from its containing the laws and regulations relating to the prieſts, Levites, and ſacrifices. See Canon and Pentateuch.

LEVITY, the privation or want of weight in any body, when compared with another that is heavier.

In which ſenſe, levity ſtands oppoſed to gravity.

The ſchools maintain, that there is ſuch a thing as *poſitive* and *abſolute* levity, and impute to this the riſe or emergency of bodies lighter in ſpecie than the bodies wherein they riſe.

But we find by experience, that all bodies tend towards the earth, ſome ſlower, and ſome faſter, in all fluids, or mediums, whether water, air, &c. Thus, cork is only ſaid to be lighter than gold, becauſe, under equal dimenſions, the gold will ſink in, and the cork ſwim upon water.

Archimedes has demonſtrated, that a ſolid body will float any where in a fluid of the ſame ſpecific gravity; and that a lighter body will keep above a heavier. The reaſon is, that of bodies falling towards the earth, thoſe which have a like number of equal parts, have equal gravity; ſince the gravity of the whole is the ſum of the gravity of all its parts. Now two bodies have an equal number of equal parts, if under the ſame dimenſions there be no intervals deſtitute of matter; whence it follows, that as no portion of matter is ſo ſmall, but that the body wherein it is contained may be wholly divided into parts equally ſmall, there can be no reaſon for the deſcent of theſe, which will not equally hold for the deſcent of that.

Hence it may be concluded, that thoſe bodies which do not equally gravitate under the ſame dimenſions, do not contain equal portions of matter; and, therefore, when we ſee, that a cube of gold ſubſides in water, at the ſame time that an equal bulk of cork ſwims upon it, it is evident, that the gold muſt have a greater number of equal parts of matter, under the ſame bulk, than the cork; or the cork muſt have a greater number of vacuities than the gold; and that there is alſo in the water a greater number of vacuities than in gold. See Fluids, and *Specific* Gravity.

Hence we have a clear idea both of denſity or gravity, and of levity; and know, that the latter cannot, in a ſtrict ſenſe, be accounted any thing poſitive, but only a mere negation or abſence of body; which determines that body to be lighter than another which contains more matter.

Dr. Hook, it is true, ſeems to maintain ſomething like a poſitive levity; which, if we miſtake not, is what he means by the term *levitation; viz.* a property of bodies directly contrary to that of gravitation towards the ſun.

This, he thinks, he has diſcovered in the ſtreams of ſeveral comets; which, though they had a deſcent from the nucleus of the comet towards the ſun, yet they quickly returned, and went oppoſite to the ſun, and that to a prodigious extent. In effect, where the power of gravitation ceaſes, it ſhould ſeem ſome ſuch contrary force does begin; whereof we have inſtances in the phenomena of attraction. This is what ſir Iſaac Newton calls the *vis repellens*, and appears to be one of the laws of nature; without which it would be hard to account for rarefaction, and ſome other appearances.

LEVIZANO, in *Geography*, a town of Italy, in the department of the Panaro; ſix miles S.S.E. of Modena.

LEUK, a ſmall town of Switzerland, built upon an eminence about a mile from the Rhine, and the principal place of one of the dixains of the Vallais; containing two churches and a large palace of the biſhops of Sion. At the diſtance of ſix miles N. are celebrated baths, ſaid to be beneficial in rheumatiſms, diſeaſes of the ſkin, &c. and to reſemble thoſe of Bath. Here are ſeveral ſprings of different warmth and of different qualities. According to accurate experiments, the mercury in Fahrenheit's thermometer, when plunged into the principal ſource, ſtood at 115, and at 120 in the ſpring which flows near the bridge over the Dola. Leuk is diſtant 20 miles E. from Sion.

LEVKOPOL, a town of Ruſſia, in the province of Tauris; 80 miles S. of Perekop. N. lat. 45° 6′. E. long. 34° 24′.

LEUNCLAVIUS, John, in *Biography*, an eminent man of letters in the ſeventeenth century, ſon of a gentleman of Weſtphalia, was brought up to the profeſſion of the law, with which ſcience he was intimately acquainted, as well as with literature in general. He was a great traveller, and reſided a conſiderable time in Turkey. He died at Vienna in 1693, about the 60th year of his age. From his knowledge of the Turkiſh language he was enabled to collect ſome valuable materials for the hiſtory of that nation, which he publiſhed under the title of "Hiſtoriæ Muſlimanicæ Turcarum," and his "Annales Turcici cum Supplemento et Pandectis Hiſt. Turcicæ." His intimate knowledge of the Greek language was diſplayed in ſeveral Latin tranſlations of Greek authors, *viz.* Xenophon, Zozimus, the annals of Conſtantine Manaſſes, and of Michael Glycas; the Greek abridgment of the ſixty books of Roman law; various works of St. Gregory of Nazianzen, &c. Bayle.

LEVONOVK, in *Geography*, a town of Ruſſia, in the government of Irkutſk, on the Lena; 52 miles S.S.W. of Kirenſk.

LEUPOLD, James, in *Biography*, a very celebrated mechanician, and noted for his conſtruction of mathematical inſtruments, and other machines for the elucidation of facts in philoſophy, was commiſſary of mines to the king of Poland, and a member of the Royal Society of Berlin, and other ſcientific bodies. He died at Leipſic in 1727, after having acquired celebrity by the publication of a work, which is ſtill highly eſteemed, entitled "Theatrum Machinarum," in three vols. folio.

LEVRET, Andrew, an eminent French ſurgeon and accoucheur, was admitted a member of the Royal Academy of Surgery at Paris in February, 1742. He obtained a high and extenſive reputation in his department of the art, by the improvements which he made in ſome of the inſtruments neceſſary to be employed in certain difficult caſes, (eſpecially the forceps,) and by the prodigious number of pupils whom he inſtructed. He was employed and honoured with official appointments by all the female branches of the royal family. He publiſhed ſeveral works, which underwent various editions and tranſlations. "Obſervations ſur les cauſes et les accidens de pluſieurs accouchemens laborieux," Paris, 1747. To the fourth edition, in 1770, were added, "Obſervations on the lever of Roonhuyſen." "Obſervations ſur la cure radicale de pluſieurs polypes de la matrice, de la gorge, et du nez, operée par de nouveaux moyens," ibid. 1749, &c. "Suite des obſervations ſur les cauſes et les accidens de pluſieurs accouchemens laborieux," ibid. 1751. "Explication de pluſieurs figures ſur le méchaniſme, de la groſſeſſe et de l'accouchement," ibid. 1752. "L'Art des accouchemens démontré par des principes de phyſique et de mechanique," ibid. 1753, &c. "Eſſai ſur l'abus des regles generales, et contre les préjugés qui s'oppoſent aux progrès de l'art des accouchemens," ibid. 1766. Eloy Dict. Hiſt.

LEVROUX, in *Geography*, a town of France, in the department of the Indre, and chief place of a canton, in the diſtrict of Chateauroux; 10 miles N. of Chateauroux. The place contains 2800, and the canton 8904 inhabitants, on a territory of 352½ kiliometres, in 15 communes. N. lat. 46° 59'. E. long. 1° 41'.

LEUSDEN, John, in *Biography*, an eminent philologiſt, was born at Utrecht in 1624. He laid the foundation of a learned education in his native city, and then went to Amſterdam to improve himſelf in the Hebrew language, and in the knowledge of the Jewiſh ritual from converſation with the learned rabbis. He obtained, in the year 1649, the profeſſorſhip of Hebrew and Jewiſh antiquities at Utrecht, which he held, with great reputation, till his death in 1699. He was a capital critic, and was highly celebrated as a teacher. He gave correct editions of the works of Bochart and Lighfoot, and of Poole's Synopſis. His own writings are numerous and very valuable, of which the principal are "Clavis Hebraica et Philologica Vet. Teſt." 4to. "Clavis Græca Novi Teſt. cum Annot." "Compendium Græcum Novi Teſt." "Philological Notes upon Jonas, Joel, and Hoſea," two vols. 8vo. Moreri.

LEUTENBERG, in *Geography*, a town of Germany, in the county of Schwartzburg-Rudolſtadt, on the Sorbitz; near which are mines of ſilver and copper; eight miles S.E. of Saalfeld. N. lat. 50° 28'. E. long. 11° 35'.

LEUTHEN, a town of Sileſia, in the principality of Breſlau; 10 miles W. of Breſlau.

LEUTKIRCH, a town of Bavaria, near the Eſchach, on a heath to which it gives name. This town was free and imperial till the year 1802, when it was conveyed, among other indemnities, to the elector of Bavaria. It has a Lutheran and a Roman Catholic church, together with a nunnery of Franciſcans. The magiſtrates are moſtly Lutheran; 28 miles S. of Ulm. N. lat. 47° 53'. E. long. 10°.

LEUTMISCHL, or Litomysl, a town of Bohemia, in the circle of Chrudim; 22 miles E. of Chrudim. N. lat. 49° 47'. E. long. 16° 5'.

LEUTO, *Ital.* in *Muſic*. See Lute, and Theorbo.

LEUTSCH, in *Geography*, a town of the duchy of Carniola; eight miles S.S.E. of Hydria.—Alſo, a town of Hungary, which has frequently ſuffered from fire; 14 miles W. of Szeben.

LEUTZBURG, a town of Switzerland, in the canton of Berne; ſix miles S. of Brugg.

LEVY, Levare, in *Law*, ſignifies to gather or collect; as, to levy money, to levy troops, &c.

Levy ſometimes alſo denotes to erect, or ſet up; as, to levy a mill. Levy alſo ſignifies to raiſe or caſt up; as, to levy a ditch. To levy a fine of lands, is to paſs a fine.

LEVYING *Money without Conſent of Parliament*. No ſubject of England can be conſtrained to pay any aids or taxes, even for the defence of the realm or the ſupport of government, but ſuch as are impoſed by his own conſent, or that of his repreſentatives in parliament. See ſtats. 25 Edw. I. c. 5. & 6. 34 Edw. I. ſtat. 4. c. 1. 14 Edw. III. ſtat. 2. cap. 1. the petition of right, 3 Car. I. c. 1. ſtat. 1 W. & M. ſtat. 2. c. 2.

Levying *War againſt the King*. See Treason.

LEUZE, in *Geography*, a town of France, in the department of the Jemappe, and chief place of a canton, in the diſtrict of Tournay, ſeated on a brook near the Dender; eight miles E. of Tournay. The place contains 3528, and the canton 14,448 inhabitants, on a territory of 122½ kiliometres, in 15 communes.

LEWALDE, a town of Pruſſia, in the province of Oberland; 12 miles N.N.W. of Soldau.

LEWARDEN, a city of Holland, and capital of Frieſland, ſituated in a quarter called "Ooſtergoo." From being a ſmall town in 1190, when it was ſurrounded with a wall, it has become large, rich, and populous, fortified with ramparts, and defended by a large ditch, baſtions, and other works: the ſtreets are regular and ſpacious, and ſeparated by canals which interſect each other, facilitate communication with the ſea and with the internal parts of the province, and contribute to an extenſive trade with Holland, Bremen, Hamburgh, and other places. The town houſe, erected in 1715, is a handſome building. The magiſtracy conſiſts of three burgo-maſters and nine echevins; 28 miles W. of Groningen. N. lat. 53° 12'. E. long. 5° 43'.

LEWCKOCE, a town of Poland, in Podolia; 44 miles N.N.E. of Kaminiec.

LEWDNESS is puniſhable by our law by fine, impriſonment, and ſuch corporal infamous puniſhment, as the court may think meet, according to the heinouſneſs of the crime. (1 Hawk. 7.) And Mich. 15 Car. II. a perſon was indicted for open lewdneſs, in ſhewing his naked body in a balcony, and other miſdemeanors, and was fined two thouſand marks, impriſoned for a week, and bound to his good behaviour for three years. (1 Sid. 168.) In times paſt, when any man granted a leaſe of his houſe, it was uſual to inſert an expreſs covenant, that the tenant ſhould not entertain any lewd women, &c. See Adultery, Bastard, Bawdy-house, Incest, &c.

LEWEHAGEN, in *Geography*, a town of Pruſſia, in the circle of Natangen; eight miles E.S.E. of Konigſberg.

LEWEN, a town of Bohemia in the circle of Leitmeritz; eight miles N.E of Leitmeritz.

LEWES, a conſiderable borough and market town in the hundred of Barcombe, rape of Lewes, and county of Suſſex, England, is ſituated on the eaſtern extremity of one of thoſe bold and fertile eminences called the South-downs, and ſo juſtly celebrated in the topography of that county. Lewes, being anciently a demeſne of the crown, appears to have appertained to the South-Saxon kings, then to the Weſt-Saxons, and afterwards to the Saxon and Daniſh monarchs of all England; and, though each of thoſe revolutions by which it changed its royal lord, removed the court ſtill farther from this town, its natural advantages ſecured it a reſpectability not inferior to that of the firſt boroughs in the kingdom. During the Daniſh ravages from the cloſe of the eighth century to the beginning of the eleventh, Lewes was rendered, both by art and nature, the moſt eligible place of refuge for the inhabitants of the adjacent country, and a firm barrier againſt the invaders. In the reign of Athelſtan, Lewes was a very conſiderable place; for it was then the chief town and mart of more than half the ſhire. And in that king's ordinance for prohibiting the coinage of money, except in towns of eſpecial note, Lewes was allowed two mints, and Chicheſter but one; a proof of the early reſpectability of the former. On the death of Edward the Confeſſor, this town, with the other appanages of the crown, devolved to Harold, and on his defeat was given by the Conqueror to his ſon-in-law William, lord of Warren, who made it his chief reſidence, and built here a grand manſion and fortifications; the gate and two towers of his caſtle ſtill remain. In the time of Edward the Confeſſor here were 127 burgeſſes. Lewes continued in the poſſeſſion of the lords Warren for nearly three centuries, when the male line being extinct, it deſcended to Richard Fitz-Allen, earl of Arundel, ſon of Alice, ſiſter of the late earl of Warren. In his heirs the barony of Lewes has continued to the preſent time. A memorable battle was fought in the vicinity of this town in the year 1264, between Henry III. and the confederate barons under Simon de Montfort. A particular account of this is printed in Lees Hiſtory, &c. of Lewes, 8vo. 1795.

Lewes is a well built town, and one of the largeſt and moſt populous in the county. It had formerly twelve pariſh churches, which are now reduced to ſix, including St. Thomas at Cliffe, ſo called from its ſtanding under the high chalky cliffs at the out-ſkirts of the town. The other churches are All-Saints, St. John's under the Caſtle, St. Michael's, St. Peter's and St. Mary's Weſtout, now called St. Anne's, and St. John's, Southover. The diſſenters, who have been reſpectable and numerous in this town, have alſo their places of worſhip.

Lewes is a borough by preſcription, but not incorporated; the civil government is veſted in two conſtables, who are annually choſen by the burgeſſes. Two members have been returned to parliament ever ſince the 26th year of Edw. I. The right of election is in the inhabitants paying ſcot and lot, in number about 310. In the year 1504 an act of parliament was obtained for holding the ſhire or county-court alternately at Lewes and Chicheſter. From the town-book, ſince that time, a few items may be extracted, calculated to diſplay the local and general cuſtoms of the ages in which they occurred. In 1542 the duke of Norfolk's officers were treated with "two couple of rabbits," price *6d.*; a pottle of ſack, *6d.*; a quart of ſack and a quart of red-wine, *6d.* In 1544, the "year's wages" of John Payne, one of the burgeſſes in parliament for this borough, was 63 ſhillings. The two burgeſſes were paid *6l.* 10*s.* in the year 1555. The following year was diſtinguiſhed by the burning of four men, in this town, for "hereſy." Here are a free grammar-ſchool, a charity-ſchool, and ſeveral private charities. On the banks of the river Ouſe, which is navigable for barges, are ſeveral iron-works, where cannon of ſmall ſizes, and ſeveral other articles, are caſt.

Lewes is 40 miles diſtant from Chicheſter, and 49 from London. Four fairs are held annually; and a weekly market on Saturdays. The population, in the year 1801, was ſtated in the parliamentary return to be 3309, occupying 512 houſes. The ſummer aſſizes are alternately held here and at Horſham.

A priory of Cluniac monks, the firſt and chief houſe of that order in England, was founded at Lewes, in 1078, by William lord Warren and Gundreda his wife. Here was alſo a priory of Grey Friars; and two hoſpitals dedicated to St. James and St. Nicholas.

Lewes. See Louistown.

LEWESTEIN, a town of Pruſſia; 16 miles N.W. o Raſtenburg.

LEWIN, a town of Sileſia, in the principality of Glatz; 15 miles W. of Glatz. N. lat. 50° 14′. E. long. 16° 4′.

LEWING, in *Metallurgy*, the ſifting of the ores of metals in water. This is done in fine ſieves moved backward and forward under water; and is the method of ſeparating the finer part of the ores which had ſubſided among the larger lumps, under that part of it ſeparated for uſe in the various waſhings. The coarſer matter, left in the ſieve, is powdered again with the larger maſſes, and all thus ſifted together for the blowing-houſe.

LEWIS I., in *Biography*, emperor and king of France, ſurnamed *Le Debonnaire*, the ſon of Charlemagne, by a ſecond wife, was born in 778, and while a child he was crowned king of Aquitaine, to which ſtate he was ſent to reſide. Here he was carefully educated in the dead languages, and in the other branches of learning that were cultivated at that period. During his adminiſtration in Aquitaine, on account of the ſuavity of his manners, he obtained the ſurname already mentioned; and at his father's death in 814, he ſucceeded to the imperial throne, without oppoſition. At this period he had three ſons, Lothaire, Pepin, and Lewis, among whom he divided his dominions: the firſt he raiſed to the dignity of emperor by aſſociating him with himſelf; the ſecond he created king of Aquitaine; and to the other he gave the title and power of king of Bavaria. A worſe ſyſtem could not have been adopted, which Lewis found to his coſt, as each of his ſons, feeling themſelves independent of the father, violated every tie of filial and fraternal duty. Bernard, king of Italy, natural ſon of Pepin, the eldeſt ſon of Charlemagne, took up arms with the hope of depoſing Lewis, but his army, in the critical moment, deſerted him, and he was obliged to throw himſelf at the emperor's feet, to implore that clemency, which his miſdeeds were ill calculated to inſpire. The emperor referred him to the aſſembly of the ſtates of Aix-la-Chapelle; by whom his conduct was inveſtigated, and himſelf and aſſociates were condemned to death. This ſentence was commuted for that of depriving the guilty of their eyes; the extreme torture of the operation was the cauſe of Bernard's death, which happened almoſt immediately after the cruel deed had been performed. The recollection of the ſufferings of his nephew ſo afflicted the mind of Lewis, that he performed a public penance on account of it, a circumſtance that rendered him contemptible in the eyes of his ſubjects. The fierce nations of the north, ſcarcely to be controlled by the genius of Charlemagne, diſdained the weak arm of his ſucceſſor, and it was with the utmoſt difficulty that their rude aſſaults were repelled, and themſelves confined within their proper circle. The moſt diſaſtrous events of this period were the death of the empreſs, and the ſubſequent marriage of Lewis with Judith, daughter of Guelf of Bavaria, whoſe ſplendid accompliſhments concealed an ambitious mind, the ſource of equal calamities to her conſort and the empire. For a time Lewis was obliged to reſign his power, but the jealouſy of his three ſons againſt each other cauſed a change in his favour, and he was again reſtored to power. The three brothers, in 832, joined in a new league againſt their father; they were ſupported by the pope, Gregory IV., and the emperor, deſerted by his troops, ſurrendered himſelf a priſoner to his undutiful children. He was now ſolemnly depoſed, the imperial dignity was conferred upon Lothaire, and Judith was ſent into a nunnery. The misfortunes and diſtreſſes of the great ever affect the minds of the multitude, and the compaſſion of his people ſoon began to operate in favour of the fallen ſovereign. Pepin and Lewis took up arms againſt their elder brother, who was obliged to throw himſelf at the feet of his father, and aſk his pardon. Lewis was again reconciled to the church, and replaced on the throne by the biſhops. He now recalled his empreſs Judith, whoſe mind, unbroken by adverſity, engaged in new plots againſt the government, with the hope of advancing her ſon Charles, to the prejudice of the other branches of the family. She had the addreſs to cauſe him to be declared king of Neuſtria, and afterwards, on the death of Pepin, king of Aquitaine, in oppoſition to the claims of the ſons of Pepin. This circumſtance induced Lewis of Bavaria to aſſemble an army, with the intention of ſeizing for himſelf as much of the territory bordering on his dominions as he could occupy. He accordingly made himſelf maſter of the beſt part of Germany: the unwelcome news was received by the emperor at a moment when his mind was broken down with age, and with terror occaſioned by a total eclipſe of the ſun: he withdrew from the ſeat of government, to an iſland in the Rhine, where he refuſed almoſt all ſuſtenance, excepting the elements adminiſtered at the ſacrament, and died at the age of ſixty-two, in the year 840. He appointed Lothaire his ſucceſſor in the empire, but his laſt moments were embittered with the moſt lively reſentment againſt the king of Bavaria: he was reminded by the biſhop of Mentz that it was his duty to forgive; he replied, "I pardon him, but tell him from me, that he muſt ſeek pardon of God, for having brought my grey hairs with ſorrow to the grave." The placid virtues and the urbanity of temper, which diſtinguiſhed the character of this emperor, very ill compenſated for the miſeries which were engendered by his feeble adminiſtration; and a prince, to whoſe name has been added the epithet of gentle, lived without the regard, and expired without the regret of his ſubjects.

Lewis II, emperor and king of Italy, the eldeſt ſon of the emperor Lothaire I., was created by his father king of Italy in 844, and was ſent to Rome, where he was crowned by pope Sergius II. In about two years he returned to Germany, and was aſſociated with his father in the empire. An irruption of the Saracens gave him employment; he haſtily went into Italy, and defeated them in ſeveral engagements. He afterwards called a council, to be held at Teſſino, for the reformation of eccleſiaſtical abuſes. In 855, by the death of Lothaire, he ſucceeded to the title of emperor, in addition to his kingdom of Italy. The repeated incurſions of the Saracens called forth his military talents and ardour, and the factions of his own nobility were a ſource of much uneaſineſs and great diſorders. He lived, in general, on good terms with the holy ſee, and in 871, was crowned king of Lorraine by pope Adrian II. He died in 875, greatly reſpected by his ſubjects, to whom he adminiſtered juſtice with impartiality.

Lewis III. emperor, called alſo Lewis IV. was ſon of the emperor Arnulf, whom he ſucceeded when he was only ſeven years old, in the year 889. During the courſe of his reign, Germany was deſolated by the Hungarians, and torn aſunder by civil diſcord. He died in 912, and his death is regarded as an era in the Germanic hiſtory, as he was the laſt king or emperor of the race of Charlemagne.

Lewis IV. or V. emperor, ſon of Lewis, duke of Bavaria, and Matilda, daughter of Rodolph I., was born in 1284. By the death of his father, when he was only 12 years of age, his education devolved chiefly on his mother, and he diſtinguiſhed himſelf beyond all the princes of his age. In 1314, he was choſen emperor at Frankfort by a part of the electors, while another part of them adhered to Frederic, ſon of Albert, emperor and duke of Auſtria. Lewis was crowned at Aix-la-Chapelle by the archbiſhop of Mentz, while Frederic received a ſimilar honour from the elector of Cologne. A civil war enſued, and in 1316 an indeciſive battle was fought between them, at Eſslinguen on the Neckar. In Italy, the Ghibelline faction eſpouſed the cauſe of Lewis, while the Guelphs ſupported that of Frederic, and the flames of war ſpread over Lombardy, till at length he gave his rival a ſignal defeat and took him priſoner. From this period thoſe conteſts commenced between Lewis and the holy ſee, which diſquieted all the latter part of his reign. The pope, John XXII., iſſued a bull, aſſuming the right of deciding between the competitors of the empire, and commanding Lewis to deſiſt from exerciſing the imperial functions, till he ſhould obtain his expreſs permiſſion. The emperor proteſted againſt the bull, and was excommunicated. To conciliate the minds of the German princes, he made a peace with the Auſtrian family, and ſet at liberty duke Frederic, whom he had hitherto kept in priſon. In 1327, he marched into Italy, and was crowned king of that country; and in the following year he proceeded to Rome, and was crowned at St. Peter's by the biſhops attached to his party. The pope renewing his bulls of excommunication and depoſition againſt him, he retaliated by publicly pronouncing his holineſs a heretic, and a deſerter of his flock; and he even pronounced upon him ſentence of death. By a change of circumſtances he was obliged to quit Rome in haſte, and from this moment his cauſe declined in Italy, and he found it neceſſary to return into Germany. He now ſought a reconciliation with the pope, and was treated with contempt. The death of John, in 1336, was of no advantage to the emperor, as the ſucceeding pope, Benedict XII., perſevered in the hoſtility manifeſted by his predeceſſor. About the year 1336, the princes of the empire, as well eccleſiaſtical as ſecular, aſſembling at Spire, declared the empire independent of the ſee of Rome, and pronounced Lewis the lawful emperor: after this a diet was convoked at Frankfort, in which a conſtitution was paſſed into a law, for ever eſtabliſhing the independence of the empire. Theſe decrees did not put an end to the diſputes between Lewis and the holy ſee: the breach was widened by the ſecret inſtigations of Philip of Valois; nevertheleſs, the emperor retained the allegiance of the greateſt part of the empire. He died, as he was in the act of hunting, in October 1347, at the age of ſixty-three. This prince is ſaid to have ſurpaſſed all his contemporaries, both in perſonal and mental qualities, and accompliſhments. His manners were gay and highly poliſhed for the times in which he flouriſhed; and although he was capable of concerting his meaſures without aſſiſtance, he willingly ſought the aid of good counſel. He appears to have been famed for piety; for, notwithſtanding the papal anathema, he received the appellation of "Moſt Chriſtian," and the monks of Germany, as ſervile, as ſuperſtitious, preſerved his knives, napkins, &c. with religious veneration. Modern Univer. Hiſt.

Lewis I. king of France, has already been noticed under the firſt emperor of that name, having reigned as chief of the Germanic empire, and monarch of France. We therefore proceed to

Lewis II. king of France, ſurnamed the *Stammerer*, ſon of Charles the Bald, who was born in 843, created king of Aquitaine in 867, and ſucceeded his father in the throne of France in 877. This prince expoſed his kingdom to the fatal conſequences of a weak and divided adminiſtration. To obtain the ſupport of the principal people, he profuſely laviſhed the honours and eſtates of the crown upon thoſe who made the earlieſt application, ſo that having exhauſted his bounties, thoſe who were the laſt to preſent their claims were diſappointed in their hopes and expectations. Neglected themſelves, they murmured, and denied the right which he had aſſumed of diſpoſing of theſe poſſeſſions, without the conſent of the general aſſemblies. His party prevailed by the force of numbers; and at his coronation he took a ſolemn oath to maintain the privileges of the grandees, and to reſpect the donations which he had conferred on them. The vaſſals of Lewis ſoon became his equals, and contended for the ſuperiority. A rebellion cauſed him to take the field in his own defence, but on his arrival at Autun he was attacked with a dangerous diſeaſe, ſuſpected to have been occaſioned by poiſon, which carried him off, after a reign of about eighteen months. At the time of his death the queen was pregnant, and was afterwards delivered of a ſon, who in due time ſucceeded to the kingdom, under the title of Charles the Simple. Previouſly to his death, and ſenſible of his approaching end, he deſired that his ſword and crown might be delivered to his ſon, Lewis III. king of France, who was at that time about ſeventeen years of age. The great lords were deſirous, in oppoſition to the wiſhes of the late ſovereign, to eſtabliſh his other ſon Carloman on the throne. To prevent, however, the evils of a civil war, they agreed that the crown ſhould be worn by both. The diviſion of territory was made in 880, when Lewis had for his ſhare France Proper, and Neuſtria; and to Carloman were aſſigned Burgundy and Aquitaine. The two brothers lived and reigned together in the moſt perfect harmony, and they diſplayed ſome of the qualities of their anceſtor Pepin. They, in ſome meaſure, put a ſtop to the ravages of the northern brigands, fifty thouſand of whom had entered by the river Somme, and had taken ſeveral ſtrong places, among which was Amiens. Lewis defeated them in an engagement near Courtray, but having neglected to follow up his victory, they rallied, and made incurſions into Picardy; here he again encountered, and gave them a moſt ſignal defeat, leaving on the field of battle 9000 of the enemy, with their leader Guaramond. This victory had diſplayed much wiſdom and valour; and the demiſe of Lewis of Germany proclaimed the moderation of the young king of France, who rejected with firmneſs the crown offered him by the inhabitants of Lorraine, and yielded to the ſuperior pretenſions of the emperor, Charles the Fat. The French were, however, permitted to contemplate the riſing virtues of their prince only a ſhort time. While he was indulging the hope of erecting freſh trophies over the Normans, a mortal diſeaſe compelled him to renounce the enterpriſe. He returned to St. Denys, where he expired in the twenty-ſecond year of his age. His premature death was marked with the ſuſpicion of poiſon, a ſuſpicion countenanced by the turbulent temper of the nobles, jealous of his active and glorious reign.

Lewis IV. king of France, furnamed *D'Outre-mer, beyond the ſea*, on account of his having been educated in England, was the only ſon of Charles the Simple, by Egira, daughter of Edward the Elder. He was born in 917, and upon the depoſition of his father, was taken by his mother to the court of Atheiſtan, in England. Here he remained till the year 936, when he was invited to return and aſcend the throne of his anceſtors. He landed at Boulogne, proceeded to Laon, and was crowned in that city by Artaud, archbiſhop of Rheims. His return was chiefly owing to the influence of the powerful Hugh the Great, duke of France. The firſt meaſures of Lewis promiſed to maintain the internal tranquillity of his kingdom. To diſcharge his obligation to Hugh, and to ſecure the fidelity of that nobleman, he appointed him miniſter, and committed the reins of government into his hands. The ſervant ſoon raiſed himſelf above the maſter; and the attempts which Lewis made to free himſelf from this ſtate of dependence, gave riſe to a civil war, which for ſeveral years threw the kingdom into confuſion. By the mediation of Otho, his brother-in-law, emperor of Germany, and that of William, duke of Normandy, a peace was concluded in 942, between Lewis and his rebellious ſubjects. On the death of the duke of Normandy, Lewis attempted to add that duchy to the kingdom: for this purpoſe he united with Hugh the Great, in an open invaſion of the country. Lewis was entirely defeated and carried priſoner to Rouen, whence he was not releaſed till he had entered into a treaty to ſecure the independence of Normandy; even after this he was detained in captivity till he had procured for himſelf a grant of the city and territory of Laon. Lewis ſeized upon the firſt opportunity to avow his reſentment againſt his powerful vaſſal, and the provinces of France were alternately afflicted by the arms of Lewis, of Otho, and of Hugh. During five years the flames of civil war raged without intermiſſion, and the precarious peace which was concluded in a perſonal interview, may be conſidered as a ſuſpenſion of hoſtilities rather than a reſtoration of tranquillity. The latent embers of diſcord were ſtill kept alive: they broke out with renewed violence, and were finally extinguiſhed by the two ſiſters, conſorts of the king and Hugh. A permanent peace was eſtabliſhed, and Lewis prepared to aſſert his authority over the revolted lords of Aquitaine, when his plans were broken by a ſudden and accidental death. As he was purſuing a wolf, rouſed by chance, with inconſiderate ardour, his horſe ſtumbled and threw him: the injury proved fatal, and in a few days he cloſed his life at Rheims, after a ſtormy reign, having been eighteen years on the throne.

Lewis V. was aſſociated with his father Lothaire in the government, whom he ſucceeded in the year 986, being in the nineteenth year of his age. He manifeſted a violent and turbulent character: he quarrelled with the queen-dowager; expelled the biſhop of Laon from the kingdom; and upon a diſpute with the archbiſhop of Rheims, forcibly entered that city with a conſiderable ſlaughter. At the time that he was preparing to march againſt the Saracens, he was taken off by poiſon, adminiſtered, it was imagined, by his own wife Conſtance. With him ended the race of kings of the houſe of Charlemagne, which had ſwayed the ſceptre nearly 240 years.

Lewis VI., ſurnamed *Le Gros*, ſon of Philip I., was born in 1081. He was aſſociated with his father in the government in the year 1100, having already acquired a high reputation for valour, prudence, moderation, and a freedom from thoſe vices incident to his age and rank. By the vigour of his conduct he held in awe the diſcontented nobles, repreſſed the rebellious, demoliſhed their caſtles, and compelled them to reſtore the eſtates which they had uſurped from the clergy. His mother-in-law, Bertrade, jealous of the reputation of the young prince, and conſidering him as the only obſtacle to the elevation of her own ſons, attempted, by every means in her power, to deſtroy him. He happily eſcaped her machinations, and Philip, diſcovering her real character, forced her to make ſuch ſubmiſſions as diſarmed the reſentment of his ſon. In 1108, Lewis, by the death of his father, ſucceeded to the throne, and in a ſhort time he became engaged in a quarrel with Henry I., which may be regarded as the commencement of the long conteſts between the kings of France and England. Lewis, in the firſt inſtance, wiſhing to avoid the effuſion of blood, ſent a challenge to Henry to decide the point at iſſue in ſingle combat, which Henry declined. A battle enſued, Lewis was victorious, and in a treaty concluded not long after, it was agreed that William, the ſon of Henry, ſhould do homage to the ſovereign of France for the duchy of Normandy, which Henry himſelf had refuſed to do. War was again renewed, and in an action at Brenneville, an Engliſh warrior ſeized his horſe's bridle, crying, "the king is taken;" to which Lewis replied, "at cheſs, the king is never taken," and inſtantly laid his antagoniſt dead with his ſword. Lewis endeavoured to deprive Henry of the dukedom of Normandy, but was unſucceſsful. In 1119, at a council at Rheims, in which the emperor Henry V. was excommunicated by pope Calixtus II. Lewis lodged his complaints againſt the king of England, but was unable to draw down the cenſures of the church upon him. After this the emperor, excited by Henry I., who was his father-in-law, invaded France, but the common danger induced the French to rally round the ſtandard of their king, and he ſhortly found himſelf at the head of 200,000 men. It was at this criſis that the famous oriflamme, or banner of the abbey of St. Denis, was diſplayed as the king's ſtandard. Lewis next had a diſpute with ſome of his prelates, which brought upon him a ſentence of excommunication from the biſhops of Paris and Sens, but it was taken off by the pope. He now attempted to put an end to the ſchiſm in the popedom between Innocent II. and Anaclet, the former of whom he ſupported as lawful pontiff. The groſs habit of his body, from which he derived his ſurname, forewarned him of his approaching end, for which he prepared by ſettling the affairs of his kingdom. He cauſed his ſon Lewis to be ſolemnly crowned, and when he found himſelf almoſt in the laſt ſtage of exiſtence, he drew the ſignet from his finger, and fixed it upon that of his ſon, charging him at the ſame time to remember, that the ſovereign authority, of which this was the ſymbol, was a public truſt, for which a ſtrict account would be required in a future world. He died in 1137, greatly lamented by his people, whom he had never burthened with taxes, and whom, in many reſpects, he had freed from the oppreſſions of the great. Lewis VI. was unqueſtionably one of the moſt irreproachable monarchs of France. His reign is reckoned the era of the commencement in France of that balance to the power of the feudal lords which aroſe from the order of citizens. He conferred new privileges on the towns within his domains, by what were entitled charters of community, and formed them into corporations or bodies politic, with the right of adminiſtering juſtice, levying taxes, and embodying a militia within their own diſtricts.

Lewis VII., ſon of the preceding, was born in 1120, and ſucceeded to the throne in 1137, having by his marriage with Eleanora, the heireſs of the duke of Guienne and count of Poitou, united to the crown of France an extenſive country from the Loire to the Pyrenées. He began his reign by repreſſing ſome outrages of his nobles, and a revolt of the commons. The election of an archbiſhop of Bourges, without his conſent, involved him in a quarrel with the clergy, and with pope Innocent II. who ſupported them. In the courſe of this diſpute, Lewis made an inroad into Champagne, ſacked the town of Vitri, and ſet fire to a church, in which more than 1300 people miſerably periſhed. Struck with remorſe for this ſavage act, he reſolved to expiate the foul crime by an expedition to the Holy Land. In 1146, Lewis took the croſs, and his example was followed by the queen, and all the principal nobility. In the following year he ſet out at the head of 80,000 men, on his march by land to Conſtantinople: from this city the French army marched through Aſia Minor, to Antioch, and at length undertook the ſiege of Damaſcus. The enterprize entirely failed, and Lewis returned diſpirited and diſgraced. To public calamity ſucceeded the pang of domeſtic miſery, and it could not be concealed from the eye of a huſband that the fidelity of his queen, who had accompanied him in this expedition, had been ſacrificed to her own uncle, Raymond. On his return he determined to divorce himſelf from the queen, which he carried into effect in 1152. By this event the provinces of Aquitaine were detached from the crown of France, and in ſix weeks they were transferred to that of England by Eleanora's marriage to Henry Plantagenet, then duke of Normandy, and ſoon after king of England, under the name of Henry II. The facility with which he parted from theſe wealthy provinces has for ever annexed to him, by way of reproach, the ſurname of *Young*. Lewis married for a ſecond wife Conſtantia, daughter of Alphonſo, king of Caſtile, and ſoon after diſplayed his piety in a pilgrimage to the ſhrine of St. James, at Compoſtella. This queen dying without any male iſſue, he married Adelaide, daughter of his old enemy, Thibauld, count of Champagne, by whom he had a ſon, named Philip. While a mere child, the royal youth, engaged in the pleaſures of the chace, was loſt in the thickneſſes of a gloomy foreſt, and the heir of France was condemned to paſs a tedious night, oppreſſed by ſolitude and deſpair. His feeble mind was incapable of ſuſtaining the horror of his ſituation, and when found in the morning, a dangerous fit of illneſs was the effect of the fright. The ſuperſtitious monarch viſited the tomb of Becket, to ſolicit the interpoſition of a ſaint, who had experienced his earthly protection. Having been kindly received at Canterbury by Henry, and having preſented his offerings at the ſhrine of Thomas, he embarked again for France, and on his arrival his heart was gladdened with the intelligence of his ſon's complete recovery. The mind of the king had, however, received a blow, from the effects of which he never recovered, and in 1180, he experienced a paralytic ſeizure. Senſible of the great danger which hung over him, he determined to haſten the coronation of his ſon, and having languiſhed about a year under his malady, he expired, after a reign of forty-three years. "If," ſays the hiſtorian, "the prudence and judgment of the king, in reſtoring the dowry of Eleanor have been arraigned, his humanity has been ſeldom, and his piety has never been impeached. A tender huſband and an affectionate father, the errors of the monarch, were loſt in the virtues of the man."

Lewis VIII., grandſon of the preceding, was born in 1187, and diſplayed, at a very early age, a martial diſpoſition under his father at the war in Flanders, and againſt king John of England in Poitou. In 1216, he was invited by the barons of England to aſcend the throne, of which their own ſovereign had proved himſelf unworthy. He landed in Kent, and marched to London, where he was at firſt received with reſpect and gratitude: in a very ſhort time the tide of public favour completely turned, and he was glad to obtain permiſſion to return unmoleſted. He ſucceeded to the crown of France in 1223, and ſcarcely had aſcended the throne of his anceſtor, when he was urged by Henry III. of England, to make reſtitution of the provinces taken by his father from king John; he refuſed, and war was declared. Lewis was every where victorious, and the power of the Engliſh in France was greatly curtailed, ſo that nothing was left in their poſſeſſion but the town of Bourdeaux, and the country beyond the Garonne. To preſerve theſe, Henry conferred on his brother Richard the title of count of Poitou, and furniſhed him with ample means to ſupport his new dignity. The inhabitants of Poitou crowded to his ſtandard, and the ſpirit of oppoſition being revived, the career of Lewis was checked, and he was glad to make a truce for three years. The court of Rome ſtrongly ſolicited the king of France to reſume the croſs, and to march againſt the Albigenſes. From Lyons he directed his march along the banks of the Rhone, and inveſted Avignon with 50,000 men. The inhabitants, animated by deſpair, defended themſelves with the moſt obſtinate valour; and the king, after the loſs of the braveſt of his troops, was forced to grant that capitulation at laſt, which he had refuſed at firſt. On his return home, he was ſeized with an illneſs which put an end to his life, in November, 1226, after a reign of about three years.

Lewis IX., king of France, named *Saint*, ſon of the preceding, was born in 1215, and ſucceeded to the crown in 1226: being only in the twelfth year of his age he was placed under the guardianſhip of his mother, Blanche of Caſtile, who was nominated regent of the kingdom. Her firſt efforts with regard to the young king was to inſpire him with a love of religion, and an attachment to the principles

ciples of pure morality. When he attained the age fit for taking upon himſelf the rule of the kingdom, ſuch was the reſpect which he bore for his mother, that her authority remained unimpaired, and for ſeveral years they may be ſaid to have reigned jointly. Though the piety of this prince obtained for him the title of ſaint, yet he knew the limits between ſecular and eccleſiaſtical juriſdictions, and was jealous of uſurpations in the latter. He refuſed to join in the cruſade recommended by pope Gregory IX., though encouraged to the undertaking by the moſt flattering propoſals. Lewis ſhewed himſelf a good warrior by his exertions in ſuppreſſing a revolt ſupported by Henry III. of England: he gained two victories in perſon, and conſtrained his rival to ſubmit to humiliating conditions of peace. Two regulations proclaim the prudence and policy of this prince. The firſt, under pretence of preventing ſtrangers from inheriting lands in France to the prejudice of the natives, precluded the nobles from marrying their daughters to foreigners, and reſtrained them from increaſing their influence by connections and alliances with the neighbouring powers. The ſecond compelled the vaſſals of the crowns of France and England to make a public avowal, as to which ſovereign they would do homage; and, finally, aboliſhed the dangerous cuſtom of adhering to either, as their caprice or intereſt ſuggeſted. Yet, even in this edict, the humanity of Lewis was conſpicuous, and his juſtice indemnified thoſe who adhered to him for the land they forfeited, by ſeceding from the king of England. A dangerous indiſpoſition, which menaced the life of Lewis, was productive of a fatal vow to march in perſon againſt the infidels, whoſe ſucceſſive victories had overwhelmed the Chriſtians of the Eaſt: no remonſtrances from his counſellors, his nobles, and even his prelates, could divert him from the reſolution of fulfilling his vow. The blind zeal, however, which induced him to deſcend from his throne to ſeek the adventures of a ſpiritual knight-errant, did not prevent him from concerting his meaſures with the utmoſt prudence and foreſight, as well with reſpect to the enterprize itſelf, as the government of the realm during the king's abſence. Having entruſted the kingdom to his mother, Blanche, he prepared for his departure. "To furniſh," ſays the hiſtorian, "an armament equal to the arduous enterprize, France was exhauſted of troops and treaſures; the ſea was whitened with eighteen hundred ſails; and nine thouſand five hundred horſe, and one hundred and thirty thouſand foot, have been computed as the number of the martial pilgrims. The fleet, with favourable winds, reached the coaſt of Cyprus; the troops were diſembarked on the friendly ſhore, and during the ſeverity of winter, their ſtrength was recruited and their health reſtored by the plenty of that iſland." Here it was determined to make war firſt upon the ſultan of Egypt, for the purpoſe of facilitating the recovery of Paleſtine. In 1249, he arrived at the mouth of the Nile, and leaping into the ſea, ſword in hand, gained the beach, and drove away the Saracens drawn up to defend it. Damietta inſtantly yielded to the aggreſſor, but it was now found the expedition was ill-timed: the riſing of the Nile prevented his farther advance, and the delay introduced diſeaſe into his army, and all the diſorders naturally attendant upon idleneſs and the want of ſubordination. From this period he was no longer ſucceſsful: every new attempt at conqueſt ended in diſaſter, till at length himſelf, his brothers who had accompanied him in the expedition, and his whole army, were under the neceſſity of ſurrendering themſelves priſoners. The enemy ſcarcely knew any bounds to their revenge: they maſſacred the captives without mercy, and even treated the fallen monarch with a great degree of inſolence and rigour, to which it is ſaid he ſubmitted with firmneſs and dignity. The king was at length liberated, having firſt agreed to pay a high ranſom, and to agree to a truce of ten years between the Chriſtians and Mahometans in Egypt and Syria. This treaty was punctually executed, and ſo high was the honour of Lewis, that upon diſcovering a conſiderable miſtake made by the Saracens in the value of the money to their own loſs, he cauſed it to be rectified. He left the country with his queen and brothers, and carried with him about 6000 men, the ſole remains of the vaſt army which he had collected in the outſet of the buſineſs. He embarked for Paleſtine; and though it might have been expected, that, after his late misfortunes, he would readily have relinquiſhed the vain hope of eaſtern laurels, and returned to the government of his own kingdom, yet he ſeemed unwilling to reviſit his dominions without glory, truſting for tranquillity at home, in the vigilance and fidelity of his mother Blanche. His ambition now was to ſecure Jeruſalem from the hoſtilities of the Saracens; with this view he repaired the fortifications of the places ſtill poſſeſſed by the Chriſtians, made pilgrimages of devotion, attempted converſions, and ſunk the character of a mighty monarch into that of a ſuperſtitious cruſader. News was brought him of the death of his mother, who had undergone much diſquiet from various circumſtances during the abſence of her ſon, and whoſe grey hairs were brought with overwhelming ſorrow to the grave. The king was now obliged to return, and in his paſſage the veſſel which carried him and his family ſtruck upon a rock, and was in the moſt imminent danger; nevertheleſs, the fortitude of the monarch was ſo great, that he refuſed to avail himſelf of another ſhip, determining to ſhare the fate of all who were expoſed to ſimilar riſks with thoſe that threatened his own life. On his return, he was received by the acclamations of the people; his dreſs was plain; and his features were impreſſed with melancholy; the former ſtill bore the ſign of the croſs, the latter evidently diſplayed the marks of defeat. The magnificence of the monarch was, however, beheld with admiration in his reception of Henry III. of England, who embraced the opportunity of an expedition into Gaſcony, to viſit Paris. The ſplendour of his entertainment was enhanced by the courteous manners of Lewis; and the interview between the two kings was followed by a renewal of a former truce for two years longer. He began to apply himſelf with all diligence to the government of his kingdom, by his ſtrict and impartial adminiſtration of juſtice. In the ſimplicity of ancient manners, he was accuſtomed to ſeat himſelf under a ſpreading oak at his caſtle of Vincennes, and there, in perſon, to decide the cauſes that were brought before him. He protected the lower orders from the oppreſſions of the great, and would not ſuffer his own brothers to paſs over the limits of law and equity. He was extremely ſevere in every thing that regarded religion; and the edicts which he iſſued againſt blaſphemous and impious perſons, as thoſe were called who doubted the truths of an eſtabliſhed faith, might have been worthy of a bigotted inquiſitor. So great was his character among foreign nations for equity, that he was often applied to for a ſettlement of diſputes between kings and their nobles. The barons of England and Henry III, in their diſputes, agreed to make Lewis the arbiter: his deciſion was favourable to the regal authority, but with a large reſervation of the rights and privileges of the ſubject, ſo that, in fact, it determined nothing. He enlarged his own kingdom by the acquiſition of various places on the borders of the Low Countries, and he acquieſced in the pope's donation of Naples and Sicily to Charles of Anjou, brother to Lewis. At length the zeal for propagating his religion ſeized again upon the mind of

Lewis; the latent flame of enthuſiaſm which had been damped by his defeat in Egypt was not extinguiſhed; and an opportunity was only wanting to revive the dormant embers. The wiſdom of his regulations had reſtored the tranquillity of his dominions: his coffers were recruited, his finances augmented, and his hopes of ſucceſs were expanded, and very ſanguine. His ſilent preparations had been inceſſantly directed towards the ſingle object of his devout ambition; the loſs of Antioch provoked the more immediate execution of his deſigns. His example was followed by his three ſons, by his nephew the count d'Artois, and by a multitude of the moſt gallant ſpirits of the court of France. He entruſted the reins of government, during his abſence, to the vigilance and ſuperintendance of Matthew, abbot of St. Denys, who derived his noble lineage from the counts of Vendome; and to Simon de Clermont, count of Neſle. A ſea-port of Languedoc, near the mouth of the Rhone, was rendered a ſecond time remarkable by the embarkation of Lewis, and the fleet of France ſteered immediately for the coaſt of Africa. An obſcure king of Tunis had profeſſed an inclination to abjure the tenets of Mahomet for thoſe of Chriſt; and the vain report of an immenſe treaſure reconciled the more intereſted pilgrims to the wild and viſionary enterpriſe. But caprice or policy had already united the fickle or crafty barbarian to the precepts of the Koran; and inſtead of a zealous proſelyte, Lewis encountered an active and formidable enemy. The walls of Carthage were, indeed, ſtormed by the impetuous valour of the French; but their ſtrength was exhauſted before the gates of Tunis; and the warriors of the weſt panted beneath the ſultry heats, and expired on the burning ſands of Africa. The king himſelf was infected by the peſtilential blaſt, and he breathed his laſt on the inhoſpitable ſhore, in the 44th year of his reign. In his ſingular character were united the virtues of the ſaint and the hero: his piety and equity in peace were not more conſpicuous than his fortitude and valour in war. The father of his people, his heart ſympathized with their miſeries, and his hand was ever ſtretched out to relieve their diſtreſs. His excellent underſtanding was clouded by the fumes of enthuſiaſm; and the ſlaughter of his ſubjects, his own captivity, and at length his death, were the fatal conſequences of a blind ſuperſtition. Pope Boniface VIII. canonized him in 1297; and his deſcendant, Lewis XIII., procured the day, dedicated to his honour, to be declared a general feaſt of the church.

Lewis X., ſurnamed the *Boiſterous*, from the rude promiſe of his infant years, ſon of Philip, was born in 1291, and ſucceeded his father in 1314. He, in a ſhort time after his coronation, cauſed his firſt wife to be ſtrangled in the priſon of Chateau Gaillard, where ſhe was confined, and endeavoured to forget the vices of a licentious woman in his nuptials with Clemence, the daughter of the king of Hungary. An empty treaſury delayed, for ſome time, the ceremonies of the coronation, and the king diligently applied himſelf to conciliate the jealouſies and appeaſe the diſcontents of his new ſubjects. Lewis, notwithſtanding the ſurname which he had acquired, was of a quiet diſpoſition, and ſurrendered the chief authority in the ſtate to his uncle, Charles of Valois. The finances of the kingdom having fallen into diſorder, the ſuperintendant, Enguerand de Marigni, was made a ſacrifice to the revengeful paſſions of the new miniſter. Marigni vindicated his character with vehemence; but his eloquence was of no avail, he was conſigned to an ignominious death on the gibbet, and his fortunes were confiſcated to the uſe of the ſovereign, and were applied to defray the expences of the coronation, which was celebrated at Rheims; and as much as they fell ſhort of public expectation, ſo much did the deficiency contribute to eſtabliſh the innocence of the unfortunate ſuperintendant. Far different ſupplies were neceſſary for the ſupport of a war with Flanders, which Lewis was deſirous of engaging in, and he accordingly propoſed to raiſe the neceſſary ſupplies by a general enfranchiſement throughout the kingdom. The inhabitants of the towns were already free, but thoſe of the country were not ſo, and few were found willing to pay for that freedom which was forced upon them. The decree was, however, gone forth, and they were compelled to accept of their liberties upon the terms propoſed by the ſovereign, who prefaced his edict with theſe words: "Since, according to natural right, every perſon ought to be free, &c." a maxim not very conſiſtent with the compulſory purchaſe of liberty. The money being provided, Lewis made a campaign againſt de Bethune, count of Flanders, who, feeling himſelf unable to withſtand the army brought againſt him, determined to bend againſt the ſtorm. By the ſpecious language of ſubmiſſion, he involved the king in a ſeries of fruitleſs negociations, till the ſeaſon of action was paſſed, and the French army was obliged to retreat, without obtaining any advantage. While the king, indignant at the arts of his adverſary, was meditating new projects for revenging himſelf upon his adverſary, his deſigns were interrupted by death. A ſudden diſorder, imputed by ſome to poiſon, by others to drinking a glaſs of cold water when he was heated, proved fatal to him in June, 1316, after a reign of about a year and a half.

Lewis XI. ſon of Charles VII. was born in 1423, and at an early age diſplayed conſiderable talents, united to a turbulent diſpoſition. At the age of ſeventeen he headed a party of diſcontented nobles, who engaged in a petty war, which was ſoon ſuppreſſed, and the prince was glad to ſubmit. After this he reinſtated himſelf in the royal favour by his ſkill and valour in relieving Harfleur, inveſted by the Engliſh. He was ſoon ſent with a body of troops to aſſiſt the duke of Auſtria againſt the Swiſs, and obtained ſome advantages over them, which were ſucceded by a negociation with the Cantons, in which he concluded the firſt treaty between them and the crown of France. In 1446, diſguſted with the aſcendancy of Agnes Sorel, his father's miſtreſs, he left the court, and retired into Dauphinè, in which province he exerciſed the ſovereign authority. He eſtabliſhed the parliament of Grenoble, made laws, and even coined money. At length his conduct created ſo much uneaſineſs in the breaſt of his father, that he was determined to get poſſeſſion of his perſon; but the prince, being made acquainted with his intention, eſcaped, and took refuge in the court of Philip the Good, duke of Burgundy. Here he was treated in a manner conſiſtent with his rank; but Philip would not encourage any of his ſeditious projects. In the mean time the king brought back the government of Dauphinè to its ancient form, and kept a watchful eye over his ſon's motions: ſo jealous was he of his intentions, that the dread of being poiſoned by his contrivance was the cauſe of his death. In the year 1461, Lewis received the news of his acceſſion to the crown of France; he did not affect to conceal the joy which the intelligence excited in his breaſt. The competition of his younger brother, the duke of Berri, vaniſhed at his appearance, and his own coronation was celebrated with vaſt magnificence at Rheims, and honoured with the preſence of Philip, his noble hoſt, and that of his ſon, the count of Charolois. The firſt emotions of the king's gratitude for the protection he had met with, was diſplayed in his declaring the count his lieutenant-general in Normandy, with a very munificent ſalary; but theſe marks of eſteem and confidence ſoon vaniſhed, and were ſucceeded by an enmity between theſe rival princes, which only expired with life. The new king immediately diſmiſſed the miniſters of his father with diſgrace, and at the ſame moment releaſed from impriſonment the duke of Alençon, who had been confined for treaſonable practices. With regard to foreign potentates, his conduct ſeemed to be deſtitute of every principle of juſtice, and dictated merely by what appeared to be the intereſt of the moment. In pope Pius II. he met with a politician more refined than himſelf, for in the hope that this pontiff would aſſiſt in replacing the houſe of Anjou on the throne of Naples, Lewis cancelled the pragmatic ſanction of his father, which eſtabliſhed the liberties of the Gallican church: afterwards, finding himſelf deceived in his expectations, he permitted its execution in certain points. Being conſtituted mediator in a diſpute between the kings of Caſtile and Arragon, he had an interview with the former, in which he diſplayed the ſingularity of his diſpoſition: for while the Spaniſh monarch with his attendants diſplayed the greateſt magnificence in their apparel, he appeared in a dreſs of coarſe cloth, with an old hat upon his head, upon which was ſtuck a leaden image of the Virgin. This contraſt inſpired them with mutual averſion, and the two kings, after a fruitleſs conference, returned with a thorough contempt of the ſordidneſs of the one and the incapacity of the other. It was a great object of his policy to reduce the formidable power of the houſe of Burgundy; and, in the execution of his plans, he was ſuſpected of a plot for the ſeizure of the perſons of the duke and his ſon. In return, the count of Charolois joined the duke of Brittany in caballing with his diſcontented nobles, and formed a confederacy, called "the league for the public good," into which the king's brother, the duke of Berri, entered. The revolters took up arms, and the count attempting to ſurpriſe Paris, an engagement took place at Montlhèri, in which the victory remained undecided. Paris was, however, beſieged, and the king, to avert the danger, followed the advice of Sforza, duke of Milan, which was to break the league by liberal promiſes, and truſt to events for eluding the execution of them. He accordingly agreed to a diſgraceful treaty in 1465, by which he ceded the duchy of Normandy to his brother, and granted lands out of the royal domains to others of the leaders. Some diſputes between the dukes of Brittany and Normandy gave him an opportunity of recovering his power, and of diveſting his brother of the dukedom of Normandy, and of that which he before poſſeſſed. The acceſſion of the count of Charolois to the dukedom of Burgundy on the death of his father Philip, gave Lewis much uneaſineſs. The fiery temper of that prince, and his declared enmity to the king, involved them in perpetual hoſtilities. In the courſe of theſe, the king's brother, whom he had been obliged to make duke of Guienne, died, not without ſuſpicion of poiſon, and the duke of Burgundy, openly accuſing Lewis of fratricide, reſumed his arms. An invaſion of France by the duke's ally, Edward IV. of England, threatened great danger; but Lewis, adhering to his favourite principle of diverting rather than confronting a ſtorm, laviſhed his treaſures upon Engliſh miniſters and generals, and allured Edward himſelf by a promiſed penſion of 50,000 crowns for life, by which means a treaty between them was concluded in 1475. The duke of Burgundy made a ſeparate peace afterwards. Having thus extricated himſelf from foreign foes, Lewis indulged his ſevere diſpoſition in taking vengeance on domeſtic traitors. The conſtable St. Pol, who had ſerved under and betrayed both him and the duke of Burgundy, was brought to the ſcaffold, as was likewiſe the duke of Nemours. The cruelty of making the innocent children of the latter nobleman ſtand under the ſcaffold, at his execution, that they might literally be ſprinkled with their father's blood, inſpired univerſal horror and general deteſtation of the tyrant who could deviſe ſuch a deed. In 1476, Lewis was delivered from his moſt dangerous enemy Charles, who fell before Nanci; and he felt no ſcruple in making all poſſible advantage of this event, to the prejudice of the heireſs, Charles's only daughter, Mary of Burgundy: but his attempts againſt her were unſucceſsful, and Flanders and Artois declared for the ducheſs. Another ſcheme which Lewis meditated, was to oblige Mary to marry the young dauphin, but his hoſtile procedure had the effect of throwing her into the arms of Maximilian, archduke of Auſtria, an event which proved the fertile ſource of war for centuries. A war was the immediate conſequence of this alliance, but mutual convenience ſoon brought about a ſuſpenſion of arms. Lewis then turned his attention to the neighbouring ſtates, and managed ſeveral negociations with his wonted dexterity. He provided for the ſecurity of the family and dominions of his deceaſed ſiſter, the ducheſs of Savoy; he ſupported the houſe of Medici againſt pope Sixtus IV., made an alliance with Ferdinand and Iſabella, and renewed his treaty with Edward IV. One of the laſt public events of this reign was the union of Provence to the crown of France, by the bequeſt of Charles, count of Maine, the laſt prince of the houſe of Anjou. Lewis had now attained to a ſtate of great external proſperity, was regarded throughout Europe for his power and dextrous policy, and feared by thoſe who did not eſteem him. The decline of his health, and the dread of death, filled him with jealouſies and ſuſpicions relative to his temporal authority. The nearer he approached his end, the more he clung to life; and he endeavoured, by ſuperſtitious practices, to quiet the upbraidings of a guilty conſcience. He had a ſtrong guard round his palace, who kept at a diſtance all viſitors, except a very few, whom he permitted into his preſence ſingly. He changed his domeſtics every day, ſacrificed many to his ſuſpicions, and felt more dread than he inſpired. "The walls of the caſtle," ſays the hiſtorian, "were covered with iron ſpikes, a guard of croſs bow-men watched the gates and ramparts night and day, and the guilty tyrant heard his enemies in every paſſing wind." Earth was in vain ranſacked to revive his jaded appetites; heaven was invoked with prayers and proceſſions to avert his impending doom; all hope was fled, and his favourite, Oliver le Dain, pronounced to him the ſentence of certain and approaching diſſolution; the king heard him without betraying any emotions of terror: he ſent for his ſon Charles, and employed his laſt moments in adviſing him to cheriſh the princes of the blood; to govern by the counſels of his nobles; to maintain the eſtabliſhed laws of the kingdom; and to diminiſh the extraordinary impoſts with which he had burdened his ſubjects. This laſt effort exhauſted the ſtrength of the fainting monarch, and he died, after a reign of twenty-three years, in Auguſt 1483. Dreaded by his ſubjects, whom he had continually oppreſſed, and deteſted by his neighbours, whom he had aſſiduouſly deceived, he yet obtained from the obſequious temper of the repreſentative of St. Peter, the title of Chriſtian King, a title that was ever after held by his ſucceſſors. He inſtituted the order of St. Michael. He was author of ſeveral uſeful eſtabliſhments, and the adminiſtration of juſtice was generally pure where he himſelf was not concerned.

LEWIS XII., ſon of Charles, duke of Orleans, deſcended from Charles V., was born in 1462: he married Joan, daughter of Lewis XI., and at the death of that monarch, in 1483, and the acceſſion of Charles VIII. he ſtood as preſumptive heir of the crown, with the title of duke of Orleans. On the death of Charles, in 1498, he ſucceeded to the crown without oppoſition. Among the very earlieſt efforts of his reign were his attempts to diminiſh the taxes levied upon the people. He is alſo celebrated at this period for the well known ſentiment with which he quieted the apprehenſions of his enemies. "It is," ſaid he, "not for the king of France to revenge the injuries done to the duke of Orleans." Turning his attention to the duties of his new ſtation, he introduced various reforms into the civil adminiſtration and military diſcipline, exhibiting at the ſame time a ſteady mind in every thing which he undertook. He was anxious to obtain a divorce from his wife, the daughter of Lewis XI., becauſe, being deformed, ſhe was not likely to bring him any children, and alſo, becauſe he wiſhed to eſpouſe Anne of Brittany, widow of the late king, who had reſumed her duchy. The pope, Alexander VI., was ready to favour him on this occaſion, in order that, in return, he might obtain an eſtabliſhment for his natural ſon, Cæſar Borgia. On the oath of the king of France, that he had never conſummated the marriage, the holy pontiff declared the union void and illegal. Jane ſubmitted with decent reſignation to a ſentence which deprived her of a crown, retiring to a nunnery, in which ſhe took the veil, and cloſed a life of humble virtue; and, in January 1499, he was married to Anne of Brittany. The queen, though willing to aſcend the throne of France, was anxious to ſecure the independence of her native duchy, and ſtipulated, that if their union ſhould be productive of two ſons, the younger ſhould inherit Brittany, with all the prerogatives of its former princes. This agreement proved ineffectual, by her having no ſon, and by the marriage of her eldeſt daughter Claude to Francis, count D'Angouleſme, who afterwards aſcended the throne. The claims of Lewis upon the Milaneſe, and the kingdom of Naples, now began to excite in his breaſt the ambition of conqueſt; he accordingly made an alliance with the Venetians, and, in conjunction with them, invaded the dominions of Ludovico Sforza, duke of Milan. The French generals, in the ſhort ſpace of three weeks, made themſelves maſters of Milan, Genoa, and all the ſtrong places in the country: Lewis entered Milan in triumph, while Sforza retired with his family and treaſures to Inſpruck. A ſudden revolution cauſed the expulſion of the French, and the return of the duke, but the troops of Lewis ſhortly entered the Milaneſe, and got poſſeſſion of the perſon of the duke, who was ſent into France, where he died. Lewis now made a treaty with Ferdinand of Arragon, for the partition of the kingdom of Naples between them. In 1501 this plan was ſucceſsfully executed, and Frederic, king of Naples, expelled from his dominions, put himſelf into the hands of Lewis, as the moſt generous of his two enemies. Ferdinand was not content with a part of the conqueſt, but took every method to ſecure to himſelf the whole ſpoils; and by means of his famous captain, Gonſalvo de Cordova, obtained poſſeſſion, in 1503, of the whole kingdom of Naples, after defeating the French at Seminara and Cerignole. It was on this occaſion that Gonſalvo got poſſeſſion of the young prince, whom he conveyed to the king of Arragon, and though treated with lenity, he was for fifty years the captive of the court of Spain, till Death, that laſt friend to captives, extinguiſhed in him the Arragoneſe line of Neapolitan kings. In the year 1507, a revolt of Genoa called Lewis, in perſon, into Italy with a powerful army; he entered it as a conqueror, ſeemingly bent on vengeance, but his natural clemency was diſplayed in a moderate chaſtiſement which he inflicted upon it. In the following year he joined the famous league of Cambray againſt the Venetians, formed by the temporary union of powers mutually jealous of each other, and oppoſite in intereſts. Lewis became a party in the league through the influence of cardinal d'Amboiſe. He even marched at the head of his army, and, in May 1509, gained a complete victory at Aignadel, which reduced the republic of Venice almoſt to ruin. Its ſafety aroſe from that diſunion which might be expected in a league formed of ſuch diſcordant materials. Pope Julius II. who had chiefly contributed to its formation, reſolved, after the purpoſes of his own ambition were anſwered, to employ all his efforts to expel the foreign powers from Italy. With this view he made peace with the Venetians, and openly declared war againſt the French. A new league was now formed, of which Julius was the chief mover: he attacked in perſon the duke of Ferrara, its ally, and excommunicated the council of Piſa, which had been aſſembled under the auſpices of Lewis and the emperor. The military reputation of the French was ably ſupported by the duke of Nemours, who, in 1512, gained the battle of Ravenna, but fell in a raſh purſuit of the enemy. The king, his uncle, was deeply affected by the loſs of him, and of many other brave men; and deprecated a victory purchaſed ſo dearly. In a ſhort time after this, the Swiſs overran the Milaneſe, and the French were expelled. It was again recovered, and again loſt. At this period Henry VIII. of England joined the papal league, invaded Picardy, and routed the French in an action, ſince denominated the battle of the Spurs. Henry purſued his career of ſucceſs, which was interrupted by the retreat of the Swiſs and the deſertion of his allies; he determined, therefore, to repaſs the ſeas with the greater part of his army, ill compenſated for the expence with which it had been attended. In 1514 the queen died, and he propoſed marriage to Mary, ſiſter of Henry VIII.: his offers were accepted, and a league offenſive and defenſive was formed between the two kings. Lewis, however, was obliged to purchaſe this alliance with a great ſum of money, inſtead of receiving a portion with his wife. It was agreed that Henry ſhould receive the payment of a million of crowns, being the arrears due by treaty to his father and himſelf; and that the princeſs Mary ſhould bring four hundred thouſand crowns as her portion, and enjoy as large a jointure as any queen of France. Lewis alſo agreed that Tournay ſhould remain in the hands of the Engliſh; and that Richard de la Pole, an exile in France, who affected to revive the pretenſions of the houſe of York, ſhould be baniſhed.

The new queen, being young and beautiful, was welcomed with univerſal acclamations by the people; who rejoiced in an alliance that converted a formidable enemy into an important friend. In the midſt of feſtivities given on account of the marriage, formidable preparations were made for renewing the war in Italy; but his deſigns were broken. He had often repeated the adage, that "love is the king of youth, but the tyrant of old age," and he was now condemned to experience its truth. His conſtitution, already ſhaken, was exhauſted by his affection for Mary, with whoſe beauty, grace, and numerous accompliſhments he was enchanted. He died within three months of his marriage by a diſorder of debility, in the ſeventeenth year of his reign, and the fifty-fourth of his age. The character of this prince was diſtinguiſhed by a ſuperior integrity, ſeldom to be diſcerned in princes; and though ſometimes the dupe of his goodneſs of heart, and often of the treachery of his neighbours, yet he well deſerved the appellation of "the father of his people." In him expired the elder branch of the houſe of Orleans, and the ſceptre of France was transferred to that of Angouleſme.

“ Hiſtory,” ſays the biographer, “ has taken pleaſure in recording, that when, according to the uſual cuſtom, the criers announced his death, it was done in theſe words, “ the good king Lewis, the father of his people, is dead.” He was naturally inclined to economy: this was once made a topic of ridicule in his preſence, to which he replied, “ I had rather ſee my courtiers laugh at my avarice, than my people weep at my extravagance.” In his manners and converſation, Lewis was affable, mild, and cheerful, prone to ſallies of innocent pleaſantry, and fond of literature. He aſſembled men of learning at his court, and employed them in public affairs. Greek was firſt taught at the French univerſities in his reign.

Lewis XIII., ſon of Henry IV., by Mary de Medicis, ſucceeded to the throne in 1610, under the regency of his mother, being only in the thirteenth year of his age. He was declared in his majority in the year 1614, and ſoon after the ſtates-general were convoked. At the meetings of this aſſembly many abuſes were diſcuſſed, and ſome few were remedied. During the minority of the king, France had been, on account of the mal-adminiſtration of the queen, a ſcene of faction and civil commotions: theſe troubles continued, and were greatly aggravated by a religious war. Lewis's character, as it opened, diſplayed that propenſity to be governed, which indicates weakneſs of mind, together with much coldneſs and indifference. The great duke of Sully, inflexible in his plans, confiding in the integrity of his own heart, and diſdaining the arts of courts, found that ſincerity, which had been eſteemed by Henry, no longer acceptable; he indignantly retired to the eſtates which he had purchaſed through the bounty of the late king, and reſigned his offices. Every day now revealed the aſcendency of Concini, who endeavoured to remove from the eyes of the people the unpopular circumſtance of foreign birth, by aſſuming the title of marquis d'Ancre. During the adminiſtration of this favourite, the annals of France, as they reſpect the internal affairs of the country, preſent a dreary proſpect of unintereſting anarchy and barren diſcord. The princes of the blood, inſatiate of power, and the nobles turbulent and diſcontented, repeatedly erected the ſtandard of revolt againſt the regal authority; as frequently, with contemptible levity, they courted the returning friendſhip of the crown, whoſe timid counſels were content to ſoothe, without preſuming to repreſs, their capricious arrogance. Amidſt theſe hoſtilities at home the king concluded his marriage, and received at Bourdeaux the hand of Anne, the infanta of Spain. Immediately after the celebration of that ceremony, Lewis marched at the head of his army with the view of reducing the prince of Condè, in order that he might impreſs his ſubjects with favourable ſentiments of his courage and activity. The approach of winter ſuſpended the operations of the contending parties, who, while they rejected all terms of accommodation, ſeemed ſtudious, in every enterprize, to avoid the effuſion of blood. With the return of ſpring the royal forces were again aſſembled, and were again led on by the preſence of their ſovereign; but much was the ſurprize of his ſubjects to learn the intelligence that the king had ſubſcribed a peace, and ſubmitted to the demands of thoſe princes whom he had ſo lately declared traitors to his throne. In 1617, Concini was murdered in the Louvre, at the inſtigation of Luynes, whom he had introduced to the king, and who now ſuperſeded him in the royal favour. The principal events which occurred in this reign during the adminiſtration of Luynes, were quarrels with the queen-mother, and a renewed war with the Calviniſts, who were headed by the duke de Rohan. During this war Luynes died, and the Calviniſts obtained an advantageous peace. In 1624, cardinal Richelieu, who, while biſhop of Luçon, had been gradually riſing to political reputation, acquired the chief management of affairs, which he held with uncontrouled ſway ſo long as he lived. This great miniſter found a very difficult taſk before him, owing to the weakneſs of the king, the ſelfiſh ambition of the nobles, and the prevalence of different factions. War broke out again with the Calviniſts, who complained that the conditions of a former treaty had not been obſerved. The ſovereign appeared in arms, but the chief honour was due to Richelieu, who, after a long ſiege, took Rochelle, by means of a vaſt dyke thrown acroſs the harbour to cut off ſupplies by ſea. This important conqueſt was the means of reducing the party to civil obedience, and, to the honour of the victor, they were ſtill allowed a good ſhare of religious liberty. In addition to the civil contentions, a war with Spain broke out in 1635, which was at firſt unſucceſsful on the part of France; but at length the Spaniards were reduced to ſue for peace. In the mean time the ſpirit of Richelieu's domeſtic adminiſtration was highly arbitrary, and the king diſplayed great harſhneſs in his addreſſes to the parliament. The laſt of his favourites was Cinqmars, who was recommended to the monarch by his miniſter, but who was led by his ambition to cabal againſt his friend and patron. His ruin was the conſequence, and Lewis gave him up to execution with the moſt perfect indifference. (See Cinqmars.) On the morning of the execution of this man, intelligence was brought of the ſurrender of Perpignan, and the total diſcomfiture of the enemy, of which facts the miniſter appriſed the king in a ſingle and very ſhort ſentence, “ Your troops are in Perpignan, and your enemies in their graves.” Immediately after theſe events, Mary de Medicis cloſed a wretched life, reduced to the utmoſt indigence, at Cologne. The filial affection which Lewis denied to her while living, was revived on the news of her death; but the attention of France was now completely engroſſed by the approaching diſſolution of him, whoſe daring counſels had driven her into baniſhment. The glories and life of Richelieu drew near their end; after the reduction of Perpignan, exhauſted in body, but ſtill vigorous in mind, he had approached the capital by ſlow and triumphant journies; his laſt moments atteſted his aſcendancy over the ſovereign. On his deathbed he proteſted to Lewis, that his counſels had ever been directed to the honour of the crown and the welfare of the kingdom. (See Richelieu.) From the death of this miniſter, Lewis aſpired to hold the reins of government for himſelf: the war was proſecuted with diligence, vigour, and ſucceſs, and the ſpirit of Richelieu ſeemed ſtill to impel the machine which his genius had ſet in motion. But victory could not check the progreſs of diſeaſe, and Lewis was ſenſible that the inevitable moment was rapidly approaching when his life and reign muſt terminate together. A ſlow fever had already worn him to a ſkeleton, and he prepared to meet with firmneſs and compoſure the laſt ſcene of human greatneſs. “ When,” ſays the hiſtorian, “ his phyſician, at his earneſt deſire, numbered the fleeting minutes that remained, and pronounced that his life could not exceed two or three hours; he received the intelligence with reſignation, and even ſatiſfaction; and looking fervently up to heaven, added, “ Well! I conſent with all my heart.” The prediction was ſtrictly verified by the event, and he expired in the forty-ſecond year of his age, and in the thirty-third of his reign. In eſtimating his character; he was devout, but his devotion ſhewed itſelf in minute obſervances and ſubmiſſion to his confeſſors. He was not greatly addicted to pleaſure, and the miſtreſſes on whom he beſtowed his favours, were rather the objects of his jealouſy than of his love. He had a ſhare of judgment and ſolid ſenſe, and did not want deciſion. In the adminiſtration of juſtice, he was inclined to rigour, and thence acquired the epithet of "The Juſt;" though it muſt be admitted that his adminiſtration of juſtice was frequently impeached by his ſeverity, and ſometimes by his cruelty.

LEWIS XIV., ſon of the preceding, was born in 1638, and ſucceeded to the crown, under the regency of his mother, Anne of Auſtria, on the death of his father in 1643. She ſoon reſigned herſelf to the influence of cardinal Mazarin, who had ſucceeded Richelieu in the laſt reign. In the early part of this reign, the kingdom was involved in a bloody and extenſive war with the houſe of Auſtria. The peace of Munſter, in 1648, relieved France from the greater of her foreign foes; but it was ſoon ſucceeded by the civil war of the Fronde, during which the royal family was obliged to leave the capital, and wander as fugitives from province to province. The education of the young king was much neglected, and he was left ignorant of the points of knowledge moſt uſeful and reputable to a prince. The more valuable part of his reading was the tragedies of Corneille, which improved his taſte, and gave him ideas of true grandeur; but the want of ſolid inſtruction, moral and literary, marked his character through life. The leſſon moſt ſtrongly impreſſed on his mind in his very childhood, was the ſentiment of his own importance, which, though it led him to adopt a dignified propriety of conduct, nouriſhed in him that pride and vanity, and that impatience of controul, which were the leading features of his reign. Taught by flatterers that he himſelf was every thing, and that his ſubjects were nothing in the compariſon; he was habituated to think no ſacrifice of their's too great for the promotion of his glory and the gratification of his deſires. The convulſions of the ſtate had not ceaſed when Lewis XIV. had attained the age fixed for his aſſuming the reins of government, and his majority was ſolemnly declared in parliament; but he was ſtill in leading-ſtrings, influenced wholly by the counſels of his mother, and he ſeemed to inherit her fond partiality for Mazarin, though he was ſhortly after, by the inſtigation of his parliament, obliged to give him up, and ſuffer him to retire into exile. No ſooner was it known that Mazarin had left the city of Paris, than the king was welcomed by the inhabitants with the loudeſt acclamations, and he found himſelf freed from the clamorous importunities of a diſcontented parliament, and firmly fixed on his throne. Scarcely, however, was he expelled by the general voice of the nation, and by the royal declaration, than he was recalled by the king, and, to his own infinite ſurprize, entered Paris once more in full power, and without the leaſt diſturbance. The king received him as a father, and the people as a maſter; but the cardinal, amidſt the ſatisfaction of this change, could not repreſs his contempt of the national levity. The miniſter applied himſelf with vigour to extinguiſh the ſparks of revolt; and, in 1653, the war of the Fronde was terminated with his complete triumph. Condè, who had joined the Spaniards, continued to maintain a kind of civil war on the frontiers, where he was held in check by his rival in glory, the great marſhal Turenne. In 1659, the peace of the Pyrenées advantageouſly concluded the long quarrel with Spain. One of its conditions was the marriage of the king with the infanta Maria Thereſa, which took place in 1660. The king, during the life of Mazarin, interfered very little in public affairs; but after his death, in 1661, Lewis began to govern for himſelf, and from that moment the poſt of prime-miniſter became vacant: he had, however, able men about him; among theſe was Colbert, who had been recommended to him by Mazarin, as a moſt able financier. To his genius was owing the revival of commerce and the marine, and all the ſplendid eſtabliſhments of arts and manufactures which adorned the early part of this reign. It was he who, though not learned himſelf, was capable of appretiating the true value of literature, and ſuggeſted to the king, his maſter, that plan of penſioning all the eminent men of letters throughout Europe, which, at a comparatively ſmall expence, ſecured to him more adulation from perſons of real learning, than any prince of modern times. His leading object was perſonal grandeur. In whatever point any other prince had attained to greatneſs, he was reſolved to emulate him. He employed all the reſources of a rich and flouriſhing country to ſurpaſs every competitor, in whatever could conduce to his glory. This ſpirit led him to attempt many great and uſeful projects, but for want of limit and moderation, it defeated its own purpoſes, and exhauſted its means before it had attained its end. The age of Lewis XIV. was that in which the reputation of France for arms, arts, literature, and magnificence, ſtood at its higheſt pitch; at the ſame time, it was that which demonſtrated its wretchedneſs and humiliation, and the impartial hiſtorian has held up the king rather as the ſquanderer of his country's proſperity, than as the author of it. Of the wars of this monarch we cannot pretend to give a detailed account; the moſt that this article will allow will be a ſketch of the principal events of the reign, as connected with the perſonal character of the king. A quarrel concerning the precedence between the French and Spaniſh ambaſſadors at London, gave occaſion to Lewis to aſſert in ſuch high terms the ſuperiority of his crown, that the point was never after conteſted. Shortly after, the inſolence of the French ambaſſador's ſervants at Rome, having brought upon them an attack from the pope's Corſican guard, in which ſome were killed, and the French quarters violated, the king ſeized upon Avignon, and obliged the pope's nephew, a cardinal, to come to Paris and aſk pardon; the Corſican guard was broke, and a column was erected in Rome as a memorial of the event. War with Spain was renewed in 1667; the king in perſon took the field, though the meaſures of the campaign were probably directed entirely by the great Turenne. The whole of Flanders was reduced in this campaign, and at the cloſe of it Franche Comptè was conquered. A triple alliance between England, Holland, and Sweden, checked the progreſs of the French arms, and produced the peace of Aix-la-Chapelle in 1668. In 1672 Lewis, with a vaſt army, commanded by the ableſt generals, burſt upon the provinces of Holland; and Amſterdam, the capital, was reſcued from his graſp only by laying the ſurrounding country under water. At this juncture, William, prince of Orange, raiſed to the office of ſtadtholder, revived the drooping ſpirits of his countrymen: and the principal potentates of Europe, alarmed at the ſucceſs and ambition of France, leagued againſt her. Holland was now evacuated as faſt as it had been over-run. The French arms were again turned upon Franche Comptè; it was conquered a ſecond time, and became inſeparably annexed to the crown of France. War with Spain, the empire, and other powers, continued ſome years longer, but it was terminated, in 1678, by the peace of Nimeguen. Lewis, attended by all the pomp and luxury of a court, formed ſeveral ſieges in perſon; he carried with him hiſtoriographers to record his exploits, and every art was employed to exalt him in his own eſtimation, and in the eyes of Europe. He received from his ſubjects the title of "Le Grand," which for a conſiderable time ſeemed durably attached to his name; but he lived to loſe it in the eſtimation of foreigners, and it has, by the events of the laſt twenty years, finally become obſolete among his own countrymen. The peace of Nimeguen did not terminate the projects of Lewis XIV.; he attacked, and brought to ſubmiſſion, the piratical ſtates of Algiers, Tripoly, and Tunis; and next, upon very trifling grounds of offence, made war upon Genoa, and forced the doge to come in perſon and aſk pardon of the king. With pope Innocent XI. he quarrelled reſpecting the ſuppoſed rights of the Roman church, and becauſe he inſiſted upon retaining the franchiſes of embaſſadors from Rome, which other powers had agreed to renounce, as inconſiſtent with a ſafe and regular police. On this occaſion Lewis declared to the nuncio, "that he would never take the example of others as the rule of his conduct, but that it was for him to give the example." He was now ambitious of the fame that would attach to the extirpation of hereſy from his kingdom. Calviniſm, in France, ſince the victory over it by Richelieu, had become a peaceful ſeparation from the national church, and its ſectaries were uſeful citizens chiefly attached to manufactures and commerce. Lewis, animated by a ſpirit of intolerance and bigotry, undertook to put an end to it. The privileges of the Proteſtants were openly violated: miſſionaries were ſent for their converſion, ſupported by dragoons; and ſeverities were exerciſed, which excited the horror and indignation of all the reformed ſtates of Europe. In 1685 the revocation of the edict of Nantes, firſt granted by Henry IV. and confirmed by Lewis XIII. deprived the Proteſtants of all exerciſe of their religion, and tore from them their children to be educated Catholics. The tyrant at the ſame time iſſued his decrees againſt emigration, and placed guards on his coaſt; nevertheleſs vaſt numbers eſcaped from his machinations, and carried their arts and induſtry to foreign and hoſtile nations. Lewis, though a pretended votary to religion, and a zealous ſon of the church, was not free from that licentiouſneſs which is regarded as highly culpable by perſons of real and unaffected piety. Several miſtreſſes, in ſucceſſion, enjoyed his favours; with one of whom, madame de Monteſpan, a married woman, he lived a long time, in the moſt open manner, and indulging her haughty and capricious humour. Her influence declined with her perſonal charms, and the king's advancing years; and ſhe was ſuperſeded by the widow Scarron, elevated from that low condition to the title of madame de Maintenon, a perſon who, by the powers of her underſtanding, and conſummate ſkill in the art of pleaſing, obtained a complete aſcendency over the king's mind. On the death of the queen he privately married her, but ſhe was never acknowledged as queen. The league of Auxbourg, formed in 1687, between the emperor and moſt of the German princes, the king of Spain, the United Provinces, the duke of Savoy, and other Italian potentates, had for its object the reduction of the power of France. The great leader in this league was William, prince of Orange, who, when he aſcended the throne of England, contrived to add that kingdom to the confederacy. The forces of France had proved victorious in many quarters; marſhal Luxembourg, and other eminent generals, renewed the ſucceſſes of the former war, and the king in perſon took Namur. The defeat at La Hogue was, however, a fatal blow to the French marine; the finances of the country began to be depreſſed, a circumſtance that led to much domeſtic diſtreſs, and Lewis XIV. was obliged, in the midſt of victory, to ſign the general peace of Ryſwick in 1697. The declining health of Charles II. king of Spain, who was without heirs, became a ſubject of univerſal intereſt with reſpect to the diſpoſal of his vaſt inheritance; and Lewis, fearing leſt it ſhould fall into the hands of the houſe of Auſtria, joined England and Holland in a ſcheme for the partition of the Spaniſh dominions. At length, however, the dying king made his will, appointing, as his general heir, Philip, duke of Anjou, ſecond grandſon of Lewis. The wary monarch foreſaw the danger of accepting the legacy, but was decided by a regard for the glory of his houſe, and the wiſh of uniting the intereſts of two great monarchies, which had generally been at variance. The hopes of the king have been completely diſappointed, and every attempt to form an union of intereſt and affection between two nations radically oppoſite in character and circumſtances, has been baffled. Neither the intrigues nor the power of the preſent emperor of France have, at preſent, been able to effect that which was unqueſtionably an object near the heart of Lewis XIV.

The jealouſy excited in England and Holland by this acceſſion to the influence of France, was converted into open hoſtility by the imprudence of Lewis in declaring the ſon of James II., king of England, at the deceaſe of his father in 1701. This ſtep, contrary to the unanimous advice of his council, and his own judgment, was taken in conſequence of a generous emotion of pity for the family of his royal friend, enforced by the ſolicitations of madame de Maintenon; it was not only impolitic, but, in fact, it amounted to a declaration of war, becauſe an article in the peace of Ryſwick, explicitly acknowledges William's title to the crown of England. A new league was immediately formed between the maritime powers and the emperor of France; and the death of king William, during the preparations for war, did not prevent its being carried into execution under his ſucceſſor queen Anne. From this period to the year 1711, the reign of Lewis was one continued ſeries of defeats and calamities; and he had the mortification of ſeeing thoſe places taken from him, which, in the former part of his reign, had been acquired at the expence of many thouſand lives. The domeſtic miſery of Lewis had kept pace with the public calamities; the court, the ſplendour and magnificent entertainments of which had excited the admiration and envy of Europe, had long been impreſſed with a deep and ſettled gloom. The art of ſurgery, in Europe, was yet feeble and crude; a fiſtula, with which the king was attacked, ſpread a general alarm; and though the operation was ſucceſsfully performed, yet he never recovered his accuſtomed ſpirits, but led a more ſerious and retired life, and chiefly devoted his hours to the converſation of madame de Maintenon, whoſe influence increaſed with his years. To his own private afflictions were added many family loſſes. The death of the king's only ſon, which happened in 1712; the duke of Burgundy, the ducheſs his wife, and their eldeſt ſon, all ſwept away within a few months, and laid in the ſame tomb; the only ſurviving child at the point of death; theſe private woes, added to thoſe of the public, mark the cloſe of the reign of Lewis, as an era of calamity; and a wretched people, who conceived that their own happineſs was concerned in the glory of the king, awaited in ſilence to behold the former greatneſs of their monarch extinguiſhed by the dark cloud of miſery which obſcured his ſetting ſun. Another mortification remained for the king; he had enlarged the canal of Mardyke, and formed an harbour there, equal, it was thought, to that of Dunkirk. The embaſſador for England remonſtrated againſt this evaſion of the treaty of Utrecht, and Lewis was under the neceſſity of diſcontinuing the works. At the age of ſeventy-ſeven, that vanity and ambition which had agitated the years of manhood were nearly extinguiſhed. He coolly liſtened to the ſolicitations of the unfortunate James, who aſpired to aſcend the throne of his late ſiſter, queen Anne, already filled by the elector of Hanover, under the title of George I. To the importunities of the prince he granted a ſmall ſupply of money, and a veſſel fitted out in the name of an individual; but while that enterprize hung in ſuſpence, Lewis was ſeized with a mortal diſeaſe which ſoon brought him to the grave. In his laſt hours he diſplayed a greatneſs of mind worthy of his exalted ſituation. "Why do you weep," ſaid he to one of his domeſtics, "did you think me immortal?" His fortitude was tempered with humility; he recollected his own weakneſſes, and had ſufficient magnanimity to confeſs them; his advice to the infant that was to ſucceed him was to avoid that glory which he had hoped to attain by war, and to conſider the happineſs of the people as the principal object of his government. To madame de Maintenon he left no fixed ſtipend, but contented himſelf with recommending her to the care of the duke of Orleans. She retired to St. Cyr, which had been founded, at her perſuaſion, for the education of young ladies, and demanded but little more than 3000*l.* *per annum* during her life; this was regularly paid till her death, which happened in about four years. Lewis XIV. had the misfortune of outliving his popularity, and an indecent joy was manifeſted by the people at his funeral. As a monarch he had none of the commanding qualities which create a nation or an era, and would ſcarcely have been diſtinguiſhed from common princes under common circumſtances. The maſculine beauty of his perſon was embelliſhed with a noble air; the dignity of his behaviour was tempered with the higheſt affability and politeneſs; elegant without effeminacy; addicted to pleaſure without neglecting buſineſs; decent in his vices, and beloved though inveſted with arbitrary power. Nevertheleſs his qualities ſeemed thoſe that rather attract a momentary regard, than command a permanent eſteem. The talents, the fire of the ſtateſman, and the hero were ſtill wanting; vanity rather prompted him to inſult, than ambition to enſlave his neighbours. Though he frequently took the field, and reduced countries and the ſtrongeſt towns, yet in all his campaigns he never expoſed his life to the hazard of a battle. The age of Lewis XIV. will always be a memorable period in his country and of Europe. His own intellectual acquiſitions were very limited, but he was the patron of learning and ſcience.

Lewis XV., ſon of the duke of Burgundy, (grandſon of Lewis XIV.) was born at Verſailles in 1710, and ſucceeded to the crown on the death of his great grandfather, when he was but five years of age. By the laſt will of Lewis XIV., a council of regency was appointed during the minority of the young king, at the head of which was the duke of Orleans. That nobleman, however, diſguſted with an appointment which gave him only a caſting vote, appealed to the parliament of Paris, who ſet aſide the will of the late king, and declared the duke ſole regent. His firſt acts were extremely popular, and gave the moſt favourable ideas of his government and character. He reſtored to the parliament the right which had been taken from them, of remonſtrating againſt the edicts of the crown; and compelled thoſe, who had enriched themſelves during the calamities of the former reign, to reſtore their wealth. The young king was placed under the tutelage of Fleury, biſhop of Frejus, afterwards cardinal, who, by his inſinuating and very gentle manners, acquired his affection and eſteem. His minority ended in 1722, and he was ſolemnly crowned; but the regent retained his chief power during another year. He now reſigned his high office as prime miniſter to the duke of Bourbon, who negociated a marriage between the king and Maria Leczinſki, daughter of Staniſlaus, king of Poland, which took place in 1725. Shortly after this, Fleury became prime miniſter; which poſt, notwithſtanding his great age, he held till his death in 1743. The ſpirit of his government was economical and pacific; and a war with the empire, in 1733, was the principal foreign occurrence. This terminated in the annexation of Lorraine and Bar to the crown of France. Lewis lived for ſome years in conjugal affection and fidelity with his queen, by whom he had one ſon and ſeveral daughters. At length, however, he was captivated by the allurements of ſome ladies of the court, and received, it is ſaid, the favours of three ſiſters at the ſame period: and from this time he indulged his propenſities for the female ſex without moderation and delicacy. On the death of the emperor Charles VI. in 1740, a new continental war was excited. France joined with Pruſſia and Poland, in raiſing to the empire the elector of Bavaria, in oppoſition to the intereſts of the houſe of Auſtria, whoſe cauſe was maintained by England, Holland, and Sardinia. In 1744 Lewis took the field in perſon, and was at the reduction of ſeveral ſtrong places; but at Metz he was attacked with a dangerous illneſs, which occaſioned a general conſternation through France. His recovery was celebrated with all thoſe tranſports of joy which could proceed from the awakened ſenſibility of a nation, then remarkable for an enthuſiaſtic attachment to its ſovereigns. The ſurname of "Well-beloved" was given to the king on this occaſion; and, in return for the affection of his people, he diſplayed the feelings of a good heart, and exclaimed very ſincerely, as well as very naturally, "How ſweet is it to be thus loved! What have I done to deſerve it?" Soon after his recovery, he beheld at a diſtance the bloody battle of Fontenoy, gained by marſhal Saxe. The French were generally ſucceſsful in Auſtria and the Dutch Netherlands, but were defeated in Italy; and their marine was totally ruined by the Engliſh. The treaty of Aix-la-Chapelle, in 1748, reſtored peace to Europe: and, as far as the exhauſted finances of France would allow, uſeful plans of domeſtic improvement were executed; and the moſt ſplendid eſtabliſhment of the reign, the royal military ſchool, was inſtituted in the year 1751. About this time, ſome warmly conteſted diſputes between the magiſtracy and clergy occaſioned the interference of the king, who, inſtead of making a firm deciſion between the contending parties, upon principles of juſtice and true policy, acted the part of a deſpot, by alternately baniſhing both. It was in conſequence of the ferment produced by theſe quarrels, that a fanatic, named Damien, was induced, in 1757, to attempt the life of the king at Verſailles, in the midſt of his guard. He received a ſlight ſtab between his ribs. Damien was evidently inſane: he was inſtantly ſeized by the ſoldiery, and put to the rack, in which he endured the moſt exquiſite tortures that the wit of the moſt ſavage hearts could invent. In the midſt of theſe he perſiſted in an obſtinate manner to declare, that he had no intention to take away the life of the king: his only object was to wound him, that Almighty God might by that means affect his heart, and thereby incline him to reſtore peace to his dominions. Theſe expreſſions had no weight with his mercileſs tormentors, who conſigned him to the moſt terrible death which they could deviſe. This circumſtance had probably ſome effect on the king himſelf; for he ſoon after baniſhed the archbiſhop of Paris, and accommodated matters with his parliament. The war of 1755 had brought the nation to the brink of ruin, when Lewis implored the aſſiſtance of Spain; and on this occaſion the celebrated "Family Compact" was ſigned, by which, with the ſingle exception of the American trade, the ſubjects of France and Spain were naturalized in both countries, and the enemy of one ſovereign was to be invariably regarded as the enemy of the other. At that time, the acceſſion of Spain to her cauſe only added new laurels and acquiſitions to Great Britain. Lewis's attachment to a ſelfiſh and imperious miſtreſs, madame de Pompadour, who was allowed to appoint and diſmiſs miniſters and commanders at her pleaſure, and ſacrificed every thing to her avarice and ambition, was greatly inſtrumental in producing the diſaſters which followed one another at this period in rapid ſucceſſion. The concluſion of the ſeven years' war, in 1763, gave the nation repoſe, but not without a conſiderable diminution of territory; and in the following year, the ſociety of Jeſuits, as celebrated for their great learning as famous for their unbounded intrigues, was aboliſhed in France. The death of madame de Pompadour did not free the king from female influence, who by this time had incurred all the habits of a confirmed debauchee. He fell under the dominion of madame de Barrè, who, by her diſſolute arts, provoked his languiſhing deſires; and his latter years, as might have been anticipated by the conduct of the former part of his life, was diſgraced by the groſſeſt ſenſuality. At the ſame time, the government became more ſevere and arbitrary. Though the arms of Lewis had extinguiſhed the flame of freedom in Corſica, in France it was revived by the breath of the parliaments, and cheriſhed with a fond regard that threatened the moſt important conſequences. An edict iſſued by the king, which transferred ſome new and extraordinary powers to the grand council, was ſtrenuouſly oppoſed by the parliament of Paris. Sixty-four members of that aſſembly voted for utterly aboliſhing that council; and the queſtion was loſt by a majority of two, though all the princes of the blood attended to ſupport the court; and the duke de Choiſeul endeavoured to overawe the independent ſpirit of the patriotic party, by continuing in the aſſembly throughout the debate. The miniſter, finding his exertions in the ſupport of deſpotiſm of no avail, attempted to conciliate thoſe whom he had vainly endeavoured to intimidate. Hitherto the ſovereign had reſiſted the ſolicitation of the people to reſtore the parliament of Brittany: he now aſpired to popularity, by doing of his own accord that which he had been frequently importuned to grant; and the duke de Duras was ſent into that province to re-eſtabliſh the parliament, and to recal the members from exile. But conceſſion, which a ſhort time before would have been aſcribed to the benignity of the monarch, was now attributed to his fears; and the parliament had ſcarcely aſſembled before they convinced their countrymen, that oppreſſion had confirmed, and not extinguiſhed their zeal for the public welfare. The province of Brittany had long groaned under the iron rule of the duke d'Aiguillon; who for four years had perſecuted with unremitting vengeance M. de Chalotais, the attorney-general to the parliament. That unfortunate gentleman had oppoſed, with the indignation of a virtuous magiſtrate, the oppreſſive meaſures of the duke; he was therefore driven into exile, and purſued from dungeon to dungeon, till at length a ſentence was procured againſt him that would have involved his life, and which his cruel perſecutor was haſtening privately to carry into execution. The parliament of Brittany interfered, and prevented the perpetration of ſo foul a deed. The reſcue of M. de Chalotais laid open a ſcene of the blackeſt iniquity; and the parliament of the province, poſſeſſed of new proofs, commenced a proceſs againſt the duke d'Aiguillon, whoſe trial was conducted in the preſence of the king, the princes of the blood, the peers, and the parliament of Paris. Before ſo high a court thus ſpecially aſſembled, the written proceedings carried on againſt M. de Chalotais were produced, and diſcloſed ſuch a complicated ſyſtem of guilt and cruelty as exceeded every thing that could have been imagined. Amidſt theſe domeſtic diſquietudes, the dauphin, afterwards Lewis XVI., received the hand of Maria Antoniette, ſiſter to the emperor of Germany. The crowd that eagerly preſſed forward to be ſpectators of the fire-works, diſplayed on this occaſion, was ſo great, and the confuſion that prevailed was ſo completely overwhelming, that ſeveral hundred perſons periſhed, by being literally trampled to death. This loſs, however, which was felt in one way or other by almoſt all the families of Paris, did not divert the public attention from the proſecution of the duke d'Aiguillon. But at the moment that the nation was expecting, with the moſt earneſt ſolicitude, the deciſion of this moſt important cauſe, Lewis thought proper, by a violent exertion of his power, to put a ſtop to the whole courſe of juſtice, and to all farther inquiries into the conduct of the duke. All the parliaments of the kingdom made a common cauſe: the ordinary courſe of juſtice was ſuſpended; and, in concluſion, the king, in 1771, overthrew the whole ſyſtem of judicial adminiſtration, and eſtabliſhed a new one. This was not effected but with force. The language of the parliament of Paris was worthy the indignant feelings of free men: "Your edict, ſire," ſay they, "is deſtructive of all law: your parliament is ſworn to maintain the law; and the law periſhing, they ſhould periſh with it: theſe, ſire, are the laſt words of your parliament." Lewis, unaccuſtomed to ſuch language, prepared to ſupport his authority by the moſt violent meaſures. In the dead of the night, the members were rouſed from their ſlumbers by parties of the guards ſent into each houſe, who preſented to every individual a lettre de cachet, which enjoined them to declare whether they would reſume the adminiſtration of juſtice. In the moment of confuſion, ſeveral of them were ſurpriſed into acquieſcence; yet they ſoon retracted, and, in the end, the whole body of parliament was baniſhed the capital. Here then was the foundation of that revolution, which muſt be touched upon in the next reign, and which has introduced ſuch ſcenes into the political world which the wildeſt imagination could not have conceived. The exhauſted ſtate of the finances ſuggeſted new and burdenſome impoſts on the great body of the people, which augmented the public diſcontents. In the midſt of theſe, Lewis found no ſolace even in the company of his miſtreſs madame de Barrè: her beauty proved inſufficient to excite deſire; and he became diſcontented with himſelf, and with all about him. A ſucceſſion of miſtreſſes became neceſſary to rouſe the languid appetites of the king. One of theſe, who was infected with the ſmall-pox, communicated the diſeaſe to the king, who in a ſhort time died of it, unpitied and unlamented, May 1774, in the ſixtieth year of his reign. He had loſt his only ſon in 1765, and his crown devolved upon his grandſon.

Such was the fate of Lewis XV., who at length fell a victim to thoſe ſenſual appetites, in the gratification of which he had ſacrificed his own fame, and the welfare of his ſubjects. The enviable appellation of *well-beloved*, which he was conſcious, as we have ſeen, he had not merited, but which had been conferred in the moment of danger by a loyal and affectionate people, was completely obliterated from memory, by 30 years of laſcivious exceſs, profuſion, and rapacity: his example had looſened the bands of morality; his prodigality had exhauſted the credit and reſources of his country; and his wanton pride had trampled upon every form that had been held ſacred in the conſtitution. His affections ſeemed to have been confined within the narrow limits of his perſonal pleaſures and ſecurity. It was by the perpetual ſuggeſtions of the counteſs de Barre, that his ſafety was at ſtake, which ſtimulated him to deciſive meaſures in ſuppreſſing the parliaments of France. Though concealed from the public eye, the embers of freedom were ſtill carefully cheriſhed, and, as will be ſeen in due time, burſt forth with accumulated force, and overwhelmed the throne of deſpotiſm. During this reign the arts and ſciences made a rapid progreſs in France, which was aided by the munificence of the court, as long as other demands did not anticipate the funds for this purpoſe. The voyages of the French mathematicians to the equatorial and polar regions, in order to meaſure a degree of the meridian, were equally honourable to the government and the perſons employed. The king was deeply read in hiſtory and geography. As a gentleman he was polite, affable, and naturally mild and humane; but fondneſs for ſenſual indulgence degraded him as a king and a man.

Lewis XVI. grandſon of the preceding, and ſon of the dauphin, Lewis, and of Maria Joſepha of Saxony, was born in Auguſt, 1754. His father carefully ſuperintended the education of his three ſons, and placed them under the direction of preceptors, who were particularly attentive to their morals, and who inſtilled into their minds ſound principles. With reſpect to the ſubject of the preſent article their cares perfectly ſucceeded: he, whoſe title at that time was the duke of Berry, was naturally modeſt, timid, and docile, and repaid, by his virtues, the attention beſtowed upon him. In his earlieſt years, though he did not manifeſt any brilliancy of parts, he ſhewed a diſpoſition capable of attaining uſeful knowledge, and manifeſted a memory retentive of the minuteſt facts. He had a ſound judgment, great patience and application. He aſcended the throne in 1774, being then in the 20th year of his age, and, to ſecure himſelf againſt the dire effects of that diſeaſe, which had proved fatal to his predeceſſor, ſubmitted to inoculation, with ſeveral others of the royal family. Their quick and eaſy recovery contributed much to extend the practice throughout the kingdom. The king, as ſoon as he had gained his health, applied himſelf diligently to extinguiſh the differences which had taken place betwixt his predeceſſor and the people. He removed thoſe from their employments, who had given cauſe of complaint by their oppreſſions; and he conciliated the affections of his ſubjects, by diſmiſſing the new parliaments and recalling the old ones. Though the prudence of Lewis had ſuggeſted theſe compliances, he was anxious to preſerve the royal authority pure and entire: he avowed in one of his earlieſt ſpeeches, in the great chamber of parliament, that the ſteps he had taken were deſigned to enſure the tranquillity and happineſs of his ſubjects; and he hoped, from the zeal and attachment of the preſent aſſembly, for an example of ſubmiſſion to the reſt of his ſubjects; he farther ſaid, he was deſirous of burying in oblivion all paſt grievances, and that he ſhould ever behold with extreme diſapprobation, whatever might tend to create diviſions and diſturb the general tranquillity. It was, however, the misfortune of this monarch, as it was that of Charles I., to come to the crown at a period when a great change in public opinion had long been preparing, and was now arrived at a point, which announced a ſpeedy criſis in the political ſyſtem. The deſpotiſm of the laſt two reigns had exaſperated men's minds, and rendered them alive to the evils of arbitrary power, while the weakneſs and debauchery of Lewis XV. had accuſtomed the nation to regard the crown with contempt. "The profligacy of the nobles, the rapacity of the courtiers, the diſputes and vices of the clergy, had ſapped the foundations of ſocial order; and, in the mean time, a ſet of able and eloquent writers had ariſen, who, by the united powers of argument and ridicule, aggravated all the faults of ancient eſtabliſhments, and endeavoured to ſubvert public opinion." The finances were in a ſtate of derangement, and though the king himſelf was extremely moderate in his expences, his economical plans were thwarted by the queen and the princes of the blood.

The final conqueſt of the Corſicans, who, provoked by the oppreſſions of their governors, had once more attempted to regain their former liberty, was the firſt event of importance which took place after the reſtoration of public tranquillity; but the kingdom was a prey to diſorder from other cauſes. A ſcarcity of corn happening to take place juſt at the time that ſome new regulations had been made by M. Turgot the new financier, the populace roſe in great bodies, and committed ſuch enormous outrages, that a military force became abſolutely neceſſary to quell them. The humanity of Lewis was ſhewn in an edict, which he cauſed to be regiſtered in parliament, ſentencing the deſerters from the army, in future, to work as ſlaves on the public roads, inſtead of puniſhing them, as formerly, with death; and with equal attention to the general welfare of his ſubjects, he ſeized the moment of peace to fulfil thoſe promiſes of economy, which on his acceſſion he had given to the people. Particular attention was paid to the ſtate of the marine; and the appointment of M. de Sartine, in 1776, to that department, did honour to the penetration of the ſovereign. Shortly after this, notwithſtanding the danger of the example, France took a decided part in the quarrel between England and her American colonies, permitting ſome of her ſubjects, men of high rank and ſtation in the country, to croſs the Atlantic, and ſerve in the republican armies. The conſequence of theſe meaſures was a declaration of war on the part of England. After a variety of fortune, France and her allies ſucceeded in detaching America from the Britiſh crown; yet the expence of ſuch widely extended operations left the French finances in a ſtate of aggravated diſorder, while the event could not fail to operate in behalf of antimonarchical principles. In the mean time ſucceſſive miniſtries had adopted various and contradictory ſyſtems with regard to external and internal policy; and ſeveral projects of reform had been propoſed and diſcuſſed, with no other advantage than that of accuſtoming the nation to debate with freedom all public topics, and open its eyes to exiſting abuſes. Without pretending to enumerate the events of the preſent reign as they occurred, the record of which would fill a volume much larger than that of which we can only occupy a very few pages, in the deſcription of an era more important to France and the world than can be found in hiſtory; we ſhall only refer to ſome of the more prominent events, which led to the fatal, unjuſt, and cruel termination of the reign and life of Lewis XVI.

Of the miniſtries employed by Lewis, ſeveral were diſtinguiſhed for enlarged and philoſophical views, though, as it afterwards proved, they were very little accommodated to circumſtances and the ancient conſtitution of the country. Among the more remarkable occurrences of the period of which we are ſpeaking, was the appointment of M. Neckar to the adminiſtration of the finances of the country. Hitherto France had carefully excluded aliens from the country and eſtabliſhed faith from the controul of her revenue; nor was it leſs hoſtile to the feelings of the court, that a perſon without rank ſhould be elevated to ſo high an office in the ſtate: nevertheleſs M. Neckar was a Swiſs by birth; a Proteſtant in religion; and a banker by profeſſion. In the year 1780, the king fixed on the anniverſary of his birth to render the day memorable in the annals of his country by a new inſtance of humanity, and aboliſhed for ever the ſavage cuſtom of "*putting the queſtion*," as it was denominated, that is, of extorting confeſſion from perſons accuſed, by the inſtrumentality of the rack and other engines of torture;—a cuſtom which had been ſo long eſtabliſhed by the practice of ages, that it ſeemed to be an inſeparable part of the conſtitution of the courts of juſtice in France. At the ſame time, he rendered himſelf worthy of public eſteem, by diminiſhing his own expenditure, and by ſacrificing the magnificence of his court to the eaſe of his ſubjects. Unfortunately, however, the popular diſcontents were excited in the following year, by the diſmiſſion of the then popular miniſter M. Neckar. He had conceived the arduous project of ſupporting the war by loans without taxes; and the rigid economy which he had introduced into all the departments of the houſhold, and the various reſources that preſented themſelves to his fertile genius, had ſupported him amidſt the difficulties that attended his ſyſtem. The auſterity of his manners, increaſed probably by the difficulties with which he was ſurrounded and interrupted, rendered him exceedingly obnoxious to the queen and perſons about the court, who took every opportunity of repreſenting the reforms, which he had introduced, as inconſiſtent with the dignity of the crown: he was therefore diſmiſſed from the high office, which he had held with great reputation. The effect of his diſmiſſal was a vaſt abatement of public confidence in the permanency of the ſtate; three different perſons ſucceeded one another in rapid ſucceſſion, as finance miniſters; theſe, however, whatever might be their intentions, ſerved only to increaſe the jealouſy of the people, and the failure of the celebrated "Caiſſe d'Eſcompte" completed the univerſal conſternation. The ſtoppage of this national bank was imputed to a ſcarcity of ſpecie, but the real cauſe was probably owing to an immenſe loan advanced ſecretly to the government. Some ſucceſsful expedients revived the credit of the bank, and its ſtock roſe to above double the original ſubſcription; by theſe means public credit was reſtored throughout the kingdom. In 1783 M. de Calonne, who had already ſucceſſively filled with acknowledged reputation the office of intendant of Mentz, and afterwards of the provinces of Flanders and Artois, was nominated to the poſt of comptroller-general. This gentleman, whoſe name was accidentally omitted in the alphabetical arrangement of the Cyclopedia, was born at Douay, in 1734, educated at Paris, and became an advocate of conſiderable reputation. After ſome attendance at the bar, he obtained, as we have ſeen, various important truſts, till he became prime miniſter. When he ſucceeded to this office, it was ſaid, he did not find a ſingle crown in the treaſury. In this important office he continued about four years, and by ſome ſpecious operations he reſtored an apparent proſperity to the affairs of the ſtate, and maintained the public credit by a punctuality, till then almoſt unknown, in the payments from the royal treaſury. He laboured with unwearied aſſiduity to reſtore the equipoiſe between the annual income and expenditure, and to provide a ſupply for the emergencies of the ſtate, without vaſtly increaſing the burdens of the people, which, even before his adminiſtration, they were ſcarcely able to ſuſtain. For this purpoſe, he adviſed the king, to revive the ancient uſage of convening national aſſemblies of the *Notables*, to whom he propoſed the bold project of ſuppreſſing the pecuniary privileges and exemptions of the nobility, clergy, and magiſtracy. This meaſure was too daring even for him to carry; it excited indeed ſo much ill-will and determined hatred from theſe powerful bodies, that M. de Calonne found it neceſſary to retire to England, where he wrote two defences in juſtification of himſelf and his meaſures. At the end of the war he returned to Paris, where he died in 1802. He was author of ſeveral other works, on the ſituation of his country, and on the ſtate of its finances.

The ſtates-general of the kingdom, as a body formidable to monarchical authority, had never been convoked ſince the year 1614, and it was therefore determined firſt to have recourſe to an inferior kind of aſſembly, denominated the Notables, becauſe theſe were to be ſelected by the king from the different orders of the ſtate, and therefore it was expected they would the more readily ſubmit to the guidance of the court. This aſſembly had been convened by Henry IV. and again by Lewis XIII. and was now to be ſummoned by the authority of Lewis XVI. The writs for calling them together were dated the 29th of December 1786; and they were addreſſed to ſeven princes of the blood, nine dukes and peers of France, eight field marſhals, twenty-two nobles, eight counſellors of ſtate, four maſters of requeſts, eleven archbiſhops, thirty-ſeven perſons high in the profeſſion of the law, twelve deputies of the pays d'états, and twenty-five magiſtrates of the different towns in the kingdom. The firſt meeting of this aſſembly, in the month of February 1787, diſcloſed an enormous deficit which had hitherto been concealed. Great taxes were propoſed to make good the deficiency, which the parliament of Paris refuſed to regiſter, and thus refuſing, that body was immediately baniſhed the capital. The duke of Orleans, a man who diſguiſed the worſt principles, and the moſt criminal ambition under the maſk of patriotiſm, and who probably, from this moment, was perpetually engaged in intrigues to ruin the king and ſubvert the conſtitution, having entered a proteſt in favour of the parliament, partook of its puniſhment. Various meaſures, ſome harſh, ſome conciliatory, ſucceeded, all diſplaying the embarraſſment of the government, and the progreſs of the public diſcontents. M. de Calonne was now diſmiſſed; Neckar was recalled; and at length, after a third convocation of the notables to no good effect, it was reſolved to adopt the alarming expedient of calling together an aſſembly of the ſtates-general, a circumſtance that was looked on with anxious dread by the partiſans of the court, and which was anticipated with pleaſure and delight by thoſe who were hoping for ſome radical change in the affairs of the ſtate. On the diſmiſſion of the notables, they were addreſſed in a moderate and very conciliatory ſpeech from the throne. During the delay, the popular cauſe had ſtill been gaining ground in the public mind, by meetings held in the capital and provinces, at which the utmoſt freedom, and no ſmall portion of violence, in diſcuſſing political points, were indulged, and men of the inferior claſſes were habituated to act in concert, and become familiar with their own ſtrength.

The time appointed for the convention of the ſtates-general was now approaching, and the means of aſſembling them formed a matter of difficult deliberation in the cabinet. The laſt meeting, in 1614, had been convened by application to the bailiwicks. This mode was liable to ſtrong objections; the bailiwicks had been increaſed in number and juriſdiction, ſeveral provinces having, ſince that period, been united to France; and the numbers and quality of the members were no leſs an object of ſerious attention: it was not, therefore, till the cloſe of the year, that the propoſal of M. Neckar was adopted, which fixed the number of deputies at 1000 and upwards, and decreed that the repreſentatives of the third eſtate or commons ſhould equal in number thoſe of the nobility and clergy united. It remained now, as a matter of vaſt importance, for the popular party to carry the meaſure of the votes being taken, not by orders in three diſtinct houſes, but by numbers in one houſe. As this would infallibly throw the whole power into the hands of the third eſtate, it was long and vigorouſly oppoſed by the royaliſt and ariſtocratical parties. At length the commons, thinking themſelves ſufficiently ſupported by the voice of the people, declared themſelves "The National Aſſembly," and aſſumed the whole legiſlative authority. (For an account of the great operating and immediate cauſes of the French revolution, we ſhall refer to the article Revolution, and in the preſent article confine ourſelves to thoſe events which were cloſely connected with the conduct of the king.) During the violent and momentous contentions which were excited in every part of the kingdom, and particularly at Paris, the king, never ſteady to his purpoſe, fluctuated between oppoſite councils. His chief deſire was, evidently, to preſerve tranquillity, and prevent the effuſion of blood, and he was prepared on his own part to ſubmit to any ſacrifices for this purpoſe that might be required of him. The ſtates had been ſummoned to meet at Verſailles on the 27th of April, and moſt of the deputies arrived at that time; but the elections for the city of Paris not being concluded, the king deferred the commencement of their ſeſſions till the 4th of May. During this period, the members aſſembled, having little to do, ſpent their time in forming an intimacy with each other. Some of them united themſelves into a club, into which none were admitted but thoſe who were deemed zealous advocates for the popular cauſe. This ſociety, originally formed at Verſailles, was, hereafter, found ſufficiently powerful to give laws to France, under the appellation of the Jacobin club, and to excite an almoſt univerſal terror and alarm through Europe. The ſtates-general commenced their buſineſs by going in ſolemn proceſſion, preceded by the clergy, and followed by the king himſelf, according to ancient cuſtom, to church, to perform an act of devotion. The nobles and ſuperior clergy were ſplendidly arrayed: the commons appeared in black The aſſembly was now opened by a ſhort ſpeech from the throne, in which the king congratulated himſelf on thus meeting the people aſſembled; and having alluded to the difficult circumſtances in which they were placed, he concluded with the following prayer, "May an happy union reign in this aſſembly, and may this epocha become ever memorable for the glory and proſperity of the country. It is the wiſh of my heart; it is the moſt earneſt deſire of my prayers; it is the price which I expect from the ſincerity of my intentions and my love for my people." Several weeks were ſpent in diſcuſſing mere matters of form; in the mean time the people from without were vexed that no important ſtep was taken to remedy the evils under which they laboured. They imputed this delay to the nobles and clergy, who became exceedingly unpopular. The leaders of the commons, called at that period the *tiers etat*, took advantage of the change which was taking place in the minds of their countrymen, and formed the project of ſeizing the legiſlative authority of France: they almoſt inſtantly declared that the repreſentatives of the nobles and clergy were only the deputies of particular incorporations, whom they would permit to ſit and vote among themſelves, but who had no title in a collective capacity to act as legiſlators of France. Some of the clergy had joined them; and they then proceeded to announce themſelves, by a ſolemn decree, the ſovereign legiſlators of their country, under the name of the "National Aſſembly." M. Bailly, the celebrated aſtronomer, was the firſt preſident: its earlieſt acts were deciſively expreſſive of its own ſovereignty. This was in the middle of June, and by the 19th a majority of the clergy voted for the verification of their powers in common with the national aſſembly, and they reſolved to unite with them on the following day. At this important criſis the nobles perceived, that unleſs they could make a deciſive ſtand all would be loſt: they accordingly addreſſed the king, intreating him to diſſolve the ſtates-general; and on the next day, the 20th, when the preſident and members were about to enter as uſual into their hall, they found it ſurrounded by a detachment of the guards, who refuſed them admiſſion, while the heralds at the ſame time proclaimed "A royal ſeſſion." Alarmed and irritated by this unexpected event, they inſtantly retired to a neighbouring tennis-court, where, in the vehemence of enthuſiaſm, they took a ſolemn oath, "never to ſeparate till the conſtitution of their country ſhould be completed." The royal ſeſſion was held in the moſt ſplendid form, but altogether in the ſtyle of the ancient deſpotiſm: the ſuperior orders were ſeated while the commons were kept an hour in the open air, while it rained, before they were admitted. The king now aſſumed a high tone, delivered his ſpeech, ordered the deputies to retire, and then left the aſſembly. He was followed by the nobles and part of the clergy, but the commons and thoſe attached to them remained in gloomy ſilence, which being interrupted by an officer of the crown, who was left to ſee the intentions of his majeſty carried into effect, the count de Mirabeau, ſtarting from his ſeat, indignantly exclaimed, "The commons of France have determined to debate; you, ſir, who have neither ſeat nor voice, nor a right to open your lips here, are not to remind us of the king's intentions. Go tell your maſter, that we are here by the power of the people, and that nothing ſhall expel us but the point of the bayonet." The king gave way, and at firſt, anxious to ſpare the blood of his people, recommended the higher orders to join the deputie of the commons; but, in a few days, he ſaw, or was perſuaded by the queen and her party, that the obvious tendency of the popular meaſures was the entire ſubverſion of all monarchical power; he therefore gave orders for the aſſembling of troops round the capital, and ventured upon the ſtep of diſmiſſing Neckar, and commanding him inſtantly to quit the kingdom. Paris burſt into a flame upon this unexpected event; commotions took place; the ſoldiers were commanded to ſuppreſs the ſeditious aſſemblies; but they without heſitation grounded their arms inſtead of firing on the people; a vaſt body of national militia was organized, who ſupplied themſelves with arms from the arſenal of the invalids, and on the memorable 14th of July, 1789, hoſtilities againſt the royal authority openly commenced by the ſtorming of the Baſtille. Reſiſtance to the popular torrent was now in vain; the king recalled Neckar, who returned amidſt the acclamations of the whole nation, and reſumed the reins of government. Schemes for a new conſtitution and new meaſures of finance were diſcuſſed with calmneſs and compoſure, till a ſcarcity of proviſions, joining with other cauſes of public agitation, inſpired the populace with uncontroulable fury. In the beginning of October a dreadful inſurrection took place, in which an immenſe armed mob marched to Verſailles, broke into the palace, maſſacred ſome of the guards, and compelled the king, with the queen and his family, to accompany them to Paris. The triumph of the popular party was followed by the emigration of ſome of the moſt zealous friends to royalty, who carried into foreign countries a deſire of exciting thoſe hoſtile interferences on the part of the neighbouring powers in the affairs of France, which in the end proved deſtructive to the king and his family. On the 19th of October the national aſſembly, which had followed the king to Paris, opened its firſt ſeſſion; and a conſtitution was ſpeedily formed on the baſis of a limited monarchy; a decree was paſſed, which put an end to all diſtinction of orders and immunities, ſo far as privileges were concerned, and the whole of the lands belonging to the church were confiſcated for the purpoſe of ſupplying the exigencies of the ſtate. This meaſure was propoſed by M. Talleyrand, the biſhop of Autun, who afterwards took a lead in the revolution. A proviſion was, at the ſame time, made for the national clergy, who were in future to be paid by the ſtate. On the day following that, on which this important meaſure was adopted, a decree was paſſed, ſuſpending the parliament of the kingdom from the exerciſe of their functions. During the winter the king had been ſtrictly watched by numerous guards placed round his palace, ſo that he was regarded as in a ſtate of captivity. To obliterate this impreſſion, if poſſible, he appeared in the aſſembly, and in the preſence of the deputies of the nation made a ſolemn declaration of his reſolution to adhere to and defend the new conſtitution to the laſt moment of his life. On the 14th of July it was determined to commemorate the deſtruction of the Baſtille, that fortreſs of deſpotiſm: never was a more ſplendid ſpectacle. The national aſſembly and the court joined in the proceſſion that was made on the occaſion, and when every thing was properly arranged to create effect, the king, after a ſerious invocation to God, approached the altar, and amidſt the moſt ſolemn and awe-inſpiring ſilence, took the following oath: "I the king of the French do ſwear to the nation, that I will employ the whole power delegated to me by the conſtitutional law of the ſtate, to maintain the conſtitution, and enforce the execution of the law." The national aſſembly then took oaths of fidelity to the nation: as did La Fayette and others in the name of the national guards. After this a "Te Deum" was ſung, the performance of which was ſublime beyond the power of deſcription. "Never," ſays the hiſtorian, "was there before ſuch an orcheſtra, or ſuch an audience; their numbers baffled the eye to reckon, and their ſhouts in full chorus rent the ſkies. It is impoſſible to enumerate all the means which were employed to add ſplendour to this day. It ended with a general illumination, and no accident occurred to diſturb the public tranquillity."

Several new efforts were now making by the diſaffected among the nobles and clergy to excite diſturbances in various parts of the kingdom. Emigration became more frequent, and comprehended the king's aunts, and moſt of the princes of the blood, while troops were collected and openly formed into an army on the frontiers. The public ſuſpicions were naturally kept awake by theſe circumſtances, and popular ferments occaſionally broke out in the capital and provinces. In April, 1791, the king and his family preparing to go to St. Cloud, to ſpend the Eaſter holidays, were forcibly ſtopped by the populace, who were ſuſpicious that he meant to quit the capital. La Fayette drew out the national guard, but they, with one conſent, refuſed to act againſt the citizens: "We know," ſay they, "that we are violating the laws, but the ſafety of our country is the firſt law." The king went to the aſſembly and complained of the inſult: he was anſwered reſpectfully by the preſident, and continued his journey. He now endeavoured to convince foreign courts that he was no longer in a ſtate of thraldom, declaring his cordial aſſent to the new order of things.

About this period, M. de Bouillè, to whom the protection of the frontiers was entruſted, was employing every means in his power to render the country defenceleſs. The garriſons were left unprovided; diſunion was ſpread among the national troops, who were removed from the frontiers, and their place was occupied by foreigners, wherever it could be done. The emigrants abroad, and their friends at home, were lying in wait for an opportunity of revolt; when ſuddenly, on the 21ſt of June, it was announced from the Thuilleries, that the king, the queen, their children, together with the king's eldeſt brother and his wife, had quitted the palace and the capital. The national aſſembly took upon themſelves the government, and decreed their ſittings to be permanent: they ſent at the ſame time meſſengers in all directions to attempt to lay hold of the fugitives. At Varennes they were ſtopped, arreſted, and brought back to Paris in triumph. The alleged reaſon for this departure was the danger and inſult to which the king, and more eſpecially the queen, were expoſed, from the licentious violence of the Pariſian mob; but there is no doubt that it was connected with the plans of the emperor Leopold and the emigrants, who were prepared, by force of arms, to make a grand effort in behalf of a counter-revolution. The king's brother, with his conſort, who took a different road, made their eſcape. The national aſſembly proceeded with their labours, which they brought to a concluſion on the following September. The conſtitution, as fixed on at that time, was preſented to the king, who ſolemnly accepted it, and ſwore to maintain it inviolate. On the 30th of September, the national aſſembly, which has been known ſince by the name of the "Conſtituent Aſſembly," diſſolved itſelf, and gave place to the ſucceeding "Legiſlative National Aſſembly," which had been elected according to the rules preſcribed by the new conſtitution. It was ſoon evident that France would have a foreign war to ſuſtain with the powers coaleſced for the reſtoration of the ancient monarchy, and for the further purpoſe of making conqueſts upon the French territories. In proportion to the national danger, the ſuſpicions of the people increaſed, and their loſt confidence in the king could never be recalled. New jealouſies were excited by the interpoſition of the royal negative, allowed by the new conſtitution, againſt two decrees of the aſſembly, one levelled at the emigrants, the other at the non-juring prieſts. War was declared by the aſſembly againſt the emperor in April, and armies marched to the frontiers. A decree paſſed the aſſembly for forming a camp of 20,000 men near Paris, which Lewis, conceiving it a plan deſigned to overawe the more moderate party, and ſtrengthen that of the Jacobins, refuſed to ſanction, as he did likewiſe a ſevere decree againſt the refractory clergy. He alſo diſmiſſed ſome of the popular miniſters who had been forced upon him. The diſcontents which theſe meaſures excited burſt out into a furious inſurrection on the 20th of June, in which an armed mob made their way into the Thuilleries, and treated the royal family and their attendants with the groſſeſt perſonal inſults. The king diſplayed on this, as on all other occaſions, great fortitude; and in reply to threats againſt his life, repeated in the loweſt and coarſeſt language, he exclaimed, "Alas! would that my life could ſecure the happineſs of the country, how readily would I offer it as a ſacrifice." A calm now ſucceeded, in which the king and the national aſſembly appeared to unite in plans for the defence of the country: in the mean time dangers were accumulating, and the approach of the duke of Brunſwick, with the Pruſſian army, preceded by a moſt menacing manifeſto, in which the king's acceſſion to the new conſtitution was repreſented as a mere involuntary compliance, ſtimulated the people almoſt to madneſs. The republican party determined to take advantage of this circumſtance, with a view of depoſing the king, and inſtituting a republic. At length, Petion, the mayor of Paris, appeared at the head of the ſections, at the bar of the national aſſembly, to demand the depoſition of the king. This was on the 9th of Auguſt; and at ſix on the following morning the king was ſeen reviewing his troops. He was received at firſt with ſhouts of *Vive le roi*, which were ſhortly overwhelmed with thoſe of *Vive la nation*. The king returned to the palace, and the multitude continued to collect. The national guard ſeemed undetermined what to do as they aſſembled in diviſions near the palace, and, had a ſteady reſiſtance been made from within, it has been thought they would have joined the royal party. The king was adviſed to ſeek protection in the hall of the national aſſembly: he was willing to comply;

but the queen oppoſed, with vehemence, the humiliating propoſal, till actual danger ſurrounded her perſon and children; ſhe then conſented, and the king, queen, the princeſs Elizabeth, the king's ſiſter, with the dauphin and princeſs royal, went on foot to the hall of the aſſembly. "I am come hither," ſaid his majeſty, as he entered the doors, "to prevent a great crime. Among you, gentlemen, I believe myſelf in ſafety." By an article of the conſtitution, the aſſembly could not deliberate in preſence of the king. The royal family were, therefore, placed in a box ſeparated from the hall, where they remained 14 hours, without refreſhment, obliged to hear diſcuſſions in which the royal character and office were treated with every mark of inſult. At length the fatal decree was paſſed that the royal authority ſhould be ſuſpended, and the nation was invited to elect a Convention, to determine on the nature of its future government. On that fatal day a numerous body of inſurgents attacked the palace of the Thuilleries, which was defended by Swiſs guards: a bloody engagement enſued, which terminated in the maſſacre of the greateſt part of the Swiſs, and ſeveral other regiments. As ſoon as the royal authority was ſuſpended, the king and his family were ſent to the Temple as a ſtate priſon. Maſſacre ſucceeded now upon maſſacre, till at length, on the ſecond and third days of September, the moſt cruel and ſavage ſcenes were exhibited that were ever witneſſed in a civilized country. More than a thouſand ſtate-priſoners were baſely and infamouſly murdered by the ruffians of the capital, among whom was the beautiful princeſs of Lamballe, whoſe bleeding head was carried on a pike through the ſtreets of the city, and under the windows of the room in which the queen was confined, whoſe intimate favourite ſhe had been. Theſe acts, to which the royal family could not be ſtrangers, they might well regard but as preludes to their own death: there was no party left in the country to eſpouſe their cauſe; and no individual durſt lift up his voice in their defence. The new convention was aſſembled on the 20th, and their firſt decree was the eternal abolition of royalty, which was carried by acclamation: this object being attained the houſe adjourned, and copies of the decree was ſent into every village and commune of France. The moſt violent meaſures were adopted; nor could the moderate party in the convention reſtrain the madneſs of the Jacobins, who were bent on levelling all diſtinctions; to bring into contempt every thing in letters and in ſcience that was in the leaſt raiſed above the comprehenſion of the loweſt of the people. The intention was ſoon avowed of bringing the king to trial. It was in vain that thoſe, who were anxious to ſave his life, appealed to the inviolability of his perſon, declared by the conſtitution he had accepted: principles, however ſacred, were made to yield, and a committee was appointed to give in a report upon his conduct. The reſult of this was, that various accuſations were brought againſt him, and the convention reſolved to take upon themſelves the part of accuſers and judges. On the 11th of December, the fallen monarch was brought to the bar to anſwer to the heads of accuſation drawn up againſt him for the crime of tyranny and treaſon towards the nation. He defended himſelf with judgment and preſence of mind, and received the advice and aſſiſtance of three eminent advocates, who generouſly and nobly undertook his cauſe, though with great hazard to themſelves. The proceedings were carried on till the 26th of December, when M. Deſeze, one of his advocates, read a defence of his client, which being finiſhed, the king roſe, and holding a paper in his hand, pronounced, in a calm and dignified manner, and with an impreſſive tone of voice, "Citizens, you have heard my defence; I now ſpeak to you, perhaps for the laſt time, and ſolemnly declare that my counſel have aſſerted nothing to you but the truth; my conſcience reproaches me with nothing." The diſcuſſion was finally cloſed on the 16th of January; and after a ſitting of 34 hours, the puniſhment of death was awarded by a very ſmall majority of the convention. M. Deſeze then invoked the aſſembly, in the name of his colleagues, to conſider by what a trifling majority the puniſhment was pronounced againſt the dethroned monarch; "Do not afflict France," ſaid he, "by a judgment that will appear terrible to her, when five voices only were preſumed ſufficient to carry it." He appealed to the eternal juſtice and ſacred humanity, to induce the convention to refer their ſentence to the tribunal of the people. "You have either forgotten or deſtroyed," ſaid M. Tronchet, another of the king's advocates, "the lenity which the law allows to criminals, of requiring at leaſt two-thirds of the voices to conſtitute a definite judgment." The ſentence was ordered to be carried into execution without delay. The king and his family had been kept ſeparate from each other; but he was now permitted to ſee them. The ſhort interval allowed him he employed in the preparations for death enjoined by his religion, to which he was ſincerely attached. The final meeting and ſeparation of the king from his family was affecting in the extreme. On the morning of the 21ſt of January, at eight in the morning, he was ſummoned to his fate. He aſcended the ſcaffold with a firm and dignified ſtep; and his behaviour there partook of the calm fortitude which had diſtinguiſhed him through all his ſcenes of ſuffering. Raiſing his voice, he exclaimed, "Frenchmen, I die innocent; I forgive my enemies." He would have proceeded, but was prevented by the beating of the drums, placed on the ſpot purpoſely to drown his voice. The executioners came forward to perform the bloody deed, which being perpetrated, the bleeding head was held up to the view of the ſurrounding crowd, of whom ſome few exclaimed "Vive la Republique;" but the great maſs of ſpectators was too deeply abſorbed in thought to join in the ſhout which the leaders attempted to excite. The body of the deceaſed victim was thrown into a pit filled with quicklime, and a guard placed around it till it ſhould be conſumed. The unhappy monarch was in the thirty-ninth year of his age, and the nineteenth of his reign. He left two children, a ſon and a daughter, of whom the ſon died very miſerably in 1795, and his ſiſter in the following year. The queen was brought to the ſcaffold in 1793, and his ſiſter in 1794. Such were the miſfortunes to which this royal houſe was ſubject. Lewis XVI. poſſeſſed from nature a good underſtanding, which, however, was blunted by the early indulgences of a court. He had a ſtrong ſenſe of juſtice, and his humanity was much ſuperior to what could have been expected from a perſon in his high ſtation in life. By poſterity he will be regarded as one of the beſt and moſt virtuous of the French kings. He had acquired a large portion of general knowledge, and on ſome literary ſubjects he entered rather deeply. He wrote well, and excelled in clearneſs of expreſſion and methodical arrangement. In vigour of mind he was unqueſtionably deficient; but in reviewing the hiſtory of the period, we cannot conceive how he could have acted ſo as to have ſucceſsfully oppoſed the voice of the people. It was his misfortune to have fallen on difficult times; he could not ſtem the torrent of public opinion; and it is probable that few princes, if any, would have been capable of extricating themſelves from ſuch difficulties as ſurrounded Lewis XVI. during a great part of his calamitous reign. For farther particulars relating to Lewis's of France, the reader is referred to the Modern Univerſal Hiſtory; to the Hiſtory of France, London, 1790;

and to the Hiſtory of the French Revolution, by Rabaut St. Etienne.

Lewis, John, a learned Engliſh divine, was born at Briſtol in 1675. He was educated in grammar learning at the free-ſchool of Winbourn, in Dorſetſhire, and received his academical education at Exeter college, Oxford, where he took his degrees. Having been ordained, he officiated ſome time as curate of St. John's, Wapping. In 1699 he obtained the rectory of Acris, in Kent, which he reſigned in 1706, when he was preſented by archbiſhop Tenniſon with the rectory of Saltwood in Kent, with the chapelry of Hythe annexed. He was afterwards collated to the vicarage of Minſter, in the iſle of Thanet, and in 1719 archbiſhop Wake conſtituted him maſter of Eaſtbridge hoſpital, in the city of Canterbury. He died at Margate in 1746. He was author of a great number of publications, which reflected credit on his induſtry and learning; among theſe were "The Life of Wickliffe:" "Wickliffe's Tranſlation of the New Teſtament:" "The Hiſtory and Antiquities of the Iſle of Thanet:" "The Hiſtory of the Abbey and Church of Feverſham:" "The Life of William Caxton:" "The Hiſtory of the Tranſlations of the Holy Bible and New Teſtament into Engliſh."

Lewis, in *Geography*, is the moſt northern, and the largeſt of the Hebrides, or Weſtern Iſlands, of Scotland. It is connected with the iſland of Harris by a narrow iſthmus, which at low water is left entirely dry, and even at high water is not completely covered; whence the whole may be conſidered as one iſland. (See Harris.) The iſle of Lewis is of very irregular form and boundary; and extends about 50 miles in length from north to ſouth, by about twenty, on an average, in a tranſverſe direction. Towards the centre the land is mountainous and boggy; but near the ſhore it is rather flat, and is interſected by numerous inlets or bays of the ſea. The iſland is almoſt deſtitute of wood; a few birches, hazles, and a little heath, being the only ſpecies of ſhrubs ſeen here: but it is ſaid that Lewis was formerly covered with plantations; the decay and deſtruction of which contributed to form the peat-earth, with which the iſland abounds. Springs, lakes, and rivulets, ſcattered through the iſland, furniſh in all parts abundance of freſh water. With reſpect to the climate, the ſpring is uncommonly cold and backward, the ſummer warm, the autumn accompanied by profuſe rains, the winter without long or ſevere froſts, or very weighty falls of ſnow, but with conſtant winds, and theſe ſtormy and ſharply cold. Among the wild animals, the iſle ſtill produces deer or roes. Great numbers of wild fowls of many different ſpecies frequent the ſhores, the lakes, and the cliffs of the mountains; among others, is the eider gooſe, the down of which is held in high eſtimation. Immenſe ſhoals of fiſh, of an innumerable diverſity of kinds, haunt the coaſts.

The iſland is interſected by arms of the ſea, called lochs, which run to a conſiderable diſtance inland, both from the eaſtern and weſtern ſides. One of the chief is loch-Roag, on the weſt, which is two leagues in breadth at the entry, and runs up, in a ſouth-eaſtern direction, about twelve miles into the iſland. This loch contains ſeveral iſlands, ſome of which are inhabited; one, called Large Bernera, is eight miles in length. The whole of this curious loch abounds with ſafe places of anchorage, ſufficient to hold the whole Britiſh navy, or even that of all Europe. About 140 tons of kelp, of a ſuperior quality, are annually made from loch Roag. On the eaſtern coaſt, loch Seaforth runs into the country to a great diſtance; loch Keoſe and loch Leurbuſt advance alſo far inland from the eaſt; but loch Stornaway is moſt important, on account of the town which ſtands near it, and which is the capital of the iſland. On the coaſt, in this pariſh, is a large cave, into which the ſea enters at high tide; this cavern is only acceſſible from the ſea. When it was firſt noticed, a great number of ſeals were killed annually in it; and the practice is ſtill continued. The entrance of the cave is very ſteep and narrow, and does not admit more than the breadth of a ſix-oared boat. The interior is divided by a large pillar into two arches. Its whole length is about an Engliſh furlong.

The iſland of Lewis is divided into four pariſhes; named Barvas, Lochs, Stornaway, and Uig. It has various ſmall iſlets attached to it. In the pariſh of Barvas is the iſland of Rona, which is a mile in length, and half a mile in breadth; it is ſituated in the Northern ocean, and is ſuppoſed to be the fartheſt to the north-weſt of any land in Europe. The pariſh of Lochs derives its name from the great number of lakes which are interſperſed over its ſurface. It is about nineteen miles in length and nine in breadth: along the coaſt it has a bold and rocky appearance; in the interior it is barren and inhoſpitable. About 50 tons of kelp are manufactured here annually; and the greater number of the inhabitants are employed in the fiſheries on the coaſt. The pariſh of Stornaway is of very great extent; but the inhabited part is of a triangular form, of which two of the ſides are about ten miles, the other ſeven. The town of Stornaway, from a very ſmall origin, has of late, by the exertions of lord Seaforth, arrived at a conſiderable extent. The harbour is excellent, and well frequented; the principal ſource of employment is the proſecution of the white and herring-fiſheries in the bays, in which about 35 or 40 ſmall veſſels are annually fitted out. It is a port of the cuſtom houſe, and has a poſt-office, and a regular weekly packet. The houſes of the town are, in general, well built: here are a convenient cuſtom-houſe, a town-houſe, a commodious church, an aſſembly-room, and two ſchool-houſes. On an elevated ſituation, near the town, ſtands Seaforth lodge, the ſeat of lord Seaforth, who is the proprietor of the iſland. The pariſh of Uig is fifteen miles in length, and thirteen in breadth: the interior is hilly, covered with heath, and interſperſed with ſmall lakes; the coaſts are moſtly level and cultivated. The fiſheries and the manufacture of kelp are here alſo the chief ſources of ſubſiſtence to the inhabitants. Near the hamlet of Calarniſh, at a ſhort diſtance from loch Roag, is a Druidical temple, formed by a circle of twelve ſtones or obeliſks, each about ſeven feet high, and ſix feet diſtant from each other: in the centre is one of a larger ſize, thirteen feet from the ground: directly ſouth from the circle are three obeliſks, ſtanding in a line; another ſuch to the weſt, and one to the eaſt; each ſtone being nearly equal in ſize, and arranged at equal diſtances. Towards the north are two ſtraight ranges of obeliſks, forming an avenue to an opening between two of the ſtones which form the circle. Each of theſe ranges conſiſts of ſix ſtones, regularly placed, one oppoſite to another. All the ſtones are in a rough natural ſtate, as taken from the ſhore. At Meliſta are the remains of a nunnery, ſtill called in the Gaelic *Teagh nan cailichan dou*, "the houſe of the old black women." At Cailaway is a Daniſh fort, quite circular, with a double wall of ſtone, thirty feet in height. This is broad at the baſe, and narrower at the top, like the fruſtum of a cone. In the year 1794, there was living in this pariſh a *luſus naturæ*, of which Mr. Monro, the miniſter, gives the following account in his ſtatiſtical report to ſir John Sinclair.—"Very near the manſe there lives a woman, who has four diſtinct breaſts or *mammæ*. She has had ſeveral ſtout, healthy children, and ſuckled them, and likewiſe one of the miniſter's children. She has nipples and milk in each of the four breaſts; the two upper are ſituated under the arm-pits, and by being diſtended with milk, are very troubleſome to her for the firſt two or three months after delivery."

The population of Lewis, in the year 1796, was 8311; which was an increaſe of 1925 from an enumeration which was made in the year 1755. The inhabitants of the whole iſland are ſcattered, for the moſt part, in ſingle families, or cluſters of two or three families, around the coaſt, or through the interior parts. Some large tracts are without inhabitants; while upon others the population is more cloſely aſſembled. There is ſcarcely any regular road: the moor, which reaches acroſs the iſland from Stornaway to Uig, is ſo extenſive and ſoft, that it would require the labour of many ages to form a regular road through it. Martin's Deſcription of the Weſtern Iſlands of Scotland, 8vo. 1716. Buchanan's Travels in the Weſtern Hebrides, from 1782 to 1790," 8vo. 1793.

Lewis, a town of America, in Eſſex county, S.W. of Lemington adjoining, in Vermont; about 8 miles S. of the Canada line.

Lewis *Creek*, a ſmall ſtream in Vermont, which falls into lake Champlain at Ferriſberg, a little N. of Little Otter creek.

Lewis *and Rehoboth*, a town in Suſſex county, Delaware, containing 1514 inhabitants.

LEWISBURG. See Louisbourg.

Lewisburg, a county in Orangeburgh diſtrict, South Carolina.—Alſo, a poſt-town of North Carolina, and capital of Franklin county, which lies on Tar river, and contains between twenty and thirty houſes, a court-houſe, and gaol; 30 miles N. of Raleigh.—Alſo, a poſt-town and chief town of Greenbriar county, Virginia, on the north ſide of Greenbriar river, containing about ſixty houſes, a court-houſe, and gaol; 250 miles W. by N. of Richmond. N. lat. 38° 8'.—Alſo, a poſt-town of Northumberland county, Pennſylvania, called alſo "Tarſtown," on the W. ſide of the Suſquehanna, 7 miles above Northumberland; containing about 60 houſes, and well ſituated for a good trade with the N.W. part of the ſtate; 30 miles E. by N. from Aaronſburg.

LEWISHAM, a populous village, in the upper half-hundred of Blackheath, lathe of Sutton at Hone, and county of Kent, England, is ſituated 5½ miles from London, and extends nearly a mile in length on the road to Bromley. Here was anciently a Benedictine priory, ſubordinate to the abbey of St. Peter in Ghent, and moſt probably founded in the Saxon times; this manor having been given to that abbey by Elthruda, niece to king Alfred. After the ſuppreſſion of the alien priories, Henry V. made this a part of the endowment of his newly erected Carthuſian priory at Shene. Lewiſham is now the property of the earl of Dartmouth, whoſe ſeat on Blackheath is within the bounds of this pariſh. The preſent church was erected in the year 1774: its form is that of an oblong ſquare, with a ſemicircular receſs at the eaſt end for the altar. It contains two handſome monuments: one to the memory of Anne, wife of John Petrie, eſq., was executed in Italy; it includes a fine bas-relief in marble, repreſenting the deceaſed on her death-bed, with her huſband and children lamenting round her. The other commemorates Margaret, relict of the Rev. Robert Petrie, and was ſculptured by Banks: it repreſents Mrs. Petrie dying in the arms of Religion, ſupported by Faith and Hope. Many old monuments were thrown careleſsly into the vault, when the church was rebuilt. An excellent free grammar ſchool was founded by the Rev. Abraham Colfe, who was rector of this pariſh from the year 1610 to 1657. His will contains the regulations of the ſchool, and directs that it ſhall be for the education of thirty-one boys of the ſeveral pariſhes therein named; one ſcholar yearly to be ſent to either of the univerſities. He alſo founded an Engliſh ſchool here for thirty-one boys, and an alms-houſe for five "poor godly houſeholders." The population of Lewiſham, as returned under the act of 1800, amounted to 4007; the number of houſes to 722. In this enumeration was included the chapelry of Sydenham, noted for its medicinal ſprings. Brayley's Beauties of England, vol. vii.

LEWISTOWN, a poſt-town in Lincoln county, Maine, on the eaſt ſide of Androſcoggin river, and bounded ſouth-weſt by Bowdoin; containing 948 inhabitants; 36 miles N.E. of Portland.—Alſo, a poſt-town, called "Lewes," in Suſſex county, Delaware, pleaſantly ſituated on Lewes creek, three miles above its mouth in Delaware bay; containing a Preſbyterian and Methodiſt church, and about 80 houſes, in a ſtreet more than three miles in length, extending along a creek which ſeparates the town from the pitch of the cape. Its ſituation is high. The court-houſe and gaol are commodious buildings; the entrance of the bay is crowded with veſſels from all parts of the world, but during part of the winter is cloſed with ice. The circumjacent country is beautifully diverſified with hills, woods, ſtreams, and lakes, but much infeſted with moſquitoes and ſand-flies. This town carries on a ſmall trade with Philadelphia in the productions of the country. A manufacture of marine and Glauber ſalts, and magneſia, has been eſtabliſhed here; 113 miles S. of Philadelphia. N. lat. 38 6'. W. long. 75 18'.—Alſo, the chief and poſt-town of Mifflin county, Pennſylvania, ſituated on the north ſide of Juniatta river, on the weſt ſide of, and at the mouth of, Ciſhicoquilis creek; about 23 miles N.E. of Huntingdon; regularly laid out, incorporated in 1795, and containing about 120 dwelling-houſes, 523 inhabitants, a court-houſe, and gaol; 150 miles W.N.W. of Philadelphia. N. lat. 40° 33'. W. long. 77° 23'.

LEWUNAKBANNEK, a town on the Ohio, in which is a ſettlement of Chriſtian Indians, formed by Moravian miſſionaries.

LEX, Law. See Law.

Lex *Amiſſa*, or *legem amittere*, in *Law*, is underſtood of an infamous, perjured perſon, who is ſaid to *loſe his law*; or, as Bracton has it, *non eſt ulterius dignus lege*. See Infamous.

Lex *Judicialis*, is properly *purgatio, per judicium ferri*; ſometimes called ſimply *judicium*.

Lex *Sacramentalis, purgatio per ſacramentum*. See Oath and Purgation.

Lex *Talionis*. See Talio.

Lex *Terræ*, the law and cuſtom of the land; by which name it is diſtinguiſhed from the *civil law*. See Common *Law*.

Lex, *Legem terræ amittere*. See Amittere.

LEXAWASCEIN, in *Geography*, a ſmall river of Pennſylvania, which riſes by ſeveral branches in Northampton county, Pennſylvania, on the eaſt ſide of mount Ararat, which unite about 10 miles from its mouth in Delaware river. It joins the Delaware, after a ſouth-eaſt and eaſt courſe, about 174 miles above Philadelphia.

LEXEN, a town of Moravia, in the circle of Olmutz; 18 miles N.W. of Olmutz.

LEXIARCHI, Λεξιαρχοι, at Athens, ſix officers, aſſiſted by thirty inferior ones, whoſe buſineſs it was to lay fines upon ſuch as came not to the public aſſemblies, and alſo to make ſcrutiny among ſuch as were preſent.

The lexiarchi kept a regiſter of the age, manners, and abilities of all the citizens, who were always enrolled at the age of twenty.

LEXICON, Λεξικον, the ſame with dictionary.

The word is chiefly uſed in ſpeaking of Greek dictionaries: it is derived from the Greek λεξις, *word, diction*; of λέγω, *I ſpeak*.

LEXINGTON, in *Geography*, a county of America, in Orangeburg diſtrict, South Carolina.—Alſo, a poſt-town of Virginia, and capital of Rockbridge county; ſituated on the poſt-road from Philadelphia to Kentucky, by way of the Wilderneſs, and about a mile ſouth of the north branch of James's river; containing a court-houſe, gaol, and about 100 houſes. Its ſituation is agreeable and healthy, and the adjacent country highly cultivated. Near it is "Liberty-hall Academy," now "Waſhington College," built of ſtone, and capable of containing forty or fifty ſtudents, and handſomely endowed by the diſtinguiſhed perſonage whoſe name it bears. The town is 159 miles W. by N. of Richmond,—Alſo, a poſt-town of Kentucky, formerly the metropolis of that ſtate; ſituated on a rich extenſive plain, in Fayette county, on the north ſide of Town fork, a ſmall ſtream, that falls into the ſouth branch of Elkhorn river. The town is built on a regular plan, and contains about 350 houſes, five places of public worſhip, a court-houſe, and gaol, and alſo an univerſity, with ſeveral manufactories and ſtorehouſes. It is an agreeable flouriſhing town, on the head waters of Elkhorn river; 24 miles E. of Frankfort. The number of inhabitants is 1795. Near the town was found, upon digging five or ſix feet deep, a large flat ſtone, covering a well, artificially ſtoned; and in its vicinity are alſo the remains of two ancient fortifications, furniſhed with ditches and baſtions, overgrown with large trees.—Alſo, a poſt-town in Rowan county, North Carolina, 399 miles from Waſhington.—Alſo, a ſmall poſt-town of Georgia, formerly called the "Great Falls," ſituated on the ſouth ſide of Ogeechee river, on a beautiful eminence which overlooks the falls of the river; 2 miles from George town.—Alſo, a town in Middleſex county, Maſſachuſetts, 11 miles N.W. of Boſton, having a neat congregational church, and a number of compact houſes. This town has been rendered famous by being the ſcene of a battle, fought April 19, 1775, which may be conſidered as the commencement of the American revolution. On the ground where this battle was fought is a ſtone monument, 10 feet high, with the following inſcription: "Sacred to Liberty, and the Rights of Mankind!! The freedom and independence of America ſealed and defended with the blood of her ſons, &c. &c." Concluding, "The die was caſt!!! The blood of theſe martyrs, in the cauſe of God and their country, was the cement of the union of theſe ſtates, then colonies, and gave the ſpring to the ſpirits, firmneſs, and reſolution of their fellow-citizens!" Morſe.

LEY, in *Agriculture*, a term uſed to ſignify land in the ſtate of ſward or graſs.

LEY, *Sir* JAMES, in *Biography*, a learned Engliſh judge, who flouriſhed in the ſeventeenth century, the ſon of Henry Ley, eſq. of Jeſſont, in Wiltſhire, was, on account of his great merit, made lord chief juſtice, firſt in Ireland, and afterwards in England. He was likewiſe created baron Ley, lord high treaſurer, and earl of Marlborough. His reports were printed in the year 1659.

LEY. See LIXIVIUM.

LEYBA, in *Geography*, a town of South America, in New Granada; 90 miles N.N.E. of Santa Fé da Bogota.

LEYBOURNE, WILLIAM, in *Biography*, a mathematician, was originally a printer in London. He publiſhed a courſe of mathematics, which was held in conſiderable eſtimation. He was author of a treatiſe on Surveying, a work on Dialling, and another work, entitled "The Trader's Guide." He died about the year 1690.

LEYDECKER, MELCHIOR, a Dutch divine, was born at Middleburg in 1652. Having received a good education, he officiated as paſtor of a church in his native place; and in 1678 was appointed profeſſor of divinity at Utrecht, and ſoon after took his degree of doctor in divinity. He died in 1721. He was deeply read in theology, eccleſiaſtical hiſtory, and rabbinical learning; but he had no taſte for polite literature, and was exceedingly bigotted to his own notions. Still he was deſirous of uniting the Lutherans and Calviniſts, and made ſome ineffectual efforts for the purpoſe. He was a voluminous writer, and his works are all written in Latin: of theſe the chief are, "A Treatiſe on the Republic of the Hebrews," in 2 vols.; "An Analyſis of Scripture, with Rules for Preaching;" "A Hiſtory of Janſeniſm;" "A Continuation of the Eccleſiaſtical Hiſtory of Hornius, with Notes;" and "A Hiſtory of the Church of Africa."

LEYDEN, LUCAS VAN. See JACOBS, LUCAS.

LEYDEN, in *Geography*, a city of Holland, the "Lugdunum Batavorum" of Ptolemy, and the "Caput Germanorum" of Antonine's Itinerary, is the capital of a ſmall diſtrict, called "Rhynland," comprehending 49 towns or villages, and, next to Amſterdam, the largeſt and moſt populous city of Holland; the number of inhabitants being eſtimated at about 50,000. It is ſituated on the ancient bed of the Rhine, which, by means of various ſtreams, divides it into a number of iſlands, that communicate with one another by bridges, which are reckoned to be not fewer than 100. This city likewiſe carries on a daily intercourſe by boats with Amſterdam, Haerlem, Utrecht, Delft, the Hague, &c. It has eight gates; and its ramparts are formed of earth, partly covered with turf, and partly faced with brick, and conſiſting of ſeveral baſtions. The cloth manufactured at Leyden has been much celebrated, and it contains a ſtaple-hall erected for the uſe of the manufacturers and merchants. The chief ſtreet of the town is conſtructed in the form of a creſcent; and the principal public building is the town-houſe, which has many ſpires, and is a handſome ſtructure, with a ſtone front. In the burgomaſter's chamber is a very capital painting of the Laſt Judgment by Lucas of Leyden, for which the emperor Rodolphus is ſaid to have offered as many gold ducats as would cover it; together with ſeveral other capital paintings, and a repreſentation of the famous ſiege of 1574, wrought in tapeſtry. The great church is one of the handſomeſt in Holland. The common council of the city, called "Vroedſchap," is compoſed of 40 perſons, who are required to be natives of Holland, 28 years of age, and Proteſtants. Here are likewiſe four burgomaſters, and eight echevins, and a grand bailiff, who adminiſters juſtice in civil and criminal caſes, jointly with the echevins. The fair of Leyden is an ancient eſtabliſhment, and ſtill much frequented: it occupies by its booths, arranged under trees, and along the borders of canals, about a fourth part of the town. In proof of the antiquity of this city, ſome allege an ancient round tower, called the "Burght," about 600 feet in circumference, ſaid to have been erected either by the Romans or Saxons; but Joſeph Scaliger contends that it was built five or ſix centuries ago by the comtes of Holland. This city was conſiderably enlarged towards the ſouth in the year 1389; but it has ſuffered much from ſieges and the plague. In the year 1574, the Spaniards laid ſiege to it; but it was obſtinately defended by the inhabitants, and even by the women, who lined the ramparts, and performed the duties of ſoldiers.

During this reſiſtance, the miſery of the inhabitants was extreme: 6000 perſons died of famine, and the diſtreſs attending it; ſo that for 14,000 who ſurvived, there remained no more than 107 muids of wheat. The general of the Spaniards, apprized of their ſituation, ſummoned them to ſurrender; but they replied, that they could not want ſubſiſtence, as long as their left arms remained, on which they were determined to feed, whilſt with the right they defended the city. The conſtancy and courage of Adrian de Werf, burgomaſter of the city, deſerve to be recorded; when he was ſolicited by ſome of the inhabitants to ſurrender, he told them, "My friends, ſince I muſt die, it is of little importance whether I fall by you or by the enemy; cut me to pieces, and divide them amongſt you; I ſhall die ſatisfied, if by my death I can be the leaſt uſeful." Juſt as they were preparing to ſurrender, they received notice by ſome pigeons, that relief was at hand; and the dykes of the Meuſe and the Iſſel having been opened, Louis Boiſſot, admiral of Zealand, advanced with a number of troops in flat-bottomed boats to their ſuccour. The Spaniards, terrified by the inundation, abandoned the ſiege. In memory of this event the inhabitants have been accuſtomed every ſeven years to exhibit a ſpectacle of the ſiege. William Prince of Orange, juſt recovering from a dangerous illneſs, was carried to Leyden, that he might in perſon thank the citizens for their brave defence; he alſo liberally rewarded Boiſſot and Janus Douza, lord of Noortwyck, who commanded in the city, not forgetting the officers and ſoldiers; and beſides granting ſeveral privileges to the city, he founded an univerſity, and appointed Janus Douza the firſt curator. This univerſity, ſays Mrs. Radcliffe, in her "Journey through Holland, &c." would ſcarcely be known to exiſt, if it had no more conſpicuous objects than its buildings. The Dutch univerſities have no endowed foundations; ſo that the profeſſors, who have their ſalaries from the ſtates, live in private houſes, and the ſtudents in lodgings. The library, to which Joſeph Scaliger was a benefactor, is open only once in a week, and then for no more than two hours. To this, and other meaſures of Dutch policy, it is owing that the univerſity has been of late years declining. There are ſtudents, however, of many nations and different religious profeſſion, no oaths being impoſed, except upon the profeſſors. Phyſic and botany are cultivated with much ſucceſs; and there is a garden to which not only individuals, but the Eaſt India company, contribute foreign plants. The ſalaries of the profeſſors, excluſively of fees from the ſtudents, are nearly 200*l.* a-year. The government of the univerſity is in the rector, who is choſen out of three perſons, returned by the ſenate to the ſtates; the ſenate conſiſts of the profeſſors; and, on extraordinary occaſions, the ſenate and rector are directed by curators, who are agents for the ſtates. The land adjoining to Leyden is very fertile and productive, and is much cultivated by gardeners, who ſupply Amſterdam with vegetables; and the rich meadows and paſtures in the environs furniſh excellent butter and cheeſe. Leyden is diſtant 14 miles N. of Rotterdam, and 19 S.W. of Amſterdam. N. lat. 52° 9′. E. long. 4° 20′.

The plays and players of the theatre of Leyden are not of the moſt refined ſort; farce has not yet quitted tragedy, nor has Punch quitted farce; however, theſe exhibitions amuſe perſons, whoſe taſte has not been formed upon refined models, and perhaps come more home to their buſineſs and boſoms, than the tragedies of Sophocles, or comedies of Menander, would do, if they were now to be repreſented in the original Athenian manner.

As to muſic, mechanical chimes, every quarter of an hour; *carillons* at noon, two or three times a week; and huge organs, coarſely played, to more coarſe plaſmody, conſtitute all that Apollo and the Nine Muſes have given to this place, in the way of harmony and melody, as far as we could diſcover. Burney.

LEYDEN, a ſmall iſland in the Eaſt Indian ocean, near the coaſt of Java, within view from Batavia.—Alſo, a ſmall iſland in the gulf of Manar, near the W. coaſt of Ceylon; 12 miles W. of Jaffnapatam.—Alſo, a ſmall iſland in a bay of the Pacific ocean, on the N. coaſt of New Guinea. S. lat. 3° 58′. E. long. 135° 39′.—Alſo, a town of Pruſſia, 27 miles S.S.E. of Konigſberg.—Alſo, a poſt-town of America, in Oneida county, New York; 330 miles N.E. from Waſhington.—Alſo, a townſhip in Hampſhire county, Maſſachuſetts, between Colerain and Bernardſton; 29 miles from Northampton, incorporated in 1784, and containing 1095 inhabitants.

LEYDEN *Phial*, in *Electricity*, is a glaſs phial or jar, coated both on the inſide and outſide with ſome conducting ſubſtance, for the purpoſe of being charged, and employed in a variety of entertaining and uſeful experiments. See COATING and CHARGE.

It was thus called becauſe Mr. Cunæus, a native of Leyden, was ſuppoſed to have firſt contrived, about the cloſe of the year 1745, to accumulate the electrical power in glaſs by this method; and hence the operation of charging and diſcharging coated glaſs, in general, has been denominated the *Leyden experiment;* and a vacuum produced in a jar of this kind has been called the *Leyden vacuum.* But Dr. Prieſtley, the hiſtorian of electricity, informs us, that the perſon who firſt made this great diſcovery was Mr. Von Kleiſt, dean of the cathedral in Camin; who, on the 4th of November, 1745, ſent an account of it to Dr. Leiberkuhn at Berlin: however, thoſe, to whom Mr. Kleiſt's account was communicated, could not ſucceed in performing his experiments. The views which led to this diſcovery in Holland are ſtated by Dr. Prieſtley in the following manner: profeſſor Muſchenbroeck and his friends, obſerving, that electrified bodies, expoſed to the common atmoſphere, which is always replete with conducting particles of various kinds, ſoon loſt their electricity, and were capable of retaining but a ſmall quantity of it, imagined, that if the electrified bodies were terminated on all ſides by original electrics, they might be capable of receiving a ſtronger power, and retaining it a longer time. Glaſs being the moſt convenient electric for this purpoſe, and water the moſt convenient non-electric, they firſt made theſe experiments with water in glaſs bottles; but no conſiderable diſcovery was made, till Mr. Cunæus, happening to hold his glaſs veſſel in one hand, containing water, which had a communication with the prime conductor by means of a wire; and with the other hand diſengaging it from the conductor, when he imagined the water had received as much electricity as the machine could give it, was ſurpriſed by a ſudden ſhock in his arms and breaſt, which he had not in the leaſt expected from the experiment. This experiment was repeated, and the firſt account of it publiſhed in Holland by Mr. Allamand and Mr. Muſchenbroeck; by the able Nollet, and M. Monnier, in France; and by Meſſrs. Gralath and Rugger, in Germany. Mr. Gralath contrived to increaſe the ſtrength of the ſhock, by altering the ſhape and ſize of the phial, and alſo by charging ſeveral phials at the ſame time, ſo as to form what is now called the *electrical battery*. He likewiſe made the ſhock to paſs through a number of perſons connected in a circuit from the outſide to the inſide of the phial. He obſerved that a cracked phial would not admit of being charged; and he diſcovered what is now called the *reſiduum of a charge.* Dr. Watſon, about this time, obſerved a circumſtance attending the operation of charging the phial, which, purſued, would have led him to the diſcovery which was afterwards made by Dr. Franklin. He ſays, that when the phial is well electrified, and you apply your hand to it, you ſee the fire flaſh from the outſide of the glaſs, wherever you touch it, and it crackles in your hand. He alſo obſerved, that when a ſingle wire only was faſtened round a phial, properly filled with warm water, and charged; upon the inſtant of its exploſion, the electrical corruſcations were ſeen to dart from the wire, and to illuminate the water contained in the phial. He likewiſe found, that the ſtroke, in the diſcharge of the phial, was, *cæteris paribus*, as the points of contact of the non-electrics of the outſide of the glaſs, which led to the method of *coating* glaſs: in conſequence of which he made experiments, that led him to conclude, that the effect of the Leyden bottle was greatly increaſed, if it was not principally owing to, not ſo much the quantity of non-electric matter contained in the glaſs, as the number of points of non-electric contact within the glaſs, and the denſity of the matter of which theſe points conſiſted; provided the matter was, in its own nature, a ready conductor of electricity. He farther obſerved, that the exploſion was greater from hot water incloſed in glaſſes, than from cold, and from his coated jars, warmed, than cold. For his manner of explaining the ſhock of the Leyden phial, ſee AFFLUX.

Mr. Wilſon, in 1746, diſcovered a method of giving the ſhock to any particular part of the body, without affecting the reſt: he alſo increaſed the ſtrength of the ſhock by plunging the phial in water, thereby giving it a coating of water on the outſide as high as it was filled on the inſide; he likewiſe found, that the law of accumulation of the electric matter in the Leyden bottle was always in proportion to the thinneſs of the glaſs, the ſurface of the glaſs, and that of the non-electrics in contact with the inſide and outſide thereof. Mr. Wilſon made a variety of other experiments with the Leyden phial, which our limits will not allow us to recite.

Mr. Canton found, that if a charged phial was placed upon electrics, the wire and the coating would give a ſpark or two alternately; and that, by continuing this operation, the phial would be diſcharged; though he did not obſerve that theſe alternate ſparks proceeded from the two contrary electricities diſcovered by Dr. Franklin.

The abbé Nollet made ſeveral experiments with this phial. He received a ſhock from a bottle, out of which the air had been exhauſted, and into which the end of his conductor had been inſerted. He aſcribed the force of the glaſs in giving a ſhock, to that property of it, whereby it retained it more ſtrongly than conductors do, and was not ſo eaſily diveſted of it as they are. He alſo firſt tried the effect of the electric ſhock on brute animals, and enlarged the circuit of its conveyance. See CIRCUIT.

M. Monnier is ſaid to have been the firſt who diſcovered that the Leyden phial would retain its electricity for a conſiderable time after it was charged, and to have found it to do ſo for thirty-ſix hours, in time of froſt; and it is remarkable that the French as well as the Engliſh philoſophers made ſeveral experiments, which, with a little greater degree of attention, would have led them to the diſcovery of the different quality of electricity on different ſides of the glaſs. But this was reſerved for the ingenious doctor Franklin, who, in explaining the method of charging the Leyden phial, obſerves, that when one ſide of the glaſs is electrified poſitively, or *plus*, the other ſide is electrified negatively, or *minus*; ſo that whatever quantity of fire is thrown upon one ſide of the glaſs, the ſame is thrown out of the other; and in a phial not charged, none can be thrown into the inſide, when none can be got out from the outſide; and there is really no more electric fire in the phial after it is charged than before; all that can be done by charging being to take from one ſide and convey to the other. Dr. Franklin alſo obſerved, that glaſs was impervious to electricity, and that therefore, ſince the equilibrium could not be reſtored to the charged phial by an internal communication, it muſt be done by conductors externally joining the inſide and the outſide. Theſe capital diſcoveries he made by obſerving that, when a phial was charged, a cork-ball, ſuſpended on ſilk, would be attracted by the outſide coating, when it was repelled by a wire communicating with the inſide, and *vice verſâ*. But the truth of this maxim appeared more evident, when he brought the knob of the wire communicating with the outſide coating within a few inches of the wire communicating with the inſide coating, and ſuſpended a cork-ball between them; for, in that caſe, the ball was attracted by them alternately, till the phial was diſcharged.

Dr. Franklin alſo ſhewed, that when the phial was charged, one ſide loſt exactly as much as the other gained, in reſtoring the equilibrium. Hanging a ſmall linen thread near the coating of an electrical phial, he obſerved that whenever he brought his finger near the wire, the thread was attracted by the coating: for as the fire was taken from the inſide, by touching the wire, the outſide drew in an equal quantity by the thread. He likewiſe proved, that the coating on one ſide of a phial received juſt as much electricity as was emitted from the diſcharge of the other, in the following manner: he inſulated his rubber, and then, hanging a phial to the conductor, he found it could not be charged, even though his hand was held conſtantly to it; becauſe, though the electric fire might leave the outſide of the phial, there was none collected by the rubber to be conveyed to the inſide. He then took away his hand from the phial, and forming a communication by a wire from the outſide coating to the inſulated rubber, he found that it was charged with eaſe. In this caſe it was plain, that the very ſame fire which left the outſide coating, was conveyed by the way of the rubber, the globe and the conductor, and the wire of the fire into the inſide. This new theory of charging the Leyden phial led Dr. Franklin to obſerve a greater variety of facts, relating both to charging and diſcharging it, than other philoſophers had attended to. This maxim, that whatever the phial takes in at one ſurface it loſes at the other, led Dr. Franklin to think of charging ſeveral phials together with the ſame trouble, by connecting the outſide of one with the inſide of another; whereby the fluid that was driven out of the firſt would be received by the ſecond, &c. By this means he found, that a great number of bottles might be charged with the ſame labour as one only; and that they might be charged equally high, were it not that every bottle receives the new fire, and loſes its old with ſome reluctance, or rather gives ſome ſmall reſiſtance to the charging. On this principle he conſtructed an electrical battery.

When Dr. Franklin firſt began his experiments upon the Leyden phial, he imagined that the electric fire was all crowded into the ſubſtance of the non-electric, in contact with the glaſs; but he afterwards found that its power of giving a ſhock lay in the glaſs itſelf, and not in the coating, by the following ingenious analyſis of the bottle. In order to find where the ſtrength of the charged bottle lay, he placed it upon glaſs; then firſt took out the cork and the wire, and finding the virtue was not in them, he touched the outſide coating with one hand, and put the finger of the other

other into the mouth of the bottle; when the ſhock was felt quite as ſtrong as if the cork and wire had been in it. He then charged the phial again, and pouring out the water into an empty bottle, inſulated, expected that, if the force reſided in the water, it would give the ſhock, but he found it gave none. He then judged that the electric fire muſt either have been loſt in decanting, or muſt remain in the bottle; and the latter he found to be true; for, filling the charged bottle with freſh water, he found the ſhock, and was ſatisfied that the power of giving it reſided in the glaſs itſelf. The ſame experiment was made with panes of glaſs, laying the coating on lightly, and changing it as the water had been before changed in the bottle, and the reſult was preciſely the ſame. He proved in other ways that the electric fire reſided in the glaſs. Franklin's Letters and Obſervations, &c. Prieſtley's Hiſt. of Electricity, vol. i. p. 191, &c.

From the above account of Dr. Franklin's method of analyſing the Leyden phial, the manner of charging and diſcharging it, and the reaſon of the proceſs, are eaſily underſtood. Thus, if a coated phial be placed near the prime conductor, ſo that the knob of its wire may be in contact with it; and the winch of the machine be turned, the index of the electrometer, fixed to the conductor, will gradually riſe as far as 90° nearly, and then reſt; which ſhews that the phial has received its full charge; then if the diſcharger be held by its glaſs handle, and one of its knobs be applied to the outſide coating of the phial, and the other be brought near the knob of the wire, or near the prime conductor that communicates with it, a report will be heard, and luminous ſparks will be diſcovered between the diſcharger and the conducting ſubſtances communicating with the ſides of the phial, and by this operation the phial will be diſcharged. If, inſtead of uſing the diſcharger, a perſon touches the outſide of the phial with one hand, and brings the other hand near the wire of the phial, the ſame ſpark and report will be obſerved, and a ſhock will be felt, that affects the wriſts and elbows; and, when the ſhock is ſtrong, the breaſt likewiſe; and a ſhock may be given to any ſingle part of the body, if that part alone be brought into the circuit. If a number of perſons join hands, and the firſt of them touches the outſide of the phial, and the laſt touches the wire communicating with the inſide, they will all feel the ſhock at the ſame time. If the coated phial be held by the wire, and the outſide coating be preſented to the prime conductor, it will be charged as readily, only with this difference, that in this caſe the outſide will be poſitive, and the inſide negative; and if the prime conductor, by being connected with the rubber of the machine, be electrified negatively, the phial would be charged in the ſame manner; but the ſide that touches the conductor would be electrified negatively, and the oppoſite ſide would be electrified poſitively. But if the phial be inſulated, and the ſame proceſs repeated, the index of the electrometer will ſoon riſe to 90°, yet the phial will remain uncharged; becauſe the outſide, having no communication with the earth, &c. cannot part with its own electricity, and, therefore, the inſide can acquire no additional quantity; but when a chain, or any other conductor, connects the outſide of the phial with the table, the phial may be charged as before. Moreover, if a phial be inſulated, and one ſide of it, inſtead of being connected with the earth, be connected with the inſulated rubber, whilſt the other ſide communicates with the prime conductor, the phial will be expeditiouſly charged; becauſe, whilſt the rubber exhauſts one ſide, the other ſide is ſupplied by the prime conductor; and in this way the phial is charged with its own electricity; or the natural electric matter of one of its ſides is thus thrown on its other ſide. This laſt experiment may be diverſified, by inſulating the phial, and placing it, with its wire, at the diſtance of about half an inch from the prime conductor, and holding the knob of another wire at the ſame diſtance from its outſide coating; then turning the winch of the machine, and a ſpark will be obſerved to proceed from the prime conductor to the wire of the phial, and another ſpark will paſs at the ſame time from the outſide coating to the knob of the wire preſented towards it; and thus it is ſeen, that as a quantity of the electric matter is entering the inſide of the phial, an equal quantity of it is leaving the outſide. If the wire preſented to the outſide of the phial be pointed, it will appear illuminated with a *ſtar;* but if the pointed wire be connected with the coating of the phial, it will appear illuminated with a *bruſh* of rays. See CHARGE, ELECTRICAL *Experiments*, &c. ELECTRICITY, ELECTROMETER, &c.

Mr. Cavallo has deſcribed the conſtruction of a phial, which, when charged by an electrical kite, in examining the ſtate of the clouds, or in any other way, may be put into the pocket, and which will retain its charge for a conſiderable time. Beſides the coating on the inſide and outſide, which this phial has like others of the ſame kind, a glaſs tube open at both ends is cemented into its neck, and paſſes, within the phial, having a ſmall wire faſtened to its lower extremity, which touches the inſide non-electric coating. The wire, with the knob of this phial, is cemented into another glaſs tube, which is nearly twice as long, and ſmaller than the tube cemented into the neck of the phial. The wire is cemented in ſuch a manner, that only its knob projects out of one end, and a ſmall length of it out of the other end of the tube. If this piece, with the wire, be held by the middle of the glaſs tube, it may be put in or out of the tube, which is in the neck of the phial, ſo as to touch the ſmall wire at the lower extremity of it; and this may be done without diſcharging the phial, if it be charged. A phial of this kind has been kept in a charged ſtate for ſix weeks. Cavallo's Elect. p. 340. See CONDUCTOR.

We ſhall cloſe this article with an account of the method by which Mr. Cavallo repairs coated phials, that have been cracked or perforated, either by a ſpontaneous diſcharge, or other accident. He removes the outſide coating from the fractured part, and then makes it moderately hot by holding it to the flame of a candle; and whilſt it remains hot, he applies burning ſealing-wax to the part, ſo as to cover the fracture entirely; taking care that the thickneſs of this wax coating may be greater than that of the glaſs. Laſtly, he covers all the ſealing-wax, and alſo part of the ſurface of the glaſs beyond it, with a compoſition made with four parts of bees' wax, one of reſin, one of turpentine, and a very little oil of olives. This he ſpreads upon a piece of oiled ſilk, which he applies in the manner of a plaſter. In this way ſeveral phials have been ſo effectually repaired, that, after being frequently charged, they were at laſt broken by a ſpontaneous diſcharge, but in a different part of the glaſs. Phil. Tranſ. vol. lxviii. part ii. p. 1011.

LEYGAGER is uſed for wager of law.

LEYMEN, or LEINEN, in *Geography*, a town of Germany, in the palatinate of the Rhine; eight miles S. of Heidelberg.

LEYPA, or LEIPPA, a town of Bohemia, in the circle of Leitmeritz; 20 miles N.E. of Leitmeritz. N. lat. 50° 39′. E. long. 14° 43′.

LEYRE, a town of Spain, in Navarre; eight miles N.E. of Sangueſa.

LEYRIA, a city of Portugal, in the province of Eſtremadura, the ſee of a biſhop, erected in 1545; containing a glaſs-houſe eſtabliſhed by Engliſhmen, and about 3500 inhabitants. Near it, on an eminence, is an ancient caſtle built by the Moors; 57 miles N.N.E. of Liſbon. N. lat. 39° 39'. E. long. 8° 34'.

LEYSE, a town of Pruſſia, in Ermeland; 18 miles N.E. of Heilſberg.

LEYSERA, in *Botany*, ſo denominated by Linnæus, in honour of Frederick William Von Leyſer, author of the *Flora Halenſis*, publiſhed in 1761, in one volume octavo. This is a ſynopſis of the plants found about Hall in Saxony, diſpoſed according to the Linnæan ſyſtem, with ſcarcely any ſynonyms. The number of ſpecies is only 1122, embracing few novelties or rarities, and bearing a great analogy to the lowland Flora of Britain. Haller, however, in his Bibl. Bot. v. 2. 510, terms it "a rich Flora, with original remarks, as well as new plants." The moſt original part ſeems, in our opinion, a chronological and local diſtribution of the plants, inſerted by way of appendix. A ſecond edition appeared in 1783.—Linn. Gen. 431. Schreb. 562. Willd. Sp. Pl. v. 3. 2132. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. v. 3. 229. Thunb. Prodr. 160. Juſſ. 179. Lamarck. Illuſtr. t. 683. Gærtn. t. 173. (Aſteropterus; Vaill. Mem. de l'Acad. des Sc. 1720. Gærtn. 460. t. 173.) Claſs and order, *Syngeneſia Polygamia-ſuperflua*. Nat. Ord. *Compoſitæ Diſcoideæ*, Linn. *Corymbiferæ*, Juſſ.

Gen. Ch. *Common Calyx* ovate, imbricated; ſcales obtuſe, concave, ſcarioſe. *Cor.* compound, radiated; *florets* of the diſk ſeveral, perfect, tubular, funnel-ſhaped, five-cleft, nearly erect; thoſe of the radius ſeveral, ligulate, lanceolate, entire. *Stam.* (in the perfect florets) Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* (in the ſame) Germen ſmall; ſtyle thread-ſhaped; ſtigma notched. In the female ones the ſtyle is ſhorter, and the ſtigma more divided. *Peric.* none, except the unchanged calyx. *Seed*, in both kinds of florets, ſolitary oblong; down, in thoſe of the diſk, long, of five feathery briſtles, ſurrounding a very ſhort chaffy crown; in thoſe of the radius the feathery briſtles are wanting. *Recept.* naked in the diſk, the florets of the circumference only being ſeparated by narrow chaffy ſcales.

Obſ. In *Leyſera paleacea* the feathery briſtles of the radius are wanting. Gærtner reſtrains the genus of *Leyſera* to ſuch ſpecies, keeping Vaillant's name *Aſteropterus* for thoſe which have the two kinds of ſeed-down as above deſcribed; but ſuch a diſtinction appears to us, as it did to Linnæus, merely to ſeparate a very natural genus, and it ſerves, among many other inſtances, diſplayed in this part of Gærtner's admirable work, to prove that technical characters muſt never be followed, without taking natural ones as a clue.

Eſſ. Ch. Receptacle chaffy in the circumference. Seed-down chaffy; in the florets of the diſk moſtly feathery alſo. Calyx ſcarioſe.

Linnæus has three ſpecies of this genus.

1. L. *gnaphalodes*. Linn. Sp. Pl. 1249. Leyſ. Hall. ed. 2; frontiſpiece, inſcribed " *unicum præmium, ſed immortale*." (Aſter æthiopicus, ſtoechadis foliis, flore aureo; Herm. Lugd. Bat. 68. t. 71.)—Leaves linear-awlſhaped, downy and glandular. Calyx-ſcales lanceolate.—Native of the Cape of Good Hope, as are all the known ſpecies hitherto diſcovered. The *ſtem* is ſhrubby, determinately branched, leafy, downy. *Leaves* copious, ſpreading every way, ſcattered, briſtle-ſhaped, hardly an inch long, downy, as well as beſprinkled with little prominent glandular briſtles. *Flowers* moſtly terminal, ſolitary, on long ſlender ſtalks, with yellow rays, and a ſhining membranous calyx. The feathery down of the *ſeeds* is very conſpicuous among the numerous florets of the diſk.

2. L. *Callicornia*. Linn. Mant. 286. (Calicorni gnaphaloides; Burm. Prodr. 24. Hieracii peculiare genus, coridis folio, æthiopicum, ſeminum pappis denſiùs radiatis; Pluk. Mant. 103. Phyt. t. 350. f. 4.)—Leaves linear-threadſhaped, rough. Scales of the calyx acute. Flowers nearly ſeſſile. This differs at firſt ſight from the former in its ſeſſile *flowers*, ſolitary at the ſummit of each branch, and the ſcales of the *calyx* are more pointed.

3. L. *paleacea*. Linn. Syſt. Veg. ed. 13. 641. ed. 14. 771. (L. ericoides; Berg. Cap. 294. Relhania paleacea; L'Herit. Sert. Angl. 24. Thunb. Prodr. 146. Willd. Sp. Pl. v. 3. 2137.)—Leaves linear, channelled, downy. Calyx ſeſſile, turbinate; its inner ſcales thin and pointed. Feathery down wanting. Marginal ſcales of the receptacle ſurmounting the florets.—The *leaves* of this are not ſo ſlender as either of the former, being triangular, furrowed above, very cottony, but not glandular. *Flowers* ſeſſile at the end of each branch, ſolitary. Outer ſcales of the *calyx* leſs ſcarioſe than in the former. On account of the want of the feathery ſeed-down, M. l'Heritier referred this ſpecies to his genus *Relhania*, which is rather a heterogeneous aſſemblage. In this, however, he is followed by Thunberg and Willdenow, who alſo agree in removing the Linnæan *Stæhelina gnaphaloides* to *Leyſera*, a meaſure which ſeems to us rather unnatural.

Thunberg adds ſeven more ſpecies to this genus, the ſpecific characters of which are given in his *Prodromus*, but nothing more is known concerning them. They are named *ciliata*, *incana*, *arctotoides*, *Piloſella*, *ovata*, *picta*, and *polifolia*.

LEYTA, in *Geography*, one of the Philippine iſlands, about 250 miles in circumference; the ſoil is ſo fertile as to yield two hundred fold; the mountains abound in deer, cows, wild hogs, and fowls; cocoas grow ſpontaneouſly; the air is pure and healthy, and more temperate than at Luçon. The inhabitants are mild and peaceable in their diſpoſition, and hoſpitable to ſtrangers. Their number is eſtimated to be about 9000, who pay tribute in wax, rice, or cloth. N. lat. 10° 50'. E. long. 124° 40'.

LEZAISKO, a town of Auſtrian Poland, in Galicia; 56 miles W.N.W. of Lemberg.

LEZANDRIEUX, a town of France, in the department of the North Coaſts, and chief place of a canton, in the diſtrict of Lannion, four miles E. of Treguier. The place contains 1763, and the canton 12,289 inhabitants, on a territory of 142½ kiliometres, in ſix communes.

LEZERS, an Indian nation, which inhabits between the mouth of the Ohio and Wabaſh rivers. They can furniſh 300 warriors.

LEZIGNAN, a town of France, in the department of the Aude, and chief place of a canton, in the diſtrict of Narbonne. The place contains 1505, and the canton 6827 inhabitants, on a territory of 270 kiliometres, in 17 communes.

LEZOUX, a town of France, in the department of the Puy-de-Dome, and chief place of a canton, in the diſtrict of Thiers; ſeven miles W.S.W. of Thiers. The place contains 3307, and the canton 10,581 inhabitants, on a territory of 197½ kiliometres, in 12 communes.

LGOV, a town of Ruſſia, in the government of Kurſk. N. lat. 48°. E. long. 35° 54'.

LHOTA, a town of Bohemia, in the circle of Koniginggratz; ſix miles S.E. of Trautenau.

LHOTKA, a town of Bohemia, in the circle of Koniginggratz; 14 miles W. of Koniggingratz.

LIADOVA, a town of Moldavia, on the Dnieſter; 56 miles E.N.E. of Choczim.

LIAISON, *Fr.* in *Muſic*, connection, relation, combination. See Relative.

LIALSKOI, in *Geography*, a town of Ruſſia, in the province of Uiting, on the Vim; 48 miles E. of Yarenſk.

LIAM, a town of Lower Siam, on the E. ſide of the gulf. N. lat. 12° 35'. E. long. 102° 18'.

LIAMONE, a river of Corſica, which runs into the ſea; 10 miles N. of Ajaccio. It gives name to one of the two departments into which Corſica is divided; the other being Golo. It is formed by the ſouthern part of the iſland, in N. lat. 41 30', containing 149 ſquare leagues, and 63.347 inhabitants. It is divided into three circles, *viz.* Vico, containing 10,049 inhabitants; Ajaccio, 26,918; and Sartene, including 26,380 inhabitants. In the vallies and acclivities of the hills, the ſoil is fertile, yielding grain, fruits, paſtures, and, in ſome diſtricts, delicious wines.

LIAM-PO. See Ning-po.

LIAMSA, a town of Ruſſia, in the goverment of Archangel, on the coaſt of the White ſea; 36 miles N.N.W. of Oneg.

LIANCOURT, a town of France, in the department of the Oiſe, and chief place of a canton, in the diſtrict of Clermont; four miles S. of Clermont. The place contains 962, and the canton 10,365 inhabitants, on a territory of 125 kilometres, in 22 communes.

LIANGA, a town on the E. coaſt of Mindanao. N. lat. 8° 21'. E. long. 126 10'.

LIANG-CHAN, a town of Corea; 40 miles S.S.E. of Kang-tcheou.

LIANGDAL, a river of Sweden, which riſes in the province of Harjedalen, and runs into the gulf of Bothnia, near Sundſwal.

LIAN-TCHUEN, a town of Corea; 25 miles E.N.E. of Haimen.

LIAR-DSAKE, a lake of Thibet, about 30 miles in circumference. N. lat. 34° 34'. E. long. 90° 44'.

LIATRIS, in *Botany*, a name of whoſe meaning or origin we are not able to diſcover any thing ſatisfactory. Gærtn. t. 167. Schreb. 542. Willd. Sp. Pl. v. 3. 1634. Mart. Mill. Dict. v. 3. (Suprago; Gærtn. v. 2. 402. Anonymos, n. 309; Walt. Carol. 196. Cirſium; Dill. Elth. t. 71, 72. See Serratula; Juſſ. 174.)—Claſs and order, *Syngeneſia Polygamia-æqualis*. Nat. Ord. *Compoſitæ capitatæ*, Linn. *Cinarocephalæ*, Juſſ.

Gen. Ch. *Common Calyx* oblong, imbricated, of numerous, ſomewhat ovate, unarmed, coloured ſcales. *Cor.* compound, uniform, tubular; florets are perfect and equal, monopetalous, funnel-ſhaped; their tube inflexed; limb in five recurved ſegments. *Stam.* Filaments five, capillary, very ſhort; anthers united into a cylindrical tube. *Piſt.* Germen to each floret, oblong; ſtyle thread-ſhaped, very long, divided as far as the top of the ſtamens, ſtraight; ſtigmas rather acute. *Peric.* none, except the permanent unaltered calyx. *Seeds* ſolitary, angular; down ſeſſile, feathery, ſometimes coloured. *Recept.* naked, flat.

Eſſ. Ch. Receptacle naked. Calyx oblong, imbricated, unarmed, coloured. Down feathery.

This genus appears to have been originally ſeparated from *Serratula* by Gærtner, who altered the name by which he at firſt diſtinguiſhed it, *Suprago*, to that it now bears. *Serratula* differs from it in having a ſcaly or hairy receptacle, as well as in habit. Eight ſpecies are defined by Willdenow, of which the following are the moſt characteriſtic and remarkable.

L. *ſcarioſa*. Willd. n. 2. (Serratula ſcarioſa; Linn. Sp. Pl. 1147. Eupatorio adfinis americana bulboſa, floribus ſcarioſis calycibus contectis; Pluk Phyt. t. 177. f. 4.)—Leaves lanceolate, tapering at each end, rough-edged. Flowers on long bracteated ſtalks. Calyx-ſcales obovate, ſpreading.—Native of North America; ſometimes ſeen with us in curious gardens, where it is a hardy perennial. *Root* a bulb-ſhaped tuber. *Stem* three or four feet high, leafy, finely hairy, racemoſe at the upper part, each *flower* ſupported by a ſtalk from two to four inches long, bearing a few leafy *bracteas*. The *ſtigmas* are long, purpliſh, as well as the florets. *Calyx-ſcales* more or leſs obtuſe, leafy, widely ſpreading.

L. *elegans*. Willd. n. 3. (Staehelina elegans; Walt. Carol. 202. Serratula ſpecioſa; Ait. Hort. Kew. v. 3. 138.)—Leaves linear, dotted. Spike very long and denſe. Calyx-ſcales lanceolate, acute, hairy; the innermoſt elongated, coloured, ſomewhat toothed. Florets few.—Gathered by Bartram, in Georgia, in 1765; by Walter in Carolina. The upper *ſtem leaves* are widely ſpreading, or reflexed; lower longer, more diſtant and upright; all finely dotted on both ſides. *Spike* long, denſe, erect, ſlender, of numerous, nearly ſeſſile, bracteated *flowers*, whoſe long, leafy, fine pink, inner ſcales of the calyx are very beautiful.

L. *piloſa*. Willd. n. 4. (Serratula piloſa; Ait. Hort. Kew. v. 3. 138.)—Leaves linear, hairy, ſomewhat dotted. Cluſter long, looſe, hairy. Bracteas and calyx-ſcales obtuſe, fringed.—Native of North America, from whence it was introduced, in 1783, into Kew garden, where we gathered it in flower two years after. It is perennial and hardy, blooming in the autumn. As there is no deſcription nor figure extant, the following may be acceptable. The *ſtem* is three feet high, ſlender, leafy, angular, clothed with longiſh ſcattered hairs, at leaſt in the upper part. *Leaves* narrow, reflexed, fringed with ſimilar hairs, and irregularly dotted on both ſides; the upper ones dilated at the baſe, and embracing the ſtem. *Cluſter* terminal, ſimple, long, looſe, leafy, ſlightly hairy. *Flower ſtalks* about an inch long, axillary, bearing at their upper part two or three ſhort, obtuſe, fringed, dotted *bracteas*, reſembling the lower ſcales of the *calyx*; whoſe inner-ſcales are gradually longer, with a membranous, fringed, white or reddiſh edge. *Florets* and *ſtigmas* pink.

We cannot but lament, that while ſo many well-known plants are figured over and over again in every publication, ſuch curious and beautiful ſpecies as the two laſt ſhould remain neglected and unknown.

L. *ſpicata*. Willd. n. 6. (Serratula ſpicata; Linn. Sp. Pl. 1147. Cirſium tuberoſum, lactucæ capitulis ſpicatis; Dill. Elth. 85. t. 72. f. 83.)—Leaves linear, diſtantly dotted, fringed at the baſe. Spike leafy; denſe above. Calyx-ſcales obtuſe, ſmooth.—Native of various parts of North America, from whence it was brought to the Engliſh gardens about eighty years ago, and ſtill remains at Kew. The nearly ſeſſile *flowers*, and ſmooth-edged *calyx*, diſtinguiſh it from the laſt, to which it is otherwiſe nearly allied.

L. *odoratiſſima*. Willd. n. 8. (Anonymos odoratiſſimus; Walt. Carol. 198.)—Leaves elliptic-oblong, ſmooth; the upper ones heart-ſhaped, claſping the ſtem. Panicle corymboſe, ſpreading. Calyx-ſcales obovate, glandular.—Gathered by Walter in Carolina, from whence it was brought by the late Mr. Fraſer in 1787. This ſpecies is remarkable for its fine ſcent when dried, which reſembles that of the Woodruff, and *Holcus odoratus*. The radical *leaves* are ſtalked, three or four inches long, nearly elliptical; thoſe of the ſtem numerous, much ſmaller. *Flowers* ſmall, purple, very numerous, in a ſmoothiſh, ſpreading, bracteated, corymboſe panicle. *Florets* not numerous.

LIBA, in *Geography*, a town of Bohemia, in the circle of Saatz; 10 miles E. of Eger.

LIBAN, a town of Bohemia, in the circle of Boleſlaw; 12 miles E S.E. of Jung-Buntzel.

LIBANIUS, in *Biography*, a celebrated Greek ſophiſt, or rhetorician, was born of an ancient family at Antioch, about the year 314. He devoted himſelf from his youth to the intereſts of literature, and purſued his ſtudies at Athens. Having finiſhed his education he collected diſciples, and made himſelf known by various rhetorical compoſitions. His reputation was ſo high at Conſtantinople, that ſome other profeſſors, jealous of his fame, procured his baniſhment on the charge of magic. He then went to Nicomedia, where he obtained a great number of diſciples, among whom, in a private manner, was Julian, afterwards denominated the Apoſtate. He finally returned to Antioch, where he ſpent the remainder of his days. About the year 360, he was preceptor to Baſil and Chryſoſtom, perſons afterwards very celebrated in the church, though he was always zealouſly attached to the ancient religion; and on the acceſſion of Julian, he was one of the firſt whom that emperor invited to be near his perſon. He declined the honours intended him, preferring a life of privacy to the buſtle of a court. He was, however, warmly attached to a prince who patronized his ſtudies, and ſupported the ſame religious cauſe; and was enabled, by the influence which he had over him, to ſoften many of the emperor's reſentments. Julian admitted him to the equality of a friend, and is thought to have derived ſome aſſiſtance from him in his compoſitions. He ſurvived to an advanced age, but the time of his death is not known. The writings of Libanius were very numerous, conſiſting chiefly of orations, declamations, diſſertations, and epiſtles; which are characterized by Gibbon as, "for the moſt part, the vain and idle compoſitions of an orator who cultivated the ſcience of words:" yet he admits that he had merit, and that his correſpondence was various and elaborate; "he praiſed the virtues of his own times; he boldly arraigned the abuſes of public and private life; and he eloquently pleaded the cauſe of Antioch againſt the juſt reſentment of Julian and Theodoſius." Some of the works of Libanius, conſiſting of his orations, declamations, &c., were publiſhed in two volumes, folio, in Greek and Latin, in the years 1606 and 1627; but the moſt complete collection of his epiſtles is that publiſhed at Amſterdam in 1738. A volume, containing ſeventeen of his harangues, from the library of St. Mark, was printed at Venice in 1755. In reference to the concluſion of this writer's life, Gibbon obſerves, "it is the common calamity of old age to loſe whatever might have rendered it deſirable; but Libanius experienced the peculiar misfortune of ſurviving the religion and the ſciences, to which he had conſecrated his genius. The friend of Julian was the indignant ſpectator of the triumph of Chriſtianity; and his bigotry, which darkened the proſpect of the viſible world, did not inſpire Libanius with any lively hopes of celeſtial glory and happineſs." The judicious and excellent Lardner has tranſlated the whole of Libanius's oration to the emperor Theodoſius, every part of which, he ſays, is of importance to Chriſtians. The occaſion of this oration was, that in the reign of Theodoſius, ſeveral heathen temples had been pulled down and deſtroyed by the monks, with the conſent or connivance, as Libanius thought, of the biſhops, and without the orders of the emperor to that purpoſe. Of this Libanius complains and implores the protection of Theodoſius, that the temples may be preſerved. Dr. Lardner, therefore, gives the oration at length, to ſhew that the teſtimony of this heathen writer went directly to prove the divine origin of Chriſtianity. And he concludes by maintaining, that the greatneſs and ſplendour to which the Chriſtian church had attained from ſmall beginnings, by the force of truth againſt worldly terrors and allurements, was a greater wonder and a work of greater power than the magnificence of Rome and the grandeur of her empire. Libanius has given an intereſting detail of the private life of Julian, quoted and referred to by Gibbon; the mention of which affords us an opportunity of making an additional reference to the article JULIAN in our laſt volume. The works of Dr. Lardner ſhould have been cited as containing a ſummary of the arguments reſpecting the extraordinary interpoſitions that prevented this emperor from rebuilding the Jewiſh temple. See Lardner's teſtimonies of Ancient Heathens, vol. iv. or vol. viii. edit. 1788. Gibbon, vol. iv. Moreri.

LIBANIUS, GEORGE, who flouriſhed in the ſixteenth century, was deſcended from a reſpectable family at Lignitz, in Poland, of which place he was a native. He purſued his ſtudies for ſeveral years in the moſt celebrated German univerſities; and coming to reſide at Cracow, he was appointed one of the profeſſors in the principal college of that city. He is ſaid to have been the firſt perſon who introduced there the ſtudy of the Greek language. He publiſhed ſeveral works: as "Œconomicorum Ariſtotelis Libri Græcis et Latinis Annotationibus illuſtrati;" "Carmina Sibyllæ Erithreæ, &c.;" "Paracleſis, id eſt adhortatio ad Græcarum Literarum ſtudioſus, habita Cracoviæ;" "De Muſicæ Laudibus Oratio, &c." He alſo compiled an "Anthology," or choice Collections from the Works of St. Baſil, St. Gregory Nazianzen, and St. Chryſoſtom. Moreri.

LIBANOMANTIA, Λιϐανομαντεια, in *Antiquity*, a ſpecies of divination performed with frankincenſe; which, if it preſently caught fire, and ſent forth a grateful odour, was eſteemed a happy omen, and *vice verſâ*.

LIBANO'TIS, in *Botany*, the ancient appellation of a plant, ſuppoſed by ſome to have been the name of a boy, changed into the plant in queſtion; but the moſt evident and generally received etymology is from λιβανος, *frankincenſe*, which the root is ſaid to reſemble in ſcent. The λιβανωτις of Dioſcorides appears to be our Roſemary, as has been uſually ſuppoſed; which ſhrub is by the modern Greeks called δενδρολίβανον, or Tree Libanos. *Libanotis* however has, at different times, been employed to deſignate various umbelliferous plants, of an aromatic quality, and generally of mountain origin, which may have been found under the genera of *Athamanta*, *Cachrys*, *Bupleurum*, &c.

LIBANUS, in *Geography*. See LEBANON.

LIBATION, LIBATIO, a ceremony in the heathen ſacrifices, wherein the prieſt ſpilt ſome water, wine, milk, or other liquor, in honour of the deity to whom the ſacrifice was offered; after having firſt taſted it himſelf.

Alexander is ſaid to have ſacrificed a bull to Neptune; and, for an offering to the ſea-gods, to have thrown the golden veſſels uſed for the libation into the ſea.

Libations were alſo in uſe under the law of Moſes, being enjoined by God in Exodus xxix. and Numbers xv.

LIBAU, in *Geography*, a ſea-port of the duchy of Courland, ſituated on the Baltic, built by the Lettonians, and deriving its name, as it is ſaid, from the word "Leepaja," which, in the Lettonian language, ſignifies a piece of ground planted with linden-trees, ſuggeſted by the circumſtance that many of theſe trees formerly grew here. This etymology is further confirmed by the conſideration that the Lettonians even now call the town "Leepaja." Some Germans intermixed with the inhabitants of this town in the

13th century, and about the cloſe of the fifteenth, and commencement of the 16th centuries, many of that nation united together, and in 1625 it obtained the privileges of a city. In 1737, the harbour was cleared by Erneſt John, and the future accumulation of mud and ſand prevented, ſo that it is now a commodious port for veſſels of light burden; a conſiderable number of which repair hither and are loaded with hemp, linſeed, &c. This town was often taken by the Swedes, but ceded to Courland by the peace of 1660; 66 miles W. of Mittau. N. lat. 55° 28′. E. long. 21° 37′. In this part of the Baltic, as well as in the whole province of Courland belonging to Ruſſia, accounts are kept by merchants, as at Riga, in Alberts dollars of eighty ferdings, or of ninety Alberts groſchen; but retail traders moſtly reckon two guldens of ninety current groſchen, four of which are equal to three Alberts groſchen. The coins chiefly circulating here are Dutch ducats, and Alberts dollars; and alſo pieces coined in the country of the ſame ſtandard and value with theſe two coins. The ferding is an old ſilver coin; but the groſche is imaginary. The Ruſſian coins are alſo current here. (See RIGA.) The laſt of wheat, rye, barley or peaſe, contains 48 leofs; that of oats and malt 60 leofs, which are equal to 106 Engliſh buſhels; ſo that a leof of wheat contains about 10½ Engliſh quarters, and a laſt of oats 13¼ Engliſh quarters: one hundred laſts of ſalt are equal to 11,110 Engliſh buſhels. Libau exchanges with London at four Alberts dollars fifty groſchen, more or leſs, for 1*l.* ſterling, at three months date. The old ſtyle is ſtill uſed at Libau. Kelly's Un. Cambiſt, vol. 1.

LIBAVIUS, ANDRECO, in *Biography*, a phyſician and chemiſt, was born at Hall, in Saxony. He was profeſſor of hiſtory and poetry at Jena, in 1588. But he removed to Rothenburg, on the Tauber, in 1591, and to Coburg, in Franconia, in 1605, in conſequence of an appointment to the office of principal of the college of Caſimir, at that place. He died at Coburg in 1616. Libavius obtained a conſiderable reputation in his time by his chemical works, having purſued that ſcience upon better principles than moſt of his contemporaries. He employed many chemical preparations in medicine; nevertheleſs, he avoided the violence of Paracelſus and his diſciples, whoſe principles he often refuted, and againſt whom he frequently defends the doctrines of the Galenical ſchool. But, like the chemical philoſophers of the age, he did not altogether eſcape the deluſions of alchemy. He left his name long attached, in the laboratories, to a particular preparation of tin with muriatic acid, which was called "the fuming liquor of Libavius." It is unneceſſary to enumerate the titles of his many works, which have now become obſolete, and are almoſt forgotten. His laſt work, publiſhed at Francfort in 1615, under the title of "Examen Philoſophiæ Novæ, quæ veteri abrogandæ opponitur," folio, is remarkable for the firſt mention of the transfuſion of blood from the veſſels of one living animal to thoſe of another, of which he ſpeaks with great confidence. The ſuggeſtion, however, was not ſubmited to the teſt of experiment until the middle of the ſame century, when the ſubject made a great noiſe throughout Europe, and many phyſicians anticipated from it no leſs than a remedy againſt all diſeaſes; nay, ſome of them felt a confident expectation of rendering life perpetual. But theſe notions were preſently confuted by the numerous fatal terminations of the experiment. See Eloy Dict. Hiſt. Haller. Bibl. Med.

LIBAVIUS, *Liquor of.* See LIQUOR.

LIBEL, *Famoſus Libellus*, a writing or report, unlawfully publiſhed abroad, containing injurious reproaches, or accuſations, againſt the honour and reputation of any perſon, particularly of a ſuperior or governor: or, it is defined to be a malicious defamation of any perſon, expreſſed either in printing or writing, ſigns or pictures, to aſperſe the reputation of one that is alive, or the memory of one that is dead. According to judge Blackſtone, libels, in their moſt extenſive ſenſe, ſignify any writings, pictures, or the like, of an *immoral* or *illegal* tendency. Conſidered particularly as offences againſt the public peace, they are malicious defamations of any perſon, and eſpecially a magiſtrate, made public by either printing, writing, ſigns, or pictures in order to provoke him to wrath, or expoſe him to public hatred, contempt, or ridicule.

Platina is of opinion, that a writing, how injurious ſoever it is, cannot be called a libel, if the author's name be to it. Libellers, among the ancient Romans, were puniſhed with death, but in after-times they were only whipped. Auguſtus ranked *famoſos libellos*, defamatory libels, among the crimes *læſæ majeſtatis*, of high treaſon; and under the emperor Valentinian it was made capital, not only to write, but to publiſh or even omit deſtroying them. F. Baldwin has publiſhed a comment on the imperial laws againſt libels. Scandalous pictures are reckoned amongſt libels.

A libel, the lawyers ſay, may be either *in ſcriptis*, or *ſine ſcriptis*: *in ſcriptis*, when a writing is compoſed, or publiſhed to another's diſgrace; which may be done either *verbis aut cantalenis*; as where this is maliciouſly repeated, or ſung, in the preſence of others: or elſe *traditione*, when the libel, or any copy of it, is delivered out, to ſcandalize the party. 3 Inſt. 174.

A libel *ſine ſcriptis*, may be twofold. 1. *Picturis*, as to paint the party in a ſhameful or ignominious manner: or, 2. *Signis*, as to fix a gallows, or other ignominious ſigns, at the door of the party, or elſewhere.

Where a writing inveighs againſt mankind in general, or againſt a particular order of men, this is no libel; in order to make it a libel, it muſt deſcend to particulars and individuals. (3 Salk. 224.) But a general reflection on the government is a libel, though no particular perſon is reflected on; and the writing againſt a known law is held to be criminal. (4 St. Tr. 672. 903.) According to C. J. Holt, ſcandalous matter is not neceſſary to make a libel; it is enough if the defendant induces an ill opinion to be had of the plaintiff, &c. And if a man ſpeak ſcandalous words, unleſs they are put in writing, he is not guilty of a libel; for the nature of a libel conſiſts in putting the infamous matter into writing. (2 Salk. 437. 3 Salk. 226.) A defamatory writing, expreſſing only one or two letters of a name, in ſuch a manner, that from what goes before and follows after it may be underſtood, by the natural conſtruction of the whole, to ſignify and point at ſuch a particular perſon, is as properly a libel as if the whole name were expreſſed at large. (1 Hawk. P. C. c. 73. ſ. 4.) On application for information againſt this offence, ſome friend to the party complaining ſhould in ſuch caſe ſtate by affidavit his having read the libel, and that he underſtands and believes it to mean the party. (3 Bac. Abr. 12.) And in the caſe of actions for libels by ſigns or pictures, it ſeems neceſſary always to ſhew, by proper innuendoes and averments of the defendant's meaning, the import and application of the ſcandal, and that ſome ſpecial damage has followed; otherwiſe it cannot appear that ſuch libel by picture was underſtood to be levelled at the plaintiff, or that it was attended with any actionable conſequences. (Bl. Com. iii. c. 8.) Although a private perſon or magiſtrate be dead at the time of making the libel, yet it is puniſhable, as it tends to a breach of the peace. (Hob. 215. 5 Co. 125. 1 Hawk. P. C. c. 73.) But an indictment for publiſhing libellous matter reflecting on the memory of a dead perſon, not alleging that it was done with a deſign to bring contempt on the family of the deceaſed, and to ſtir up the hatred of the king's ſubjects againſt them, and to excite his relations to a breach of the peace, cannot be ſupported; and judgment was in this caſe accordingly arreſted. (4 Term Rep. 126.) No writing is eſteemed a libel, unleſs it reflect upon ſome particular perſon. And a writing full of obſcene ribaldry is not puniſhable by any proſecution at common law; but the author may be bound to good behaviour, as a perſon of evil fame. (1 Hawk. P. C. c. 73.) Printing or writing may be libellous, though the ſcandal is not directly charged, but obliquely and ſarcaſtically. Id.

It is certain that he who compoſes a libel, or procures another to compoſe it, and alſo he who publiſhes or procures another to publiſh it, is in danger of being puniſhed for it; and it is ſaid not to be material, whether he who diſperſes a libel know any thing of the contents or effect of it, or not; for nothing would be more eaſy than to publiſh the moſt virulent papers with the greateſt ſecurity, if concealing the purport of them from an illiterate publiſher would make him ſafe in diſperſing them. (1 Hawk. c. 70.) It hath alſo been ſaid, that if he who hath either read a libel himſelf, or hath heard it read by another, do afterwards maliciouſly read or repeat any part of it in the preſence of others, or lend or ſhew it to another, he is guilty of an unlawful publication of it. (Id.) It hath alſo been holden, that the copying of a libel ſhall be a concluſive evidence of the publication of it, unleſs the party can prove that he delivered it to a magiſtrate to examine it. (Id.) When any one finds a libel, if it be againſt a private perſon, he ought to burn it, or deliver it to a magiſtrate; and where it concerns a magiſtrate, he ſhould deliver it preſently to a magiſtrate. (5 Rep. 125.) If a libel be found in a houſe, the maſter cannot be puniſhed for framing, printing, and publiſhing it; but it is ſaid he may be indicted for having it, and not delivering it to a magiſtrate (1 Vent. 31.); or it may, in ſome caſes, be conſidered as evidence of his being the author or publiſher. (2 Salk. 418.) It hath been ruled, that the finding of a libel on a bookſeller's ſhelf is a publication of it by the bookſeller, and that it is no excuſe to ſay, that the ſervant took it into the ſhop without the maſter's knowledge; for the law preſumes the maſter to be acquainted with what the ſervant does. (1 Seſſ. C. 33. R. v. Dodd. 10 G.) The ſale of the libel by a ſervant in a ſhop is *prima facie* evidence of publication, in a proſecution againſt the maſter; and is ſufficient for conviction, unleſs contradicted by contrary evidence, ſhewing that he was not privy, nor in any way aſſenting to it. 4 Term Rep. 126. 5 Burr. 2686, 7. 1 Hawk. P. C. c. 73.

It is ſaid to be immaterial, on a criminal proſecution, with reſpect to the eſſence of a libel, whether the matter of it be true or falſe, or whether the party againſt whom it is made be of good or bad fame; for in a ſettled ſtate of government, the party grieved ought to complain for any injury done to him, in the ordinary courſe of law, and not by any means to revenge himſelf either by the odious courſe of libelling or otherwiſe. (5 Co. 125.) But this is to be underſtood, when the proſecution is by information or indictment; but in an action on the caſe, which is to repair the party in damages, the defendant may juſtify the truth of the facts, and ſhew that the plaintiff hath received no injury. Although it has been held, agreeably to the doctrine maintained by lord chief juſtice Manſfield, for at leaſt two centuries, that the truth of a libel is no juſtification in a criminal proſecution, yet in many inſtances it is conſidered as an extenuation of the offence; and the court of king's bench has laid down this general rule, *viz.* that it will not grant an information for a libel, unleſs the proſecutor who applies for it makes an affidavit, aſſerting directly and pointedly that he is innocent of the charge imputed to him. This rule, however, may be diſpenſed with in particular caſes; as if the perſon libelled reſides abroad, or if the imputations of a libel are general and indefinite, or if it is a charge againſt the proſecutor for language which he has held in parliament. Where, on application for an information, the truth of the libel is not denied, the court, except in the inſtances above mentioned, will leave the injury to be remedied in the ordinary courſe of juſtice by action or indictment. (Stra. 493.) But the court will not grant this extraordinary remedy by information, nor ſhould a grand jury find an indictment, unleſs the offence be of ſuch ſignal enormity, that it be reaſonably conſtrued to have a tendency to diſturb the peace and harmony of the community. (1 Hawk. P. C. c. 73.) There are authorities, that truth is not a juſtification even in an action for a libel; and a very learned writer ſeems to doubt whether ſuch a plea would now be admitted by the court, if the accuſation in the libel did not amount to an indictable offence. (3 Woodd. 182.) It ſeems, however, that the contrary is the prevalent opinion; and that in every action for a libel, if ſpecific inſtances can be ſtated upon the record, ſo as to ſupport the general charge of the libel, the courts would determine them to be a ſufficient juſtification of the defendant. 1 Term Rep. 748.

The puniſhment of libellers for either making, repeating, printing, or publiſhing the libel, is fine, and ſuch corporal puniſhment (as impriſonment, pillory, &c.) as the court in its diſcretion ſhall inflict; regarding the quantity of the offence, and the quality of the offender. (1 Hawk P. C. c. 73.) If a printer print a libel againſt a private perſon, and much more againſt a magiſtrate, or againſt the king and ſtate, he may be indicted and puniſhed for it; nor is it any apology to ſay, that it was done in the way of trade, or to maintain a family. (1 St. Tr. 982. 986.) Alſo, if bookſellers, &c. publiſh or ſell libels, though they know not the contents of them, they are puniſhable. It has been reſolved, that where perſons write, print, or ſell any pamphlets, ſcandalizing the public, or any private perſons, ſuch libellous books may be ſeized, and the perſons puniſhed by law; and all perſons expoſing books to ſale, reflecting on the government, may be puniſhed; alſo, writers of news (though not ſcandalous, ſeditious, or reflecting on the government, if they write falſe news) are indictable. St. Tr. 477.

With regard to libels in general, there are two remedies; one by indictment and another by action. The former for the public offence; for every libel has a tendency to break the peace, or to provoke others to break it; which offence is the ſame, in point of law, whether the matter contained be true or falſe; and, therefore, the defendant on an indictment for publiſhing a libel, is not allowed to allege the truth of it by way of juſtification. In ſuch proſecutions the only facts to be conſidered are, firſt, the making or publiſhing of the book or writing; and ſecondly, whether the matter be criminal. But in the remedy by action on the caſe, which is to repair the party in damages for the injury done him, the defendant may, as for words ſpoken, juſtify the truth of the facts, and ſhew that the plaintiff has received no injury at all. Blackſt. Com. vol. iii. and vol. iv.

In information and law proceedings, there are two modes of deſcribing a libel; *viz.* by the ſenſe, and by the words; the firſt is "cujus tenor ſequitur," and the ſecond "quæ ſequitur in hæc Anglicana verba, &c." in which the deſcription is by particular words, and of which every word is a mark, ſo that if there is any variance, it is fatal; in the other deſcription by the ſenſe, it is not material to be very exact in the words, becauſe the matter is deſcribed by the ſenſe of them (2 Salk. 660.) It hath been adjudged, that libels, as having a direct and immediate tendency to a breach of the peace, are indictable before juſtices of the peace. (1 Hawk. c. 8.) A libel muſt be proved to be written or publiſhed in the county laid in the indictment; all matters of crime being local. An information for a libel need not charge the offence to have been committed "vi et armis," or allege that the libellous matter is falſe. (7 T. R. 4.) The declaration for a libel muſt lay it to be "of and concerning the plaintiff;" otherwiſe there can be no judgment. (2 Strange, 934.) A very important ſubject of litigation has ariſen from proſecutions for libels, and particularly for ſtate libels; and that is, whether juries are, or are not, judges of *law* as well as of *fact*. With regard to libels, it had for a long time been the uſage for the judge to direct the jury, that if the fact of the publication of the paper charged to be a libel was proved, and if they believed the innuendoes in the indictment, they muſt find the defendant guilty; without adverting to any other circumſtances, ſuch as whether the paper were, in their opinion, a libel, or publiſhed with a malicious, ſeditious, traiterous, &c. intention. The counſel for the defendants in ſuch proſecutions always maintained, that it was the province of the jury to judge whether the paper was a libel (a queſtion of mere law); and alſo whether it were publiſhed with a malicious, ſeditious, &c. intention, as charged,—a complicated queſtion of law and fact. Mr. (now lord) Erſkine was the moſt ſtrenuous aſſertor of this latter doctrine; and by the indefatigable exertions of him and the late Hon. Charles Fox, the following act of parliament was obtained with a view expreſsly of ſettling this queſtion by legiſlative authority; and in conſequence of it a great, and, as many have deemed it, a very favourable, alteration has taken place in the trials for libels. The ſtatute is that of 32 Geo. III. c. 60. After reciting that doubts had ariſen whether on the trial of an indictment or information for making or publiſhing a libel, where an iſſue is joined on the plea of not guilty, it were competent to the jury to give their verdict upon the whole matter in iſſue, it enacts that on every ſuch trial the jury may give a general verdict of guilty or not guilty upon the whole matter; and ſhall not be required or directed by the court or judge, before whom ſuch indictment or information ſhall be tried, to find the defendant guilty merely on the proof of the publication by ſuch defendant of the paper charged to be a libel, and of the ſenſe aſcribed to the ſame in ſuch indictment or information. (ſ. 1.) Provided always, that on every ſuch trial the court or judge before whom ſuch indictment or information ſhall be tried, ſhall, according to their or his diſcretion, give their or his opinion and directions to the jury on the matter in iſſue between the king and the defendants, in like manner as in other criminal caſes. (ſ. 2.) Provided alſo, that nothing herein contained ſhall extend, to prevent the jury from finding a ſpecial verdict, in their diſcretion, as in other criminal caſes. (ſ. 3.) Provided alſo, that in caſe the jury ſhall find the defendant guilty, it ſhall and may be lawful for him to move in arreſt of judgment on ſuch ground, and in ſuch manner, as by law he might have done before the paſſing of this act.

When a perſon is brought before the court to receive judgment for a libel, his conduct, ſubſequent to his conviction, may be taken into conſideration, either by way of aggravation or mitigation of his puniſhment. (3 Term Rep. 432.)

Judge Blackſtone obſerves, that in all the inſtances where blaſphemous, immoral, treaſonable, ſchiſmatical, ſeditious, or ſcandalous libels are puniſhed by the Engliſh law, ſome with a greater, and others with a leſs degree of ſeverity, the liberty of the preſs, properly underſtood, is by no means infringed or violated. See *Liberty of the* Press.

Libel, or *libellus*, *a little book*, in the ſpiritual court ſignifies the original declaration of any action in the civil law. (Stat. 2 Edw. VI. c. 53.) The libel uſed in eccleſiaſtical proceedings conſiſts of three parts. 1. The major propoſition, which ſhews a juſt cauſe of the petition. 2. The narration, or minor propoſition. 3. The concluſion, or concluſive petition, which conjoins both propoſitions. Blackſt. Com. vol. iii.

Libel, in the *Law of Scotland*, is uſed for a criminal accuſation or indictment.

LIBELLA, in *Natural Hiſtory*. See Libellula.

Libella, among the Romans, was the tenth part of the denarius.

LIBELLATICI, an ancient kind of apoſtates from Chriſtianity, under the perſecution of Decius; who, to prevent their being obliged to renounce the faith, and ſacrifice to idols in public, made application to the magiſtrates, and abjured their faith in private; obtaining certificates of them, either by intreaty, or by money; by which they were atteſted to have complied with the orders of the emperor; and were thereby ſheltered from any farther moleſtation on account of their religion.

Theſe certificates were called *libelli;* whence the people who obtained them came to be denominated *Libellatici*.

Others, particularly the centuriators of Madgebourg, are of opinion, that the Libellatici were only ſuch as furniſhed the magiſtrates with money, to ſcreen them from proſecution, and from being obliged to renounce Chriſtianity.

M. Tillemont retains ſomething of each opinion; he thinks, the Libellatici, applying themſelves to the magiſtrates, bought off the ſacrificing and abjuration; and obtained letters, by which they were declared to have renounced Chriſt, and ſacrificed to idols; though, in effect, they had done neither.

LIBELLULA, or *Dragon Fly*, in *Entomology*, a genus of the order Neuropteræ; the character of which, according to Gmelin, reduced to the arrangement of the "Syſtema Naturæ," conſiſts in the mouth armed with jaws, more than two in number; lip trifid; antennæ very thin, filiform, and ſhorter than the thorax; wings expanded; tail (of the male inſect) furniſhed with a forked proceſs.

In this genus the antennæ are very ſhort, being merely a pair of ſmall hairs, the wings large and ſpreading, and the body lengthened. The libellulæ, or dragon-flies, exhibit an inſtance ſcarcely leſs ſtriking than the butterfly of that diſſimilitude in point of form under which one and the ſame animal is deſtined to appear in different periods of its exiſtence. Perſons not converſant with natural hiſtory, would ſcarcely believe that theſe brilliant inſects, flying with vaſt ſtrength and rapidity, and purſuing other inſects ſtill ſmaller, after the manner and with the velocity of a hawk, had been inhabitants of the water, in which they reſided a conſiderable time before they had aſſumed the flying form. The whole tribe, which is divided into ſections, and one of which ſections is ſubdivided, is exceedingly ravenous, and generally ſeen hovering over ſtagnant waters: the larvæ are ſix-footed, active inhabitants of the water, furniſhed with an articulate forcipated mouth; and prey with the utmoſt rapaciouſneſs upon aquatic inſects and the larvæ of others; the pupa reſembles the larva, but, in the former ſtate, it has the rudiments of wings. The libellulæ, or dragon-flies, are ſometimes, though very improperly, called horſe-ſtingers. There are nearly ſixty ſpecies: before, however, we come to the enumeration of theſe, we may relate ſome facts common to the tribe itſelf. The addreſſes of the male libellula to his female ſeem carried on in a rough but very efficacious manner. He hovers about on the wing, till the object of his amours makes her appearance; he then watches an opportunity of ſeizing her by the head with thoſe pincers with which his tail is armed. In this manner he travels through the air, till the female, yielding either to ſuperior ſtrength or inclination, forms her body into a kind of circle, adapted to the purpoſe of nature; hence the libellulæ are frequently ſeen coupled in the air, exhibiting the form of a ring. The female, at a proper period, retires to ſome ſtagnant water, where, by the aſſiſtance of a ſtick or reed, ſhe lowers herſelf down, by moving backwards, till the tip of the tail is immerged a little in the water; ſhe is then ſeized with a tremor of the body, during which ſhe depoſits the egg in the water. In this way the operation is repeated. The tail is withdrawn from the water, by contracting the annuli; and, by the preſſure of theſe upon each other, the egg is gradually forced from the ovary to the extremity of the tail; whence it is ſeparated by ſhaking that part in the water. The eggs are of a white colour, reſembling thoſe produced by the common blow-fly. The larvæ are diſguſting in appearance, but beneath the head is placed an inſtrument excellently adapted for ſeizing and holding their prey. It is furniſhed with a forceps at the end, and can be advanced or drawn back with the agility of the human hand! The larva remains in the ſame ſtate about a year before it attains its full ſize: when the period of its transformation has arrived, it repairs to the margin of the pond in queſt of a convenient ſituation during the ſeaſon of its inaction. It there attaches itſelf to a plant or piece of dry wood, and the ſkin, which has gradually become parched and brittle, at length ſplits oppoſite the upper part of the thorax. Through this aperture the winged inſect quickly puſhes its way, and being thus extricated from confinement, begins to expand its wings, to flutter, and finally to launch into the air. The complete inſect, in its winged ſtate, continues to purſue food ſimilar to that by which it had been ſupported before, and remains inſectivorous. The lepidopterous inſects, the butterflies, and phalænæ, are deſtined for the ſupport of the larger libellulæ, which are a part of thoſe numerous tribes appointed to confine theſe prolific genera within due bounds. The life of the libellula, in its winged ſtate, is ſhort in compariſon with that which it paſſed in its aquatic form, the froſts of the early autumn deſtroying all thoſe that have not been devoured by birds in the preceding months. It is impoſſible not to be ſtruck with wonder in contemplating the changes of the libellula, which, while living in the water, would periſh by a long expoſure to the air, while the winged inſect, having eſcaped from the pupa, would be deſtroyed by ſubmerſion under the water, of which, not an hour before, it was the legitimate inhabitant.

The ſpecies are divided into the ſections A and B. Section A. Wings expanded when at reſt. The inſects of this diviſion are ſubdivided into α Dorſal diviſion of the lip very minute; and β Diviſions of the lip equal; conſtituting the tribe Æſhna of Fabricius. B. Wings erect when at reſt; eyes diſtinct; outer diviſions of the lip bifid. The tribe Agrion of Fabricius.

Species.

Section A. *Wings expanded when at reſt: α Dorſal diviſion of the lip very minute.*

4-MACULATA. Lower wings at the baſe, and all in the middle on the fore-part with a blackiſh ſpot; abdomen depreſſed, downy. It is an European inſect, and deſcribed by Reaumur.

DEPRESSA. All the wings blackiſh at the baſe; abdomen depreſſed, yellowiſh at the ſides. This alſo is an European inſect; figures and deſcription are given by Edwards and Donovan. The male is of a bright ſky-blue, with the ſides of the body yellow; the female of a fine brown, with yellowiſh ſides. The wings in both ſexes are tranſparent, except at the ſhoulders, where they are each marked by a broad bed of brown with a ſtripe of yellow; the tips of each wing have alſo a ſmall oblong-ſquare black ſpot on the outer margin. The larva is of a greyiſh-brown.

TRIMACULATA. All the wings hyaline, with a ferruginous ſpot at the baſe, and band in the middle. It inhabits Carolina.

BIFASCIATA. Wings hyaline, with a brown ſpot at the baſe and two bands. It inhabits America. The thorax is villous-brown, with two yellow lines under the wings; abdomen depreſſed, brown, the ſides yellowiſh.

4-PUNCTATA. Wings white; lower ones black at the baſe with a yellow line; all with a black dot; abdomen cylindrical. It inhabits America. Thorax is of a downy green; front veſicular green; abdomen greeniſh at the baſe, but towards the tip blackiſh; all the wings with a black dot in the middle at the rib, and an oblong ſtigma at the tip.

FLAVEOLA. Wings pale yellow at the baſe. Inhabits Europe. Its wings are ſometimes without the yellow ſpot.

LINEATA. Wings white with a yellowiſh baſe, and black band and tip; abdomen yellow, with a lateral black line. This ſpecies is found in India. Its head and thorax are yellow; abdomen compreſſed.

STIGMATIZANS. This is a yellowiſh inſect; has wings with a brown ſpot, the tip brown with a ſnowy ſtigma. It is found in New Holland. Sir Joſeph Banks has a ſpecimen in his muſeum. The abdomen is marked with black lines; wings hyaline.

OCULATA. Like the laſt, this is of a yellowiſh colour; the upper wings are hyaline at the tip, lower ones at the margin, with a ſnowy ſtigma. It inhabits New Holland.

INDICA. This ſpecies has wings varied with yellow and brown, and white at the tip; the lower ones have a blue ſpot at the baſe. It is found, as its name imports, in India. The body is brown; tip of the wings hyaline.

MURCIA. Bronzed; wings are of a whitiſh colour ſpotted with brown; the lower ones yellow at the baſe. Inhabits India.

VESICULA. Wings white; takes its name from an elevated veſicular front, and thorax yellow immaculate. Is found in America, and is a large inſect; the abdomen is cylindrical, the ſegments pale at the baſe and black at the tip; tail with cylindrical ſcales.

RUBICUNDA. Lower wings only blackiſh at the baſe; body ſquare. An inhabitant of Europe. In one ſex the back is ſpotted with red, in the other with yellow.

VULGATISSIMA. Thorax yellow, with eight black ſtreaks. It inhabits Europe.

OBSCURA. All its wings are ferruginous; the body of a duſky hue; an American inſect; the abdomen is cylindrical; wings with an oblong brown marginal dot.

VULGATA. Wings hyaline immaculate; abdomen cylindrical and reddiſh. Inhabits Europe.

SIBERICA. Wings hyaline, with a tranſverſe broad ferruginous band towards the tip; body reddiſh. Inhabits Siberia.

SINUATA. The wings of this inſect are flat, longitudinally ſinuate, and black on the thicker margin, with a white ſtigma. The body is blueiſh. There is a ſpecimen in the Britiſh Muſeum.

CANCELLATA. Wings immaculate at the baſe; back and ſides of the abdomen interrupted by yellow. It inhabits Europe.

PEDEMONTANUS. Found among the mountainous parts of Italy; wings flat, cinereous, with a brown band at the tip. It is ſmall, and the body of an obſcure yellowiſh.

FASCIATA. Wings flat, brown, with a white ſtreak. It inhabits India.

UMBRATA. Found in America. Wings flat, with a brown band.

SERVA. Wings flat, white, with an oblong black ſpot at the baſe and band in the middle. It inhabits China. The body is cylindrical.

NOTATA. The wings of this are flat, with white ſpots and tip. It inhabits Africa. A ſpecimen is in the muſeum of ſir Joſeph Banks.

DIMIDIATA. Wings flat and black from the baſe to the middle. It is found in America.

EQUESTRIS. Wings half black, with a ſnowy band in the middle. It inhabits Africa. A ſpecimen in the muſeum of ſir Joſeph Banks. The head is brown, with a yellow dorſal line; all the wings are black from the baſe to the middle, then a ſnowy band; the tip hyaline with a common brown ſpot.

FLUCTUANS. Wings black tipt with white. It inhabits India, is ſmall, and brown; the front is veſicular yellowiſh.

NEBULOSA. Wings white tipt with black. It inhabits India; the body is black; mouth yellow; ſides of the thorax and abdomen ſpotted with yellow; tail with yellow appendages.

CHINENSIS. The upper wings faint teſtaceous; lower ones green tipt with brown. It inhabits China.

VERSICOLOR. Wings flat, white with three black and three cinereous ſpots. It inhabits America. A ſpecimen is in the muſeum of Dr. Hunter. The head is brown, ſpotted with yellow; thorax brown, with two yellow lines each ſide under the wings; the abdomen is brown.

VIBRANS. Wings flat, white with a black ſpot in the middle, the tips ferruginous.

AMERICANA. Notwithſtanding the name, this ſpecies is found in India. Wings purpliſh, with a white band; upper pair tipt with white, lower ones with a white line at the baſe.

MARGINATA. Wings black; upper pair with a white ſpot at the tip; lower ones edged with white. It inhabits Africa; may be ſeen in ſir J. Banks's muſeum. The front is blue; eyes brown, dotted with yellow; thorax black; abdomen brown, whitiſh at the baſe.

FERRUGINEA. Wings white, yellow at the baſe; body red. It inhabits China.

TOMENTOSA. The wings of the inſects of this ſpecies are alſo white; but the body is downy variegated with brown and green. It is found in America. The front is blue; abdomen cylindrical black, the ſegments with a greeniſh dot on each ſide.

ÆNEA. Wings hyaline; thorax green bronzed. It inhabits Europe.

CYANEA. Wings white, with a ſnowy ſpot terminated by a brown one. The body is blue. It inhabits America.

6-MACULATA. Wings with three black coſtal ſpots, the laſt with a ſnowy ſtigma; lower ones with yellowiſh bands. It inhabits China. The head is yellowiſh; thorax yellowiſh with black lines; abdomen flat and yellowiſh with black lines.

CONTAMINATA. Yellowiſh; wings whitiſh, with a yellowiſh ſhade in the middle. It inhabits India. The head, thorax, and abdomen yellowiſh.

EPONINA. Wings yellowiſh, with about three black bands. Is found in Carolina. Head and thorax yellowiſh; abdomen cylindrical, with a yellowiſh dorſal and lateral line; all the wings have a white coſtal ſpot near the tip.

VARIA, or great variegated libellula, the moſt remarkable Engliſh ſpecies, makes its appearance towards the decline of ſummer, and is an animal of ſingular beauty; it is three inches long, and the wings, when expanded, meaſure about four inches from tip to tip. Wings varied with yellow and brown, the tip with a white ſpot terminated by a black one. The head is very large, and affixed to the thorax by an extremely ſlender neck; the eyes occupy by far the greateſt part of the head, and are of a pearly blue-grey caſt, with a varying luſtre; the front is greeniſh-yellow; the body is long, ſlender, and black, with rich variegations of bright blue, and deep graſs-green. The wings are perfectly tranſparent, ſtrengthened by numerous black reticular fibres, and exhibit a ſtrongly irideſcent appearance, according to the different inflections of light. This inſect, in its motions, is extremely rapid, flying about in purſuit of its prey during the middle of the day, and is at this time taken with extreme difficulty, darting off on the ſlighteſt alarm from the ſpot on which it ſettled, and in the ſpace of a ſecond or two flying to a great diſtance. During the early hours of the morning, and the late ones in the evening, it is eaſily taken; at ſuch times it is obſerved to ſit with its wings expanded, but in ſo inert a ſtate, that it will ſuffer itſelf to be readily ſeized by one of its wings, without attempting to move from its place.

JUNCEA. Wings with a blackiſh acceſſory membrane; thorax with ſix yellow lines; abdomen tapering towards the baſe. Inhabits Europe.

CAROLINA. Wings whitiſh; lower ones indented ferruginous at the baſe; thorax brown. An inhabitant of America.

CAPENSIS. In this ſpecies the whitiſh wings are every where ſpotted and dotted with brown; it is found, as its name imports, at the Cape of Good Hope.

TRICOLORA. Wings variegated with brown, blueiſh, and yellow, the tip hyaline. An inhabitant of India.

RUBRA. Is ſo named from its reddiſh colour; the wings with a ferruginous baſe and marginal lines. It inhabits Europe.

ϐ *Diviſions of the Lip equal.*

FORCIPATA. This inſect, like the *varia*, is very large, and expands full four inches and a half. Noſe yellow, with a black line on the prominent part; thorax black, with ſeveral broad yellow ſtripes, two on the front, and two behind the ligaments of each pair of wings; abdomen black, with two ſtreaks reſembling a creſcent on each ſegment; wings tranſparent and white, with a tinge of amber; tail with three incurved claws.

GRANDIS is the largeſt of this genus found in Britain, and is, perhaps, not inferior in bulk to any inſect which this country produces; the fore-part of the head is yellow; the eyes brown, and ſo large, that they meet at the top of the head. The thorax is of a dun colour, with four oblique bands on each ſide of a lemon colour. The abdomen is reddiſh, often ſpotted with white and black upon the top and bottom of each ſegment; the ſmall appendices which terminate the abdomen are very long; the wings have more or leſs of a yellow complexion, and are diſtinguiſhed by a brown ſpot on the exterior edges. The colours of the inſect vaniſh when dead.

VARIEGATA. Thorax with two yellow lines on each ſide; wings with a white ſpot at the baſe. It inhabits Terra del Fuego. A ſpecimen is in the muſeum of ſir Joſeph Banks. The body is brown; mouth yellowiſh, with a black dot at the baſe; the abdomen is round and ferruginous, the ſegments are edged with black, and in each a white ſpot divided by a black line.

CLAVATA, has a clavate abdomen, which is gibbous at the baſe, variegated with brown and green. It inhabits China. The head is veſicular green; thorax green with black lines; abdomen green with black ſtreaks, the middle thinner and black with lateral yellow ſpots, the tip thickened black with a white tail.

MINUTA. Abdomen yellow, with two black lines; lower wings yellow with two black ſpots. It is an inhabitant of China. The head is yellow, eyes brown; thorax with yellow lines beneath; abdomen with two black lines above and beneath; upper wings black at the baſe with a yellow ſpot.

B. *Wings erect when at reſt; eyes diſtinct; outer diviſions of the lip bifid.*

VIRGO. This is one of the moſt elegant of the European inſects, but is ſmaller than the *varia* or *grandis*, and is diſtinguiſhed by its ſlender, long, cylindric body, which, as well as the head and thorax, is uſually either of a bright but deep golden-green, or elſe of a deep gilded blue; the wings are tranſparent at the baſe and tips, but are each marked in the middle by a very large oval patch of dark violet blue, accompanied with irideſcent hues, according to the direction of the light; ſometimes the wings are entirely violet-black, without the leaſt appearance of tranſparency either at the baſe or the tips, and ſometimes they are altogether tranſparent, without any appearance of the violet-black patch which diſtinguiſhed moſt of the individuals: laſtly, the inſect ſometimes appears with tranſparent wings, but ſhaded with a ſtrong caſt of gilded greeniſh-brown, each being marked by a ſmall white ſpeck at the exterior edge near the tips. The genus is divided into varieties, *viz.* *a.* Body ſhining green-blue; wings blueiſh in the middle, the baſe and tip whitiſh, the margin immaculate. Donovan. *b.* Body ſilky; wings blueiſh-green, the tip brown, the margin immaculate. Reaumur. *c.* Body ſilky-green; wings browniſh with a white marginal dot. *d.* Body ſilky; wings brown-gilt with a black ſpot. It inhabits Europe, and is common about waters.

PUELLA. Wings hyaline, not coloured. This is a much ſmaller ſpecies than the *virgo*. It varies in colour, but is generally of a bright and beautiful ſky-blue, variegated with black bars on the joints, and with the thorax marked by longitudinal ſtripes; the wings are tranſparent, and each marked near the tip with a ſmall, oblong, ſquare, black, marginal ſpot: the head in this ſpecies is broader and narrower in proportion than that of the *L. varia*, and the eyes are round, protuberant, and placed on each ſide at a diſtance from one another. From the brilliancy and richneſs of its colours, it has been called the king's-fiſher; it frequents little rivulets of water overſhaded with buſhes. There are ſeveral varieties of this ſpecies, taken from the difference of ſpots and colours: as *a.* Body red with yellow and black lines at each ſegment; thorax green with yellow lines; wings with marginal ſpots. This is given by Mr. Donovan. *b.* Body fleſh colour; wings with a brown marginal dot. *c.* Body alternately blue and cinereous; wings with a black dot. *d.* Body beneath blue-green, above brown; thorax with alternate brown and blueiſh bands; wings with a black marginal dot. *e.* Body green with a fleſh-colour bluſh; thorax with three black lines; wings with a brown marginal dot. It inhabits Europe, in almoſt endleſs varieties.

CILIATA. Green-bronzed; abdomen brown; legs fringed black. Inhabits Coromandel. A ſpecimen is in ſir Joſeph Banks's muſeum. Head and thorax bronzed; abdomen cylindrical.

NOBILITATA. Upper wings duſky; lower ones ſilky green tipt with black. Is found in South America. Body gloſſy green; lower wings beneath black.

LINEARIS. Wings with a yellowiſh or black ſtigma; abdomen extremely ſtrong. Is found in India, and is figured by Drury; who, according to Dr. Shaw, has given a beautiful figure of a ſpecies not mentioned by Gmelin, *viz.* the

LUCRETIA, which is a native of the Cape of Good Hope, and is diſtinguiſhed by the length of its ſlender body, which is about five and a half inches long, though ſcarcely the tenth of an inch in diameter. The wings of this ſpecies are tranſparent, ſlender, and narrow; they meaſure from tip to tip five and a half inches. The colour of the head and thorax is brown, with a yellowiſh ſtripe on each ſide, and the body is of a deep mazarine blue.

Having deſcribed the ſeveral ſpecies of the libellula, we ſhall cloſe our account of this intereſting genus of inſects with ſome account of the eyes, as deſcribed in Adams' Eſſays. Theſe are finely adapted for microſcopical examination; and by the aſſiſtance of a good inſtrument, it will be ſeen that the eye is divided into a number of hexagonal cells, each of which forms a complete eye. The external parts of theſe eyes are ſo perfectly ſmooth, and ſo well poliſhed, that when viewed as opaque objects they will, like ſo many mirrors, reflect the images of all ſurrounding objects. The figure of a candle may be ſeen on their ſurface multiplied almoſt indefinitely, ſhifting its beam to each eye according to the motion given to it by the hands of the obſerver. Leeuwenhoeck ſays, there are twelve thouſand five hundred and forty-four lenſes on each eye of the libellula. If one of the protuberant ſubſtances be nicely taken from the head of the inſect, waſhed clean, and placed before the microſcope, its ſtructure is elegantly ſeen, and it becomes an object worthy of the higheſt admiration. Each of the eyes is an hexagon, and has the ſame effect as a convex lens in forming the image of an object placed before it, as may be ſeen by turning the mirror of the microſcope ſo as to bring the picture of ſome well-defined object under the eye. If turned to a ſingle houſe, in the eye of the inſect the houſe is diminiſhed very much, but it is multiplied into a city; if turned to a ſoldier, there will be ſeen an army of pigmies performing every motion at the ſame inſtant of time; if turned towards a candle, there will be a beautiful and reſplendent blaze from multitudes of regular flames. See Adams' Eſſays, 4to. p. 195—6.

LIBEN, in *Geography*, a town of Bohemia, in the circle of Leitmeritz; 11 miles N. of Leitmeritz.

LIBER, in *Vegetable Anatomy*, an ancient Latin word for the thin inner bark or rind of a tree, which being uſed to write upon before the invention of parchment or paper, is ſuppoſed to have given its name to a book. For the nature and functions of the *liber*, ſee BARK and CORTEX.

LIBER *Niger, domus Regis*, is the title of a book in which there is an account of the houſehold eſtabliſhment of king Edward IV., and of the ſeveral muſicians retained in his ſervice, as well for his private amuſement, as for the ſervice of his chapel. See King's Band, Household, and Chapel *Eſtabliſhment*. See alſo, N° 293 of the Harl. MSS. Brit. Muſ. and N° 1147, 2, 3, 11, of the Aſhmol. Collect. Oxf. for "ordinances touching the king's houſehold," made in the time of Edward II. as well as in that of Edward IV. And in the Liber Niger publiſhed by Batman, with additions.

LIBERA, in *Mythology*, the name of a goddeſs, which Cicero, in his book of the Gods, repreſents as the daughter of Jupiter and Ceres. Ovid in his Faſti ſays, that the name was given by Bacchus to Ariadne.

Libera is exhibited on medals, as a kind of female Bacchus, crowned with vine-leaves.

Libera, in *Law*, a livery or delivery of ſo much corn or graſs to a cuſtomary tenant who cut down or prepared the ſaid graſs or corn, and received ſome part or ſmall portion of it as a reward or gratuity. Cowel.

Libera *Chaſea habenda*, a judicial writ granted to a perſon for a free chaſe belonging to his manor, after proof made by inquiry of a jury, that the ſame of right belongs to him. Reg. Orig. 36.

Libera *Piſcaria*, a free fiſhery, which being granted to a perſon, gives him a property in the fiſh, &c. (2 Salk. 637.) See Fishery.

LIBERAL Arts, are ſuch as depend more on the labour of the mind than on that of the hand; or, that conſiſt more in ſpeculation than operation; and have a greater regard to amuſement and curioſity than to neceſſity.

The word comes from the Latin *liberalis*; which, among the Romans, ſignified a perſon who was not a ſlave; and whoſe will, of conſequence, was not checked by the command of any maſter. See Arts.

LIBERALE Veronese, in *Biography*. By this name Vaſari ſpeaks of an hiſtorical painter, born at Verona in 1451. He was at firſt a diſciple of Vincenzo di Stefano; but afterwards he imitated the ſtyle and manner of Bellini of Venice, whom, while a youth, he ſaw painting in the chapel of St. Nicolo at Verona.

He began to paint very early in life, and filled the churches and convents of his native city with highly wrought pictures, which were very much eſteemed; and of which the author above-mentioned ſpeaks with high encomiums.

His ſtyle appears by his account to be of the early dry manner in art. Compoſitions conſiſting of a number of figures, all finiſhed with great minuteneſs; and frequently of ſmall proportions.

LIBERALIA, feaſts celebrated by the ancient Romans, in honour of Liber, or Bacchus, the ſame with thoſe which the Greeks called *Dionyſia*, and *Dionyſiaca*.

They took their name from *liber*, i. e. *free*, a title conferred on Bacchus, in memory of the liberty or freedom which he granted to the people of Bœotia; or, perhaps, becauſe wine, whereof he was the reputed deity, delivers men from care, and ſets their minds at eaſe and freedom. Varro derives the name of this feaſt from *liber*, conſidered as a noun adjective, and ſignifying *free*; becauſe the prieſts were free from their function, and eaſed of all care, during the time of the liberalia, as the old women officiated in the ceremonies and ſacrifices of theſe feaſts.

LIBERAM Legem. See Lex.

LIBERAN, in *Geography*, a ſmall iſland of the Eaſt Indian ſea, near the N.E. coaſt of the iſland of Borneo, on which are many deer. N. lat. 6° 2′. E. long. 116° 8′.

LIBERANDIS Terris. See Terris.

LIBERATE, in *Law*, a writ that lies for the payment of a yearly penſion, or ſum of money, granted under the great ſeal, and directed to the treaſurer, chamberlains, and barons of the exchequer, &c. for that purpoſe.

In another ſenſe it is a writ to the ſheriff of a county, for the delivery of poſſeſſion of lands, and goods extended, or taken upon the forfeiture of a recognizance.

Liberate is alſo uſed for a writ iſſuing out of the chancery, directed to a gaoler for delivery of a priſoner, who hath put in bail for his appearance. F. N. B. 132. 6 Inſt. 116.

LIBERATI, Antimo, in *Biography*, a ſinger in the pontifical chapel at Rome in the 17th century. When a youth, he was a choiriſter in the chapel of the emperor Ferdinand III., and his brother Leopold, previous to his admiſſion into the pope's chapel: where, beſides his vocal abilities, he diſtinguiſhed himſelf as a compoſer. He was, likewiſe, organiſt della ſantiſſima Trinità di Pellegrini, and maeſtro di cappella, and organiſt of the church di Santa Maria dell' anima della natione Teutonica at Rome. In this quality he wrote a letter, which is often quoted, particularly by Adami, in his Oſſervazioni per ben reg. il coco de i Cantoci della Cap. Pont. This letter is addreſſed to Ovidio Perſapegi, in anſwer to ſome queries he had ſent to him, concerning the ſtate of muſic in the pontifical chapel; and the character of ſome muſicians in its ſervice, who were candidates for the place of maeſtro di cappella of the Metropolitan church at Milan.

This letter, printed at Rome 1685, contains characters of the great Roman maſters, and deſcriptions of ſtyles, more reſembling ſound criticiſm than any muſical work of the laſt century; but it is, unluckily, written in ſuch a vein of general panegyric, as is more likely to generate ſcepticiſm in the minds of modern readers, than conviction. Liberati was a diſciple of Benevoli, and his voice a ſoprano.

LIBERATUS, a deacon of the church of Carthage, flouriſhed about the middle of the ſixth century. In the year 534, he was ſent to Rome by a council of African biſhops held at Carthage for the purpoſe of conſulting with pope John about ſome dubious points; and he was frequently employed reſpecting affairs of importance. He drew up an hiſtorical memorial of the conteſts which aroſe about the opinions of Neſtorius and Eutyches, entitled "Breviarum de Cauſa Neſtorii et Eutychetis, &c." The materials made uſe of on this occaſion were collected from the relations of various credible perſons, the hiſtory of the church, tranſlated out of Greek into Latin, authentic acts of councils, and the letters of different biſhops. An appendix to this Breviarum is given by father Crabbe, in the ſecond volume of his edition of the Councils. Moreri.

LIBERGA, in *Geography*, a town of Pruſſia, in the palatinate of Culm; 26 miles E. of Culm.

LIBERHOF, a town of Pruſſia, in the province of Pomerelia; 18 miles S.S.E. of Dantzic.

LIBERI *Tauri Libertas*. See Tauri.

LIBERIA, a feaſt held among the Romans, on the day whereon their children laid aſide their juvenile habits, and aſſumed the robe called *toga liberia*.

The liberia were kept on the 16th of the kalends of April; that is, on the 17th of March.

LIBERIUS, pope, in *Biography*, a native of Rome, who, having diſcharged the duties of different eccleſiaſtical offices with reputation, was choſen biſhop in 352. Immediately after his election he wrote to Athanaſius, ſummoning him to appear at Rome, and clear himſelf from the accuſations preferred againſt him by the eaſtern biſhops. It ſhould ſeem he had afterwards a much better opinion of Athanaſius, and undertook his defence with great zeal. With this view he ſent legates to a council which the emperor Conſtantine had ſummoned to meet at Arles, but had the mortification to hear they had betrayed the cauſe entruſted to them. When Liberius was told of the conduct of his deputies, he was filled with reſentment and ſorrow, and diſavowed it in the ſtrongeſt terms, as well in his declarations, as in his correſpondence. He requeſted the emperor to aſſemble a new council, for the purpoſe of examining the matters in diſpute between Athanaſius and his opponents, and of reſtoring peace and tranquillity to the Catholic church. A council was accordingly held at Milan in 355, at which there were 300 weſtern biſhops, and a few from the eaſt. So far from calm diſcuſſion into the merits of the queſtion, the emperor inſiſted upon it, as a preliminary meaſure, that they ſhould give their ſignatures to the condemnation of Athanaſius, and alſo to an edict containing the chief tenets of Arius, which had been publiſhed in his name. Thoſe who had reſolution to oppoſe the will of the emperor were threatened with inſtant execution, and were actually baniſhed. Such were the means uſed by Conſtantius in obtaining the ſignatures of by far the greater part of the weſtern biſhops to the condemnation of Athanaſius; but Liberius ſtill declared in his favour, and exerted himſelf, by all the means in his power, to gain others to his party. At length, the emperor having failed, by threats and proffered bribes, to gain the ſuffrages of the pope, he determined to apprehend him, and gave his order accordingly. This was executed in the dead of night, to prevent any commotion among the people, who were much attached to their biſhop; he was carried firſt to Milan, and thence to Berœa in Thrace. The hardſhips which Liberius experienced in exile, diſpoſed him to yield to conditions which at one time he would have rejected with the utmoſt indignation. He not only ſubſcribed to the condemnation of Athanaſius, but received, as Catholic, the Arian confeſſion, and made other conceſſions ſtill more diſgraceful to his reputation as biſhop of the holy Roman ſee. Before he could reach Rome, the emperor had embraced the doctrine of the Semi-Arians, and obliged Liberius to do the ſame; ſo that this pontiff, who, of courſe, was always the infallible head of the church, avowed himſelf an Athanaſian, an Arian, and a Semi-Arian. On account of his obedience, he was permitted to return to Rome, on condition that he ſhould govern the church jointly with FELIX II. (See the article.) Liberius arrived at Rome in Auguſt, 358, and entered the city in a kind of triumph, being met on the road, and received by the people at large with loud acclamations of joy. He died in September, 366, after he had preſided over the Roman ſee fourteen years; and notwithſtanding his repeated change of religious opinions, he is honoured both by the Latin and Greek churches as a ſaint. "A Dialogue with the Emperor Conſtantius" is aſcribed to Liberius; ſo, likewiſe, are twelve "Letters," inſerted in the ſecond volume of the Collect. Concil. Bower. Moreri.

LIBERO, *Ital.*, free, unconfined, in *Muſic*, the ſame as *ſciolto*; oppoſed to *Legato*, reſtrained by particular laws. Thus, a *free fugue*, is diſtinguiſhed from a canon; *fuga ſciolta*, or *Libera*, from *Fuga perpetua*. See SCIOLTA, and LEGATO.

LIBERTAS ECCLESIASTICA, *Church Liberty*, a frequent phraſe in old writers, who treat of eccleſiaſtical immunities. The right of inveſtiture, extorted from our kings by the papal power, was at firſt the only thing challenged by the clergy, as their *libertas eccleſiaſtica*, but by degrees, under the title of *church liberty*, they contended for a freedom of their perſons and poſſeſſions, from all ſecular power and juriſdiction; as appears by the canons and decrees of the councils held by Boniface, archbiſhop of Canterbury, at Merton, A. D. 1258, and at London, A. D. 1260, &c. See Lord Littleton's Hiſt. of Hen. II., and Robertſon's Hiſt. of Ch. V.

LIBERTATE PROBANDA, in *Law*, an ancient writ that lay for ſuch as being demanded for villains, offered to prove themſelves free; directed to the ſheriff, that he ſhould take ſecurity of them for the proving of their freedom before the juſtices of aſſize, and that in the mean time they ſhould be unmoleſted. F. N. B. 77.

LIBERTATIBUS ALLOCANDIS, a writ lying for a citizen or burgeſs, impleaded contrary to his liberty, to have his privilege allowed. Reg. Orig. 262.

If any claim a ſpecial liberty to be impleaded within a city or borough, and not elſewhere, there may be a ſpecial writ *de libertatibus allocandis*, to permit the burgeſſes to uſe their liberties, &c. Theſe writs are of ſeveral forms, and may be ſued by a corporation, or by any ſingle perſon, as the caſe ſhall happen. (New Nat. Br. 509, 510.) The barons of the Cinque Ports, &c. may ſue forth ſuch writs, if they are delayed in having their liberties allowed them. Id.

LIBERTATIBUS *Exigendis in Itinere*, an ancient writ by which the king commands the juſtices in eyre to admit of an attorney for the defence of another man's liberty. Reg. Orig. 19.

LIBERTATIS *Angliæ Cuſtodes*. See CUSTODES.

LIBERTE' *de la Muſique*, is the title of one of the late M. D'Alembert's Eſſays in his "Melange de Litterature," publiſhed in 1767. After being the champion of Rameau's ſyſtem, and his baſſe fondamentale, he became his opponent, and a convert to Italian muſic. He enters into all the reaſoning of Rouſſeau againſt the French ſtyle of compoſition, but in a more guarded manner. Indeed, he appears never to have heard good Italian muſic well performed. The Suva Paderna of Pergoleſi, executed by a troop of Italian burletta ſingers, not of the firſt claſs, was his ſtandard of perfection. He tries hard to perſuade the French that their muſic is bad, without knowing very well in what the Italian was ſuperior. Rouſſeau had reſided at Venice a conſiderable time, and ſeems forcibly to have felt all the lyric beauties of Metaſtaſio's poetry, as well as the merit of the great compoſers and enchanting powers of the great ſingers of his time. This, D'Alembert only knows by tradition. It was eaſy for a man of his abilities to ridicule the old French muſic, and praiſe the Italian; but he was too little acquainted with its real beauties to know *why* Italian dramatic vocal muſic was ſuperior to all other muſic, and the French inferior. But it may, perhaps, be roundly aſſerted that the French vocal muſic *was*, *is*, and probably *ever will be* inferior to the Italian from bad ſinging, as well as from the naſal nature of their language, and the national expreſſion founded upon it, by which the vocal organ is vitiated from infancy to age, and its tones in their expreſſion rendered unpleaſing to all ears but thoſe of the natives.

The French, ſince the time of Rameau, have often had fine compoſitions performed in their theatres, and a well-diſciplined band to execute them *inſtrumentally*; yet, for want of good ſingers, the vocal part, which is the beſt and moſt intereſting in an Italian opera, is the worſt in the muſical dramas of France. And for this there are two cauſes which affect the compoſition as well as the performance of French opera ſongs: the compoſer, be he a Gluck, a Piccini, or a Sacchini, having no great vocal talents to diſplay, dares not give way to fancy, or aim at new paſſages, but, of neceſſity, *underwrites* the vocal part ſo much, that the productions of theſe great maſters for the French ſtage are never in favour elſewhere with their greateſt admirers. And even the ſimple and common paſſages given to the voice, are ſo ill ſung, that they give pleaſure to no ears but thoſe which are accuſtomed to nothing better.

In 1767, when D'Alembert wrote in favour of *toleration* in the muſical religion of France, the accompaniments to what were called ſongs at the opera were ſo buſy and ſo loud, that he compares the effect to twenty people reading different books at the ſame time.

Though D'Alembert and Rouſſeau quarrelled about the expediency of allowing plays to be acted within the walls of Geneva; yet the mathematician in his diſcourſe on the Liberty of Muſic, is but a commentator on the citizen of Geneva's "Letter concerning French Muſic."

On the ſubject of adapting Italian melody to French words, the great geometrician has not taken into his calculation all the objections to its ſucceſs. In Italian poetry each verſe is terminated by a double rhyme; and in the French poetry, the maſculine and feminine rhymes are alternate. This muſt affect the melody. The mute ſyllables in French poetry (which are dogrel in Engliſh), can alone receive Italian melody: the maſculine rhymes admit of no imitation.

M. D'Alembert, however, modeſtly ſays, that all his reflections are not worth a ſingle fine air in muſic; and adds (after Rouſſeau), that "inventing what ſucceeds is infinitely preferable to philoſophical reaſoning: a compoſer never thinks of giving precepts who is able to furniſh models: Raphael produced pictures, not diſſertations. In muſic, we (the French) write reveries; and the Italians compoſe and execute muſic." The two nations, in this reſpect, reſemble the two architects who were candidates at Athens for the erection of a monument which the republic wiſhed to raiſe to a deceaſed hero; one of them ſpoke a long while with great eloquence on his art; the other, after liſtening with great attention, only uttered theſe words: "What he *ſays*, I have *done*."

LIBERTIES. See Franchise.

LIBERTINES, in *Scripture Hiſtory*, the denomination of a claſs of Jews, or Jewiſh proſelytes, who had a ſynagogue at Jeruſalem, which is mentioned in the book of Acts, ch. vi. 9. Libertinus, or Libertine, denoted a perſon who had been a ſlave, but who had obtained his freedom; or one who was the ſon of a perſon that had been a ſlave, and was afterwards made free. Several learned men have ſuppoſed, that the libertines above-mentioned were Jews, or proſelytes of the Jewiſh religion, who had been ſlaves to Roman maſters, and had been made free, or the children of ſuch. In proof of this, the learned Lardner alleges, that there was a great number of Jews at Rome; and, according to Philo, they occupied a large quarter of the city; and they were chiefly ſuch as had been taken captive at ſeveral times, and had been carried into Italy, and were made free by their Roman maſters. That theſe Jews were called Libertines, appears plainly from paſſages, which Lardner has cited from Tacitus, Joſephus, and Suetonius, in which they ſpeak of the baniſhment of the Jews from Rome in the reign of Tiberius. Joſephus and Suetonius expreſsly call thoſe Jews, whom Tacitus calls men of the Libertine race; and as there were many of them at Rome, it is not at all unlikely that they had a ſynagogue at Jeruſalem. Such are the ſentiments of Grotius and Vitringa, adopted by Lardner's Works, vol. i. p. 114.

Libertines, *Libertini*, in *Eccleſiaſtical Hiſtory*, a religious ſect, which aroſe in the year 1525, whoſe principal tenets were, that the Deity was the ſole operating cauſe in the mind of man, and the immediate author of all human actions: that, conſequently, the diſtinctions of good and evil, which had been eſtabliſhed with regard to thoſe actions, were falſe and groundleſs, and that men could not, properly ſpeaking, commit ſin; that religion conſiſted in the union of the ſpirit, or rational ſoul, with the Supreme Being; that all thoſe who had attained this happy union, by ſublime contemplation and elevation of mind, were then allowed to indulge, without exception or reſtraint, their appetites or paſſions; that all their actions and purſuits were then perfectly innocent; and that, after the death of the body, they were to be united to the Deity.

They likewiſe ſaid that Jeſus Chriſt was nothing but a mere *je ne ſçai quoi*, compoſed of the ſpirit of God, and of the opinion of men.

Theſe maxims occaſioned their being called Libertines: and the word has been uſed in an ill ſenſe ever ſince.

The Libertini ſpread principally in Holland and Brabant. Their leaders were one Quintin, a Picard, Pockeſius, Ruffus, and another called Chopin, who joined with Quintin, and became his diſciple.

This ſect obtained a certain footing in France through the favour and protection of Margaret, queen of Navarre, and ſiſter of Francis I., and found patrons in ſeveral of the reformed churches. This ſect was probably a remnant of the more ancient *Beghards*, or *Brethren of the Free Spirit.* Moſheim's Eccl. Hiſt. vol. iv.

Libertines *of Geneva*, were a cabal of rakes rather than of fanatics: for they made no pretences to any religious ſyſtem, but pleaded only for the liberty of leading voluptuous and immoral lives. This cabal was compoſed of a certain number of licentious citizens, who could not bear the ſevere diſcipline of Calvin, who puniſhed with rigour not only diſſolute manners, but alſo whatever bore the aſpect of irreligion and impiety. In this turbulent cabal there were ſeveral perſons who were not only notorious for their diſſolute and ſcandalous manner of living, but alſo for their atheiſtical impiety and contempt of all religion. To this odious claſs belonged one Gruet, who denied the divinity of the Chriſtian religion, the immortality of the ſoul, the difference between moral good and evil, and rejected with diſdain the doctrines that are held moſt ſacred among Chriſtians; for which impieties he was at laſt brought before the civil tribunal, in the year 1550, and condemned to death. The Genevan ſpirit of reformation, improperly directed by the violence and zeal of Calvin, did at this time operate to a degree, which has marked the character of this great reformer with reproach. For, in 1544, Sebaſtian Caſtalio, maſter of the public ſchool at Geneva, who was a man of probity, and diſtinguiſhed by his learning and taſte, was, nevertheleſs, depoſed from his office and baniſhed the city, becauſe he diſapproved ſome of the meaſures that were purſued, and ſome of the opinions entertained by Calvin and his colleagues, and particularly that of abſolute and unconditional predeſtination. Jerome Bolſec, alſo, a man of genius and learning, who became a convert to the Proteſtant religion, and fled to Geneva for protection, was caſt into priſon, and, ſoon after, ſent into baniſhment, becauſe, in 1551, he imprudently and indecently declaimed, in full congregation, and at the cloſe of public worſhip, againſt the doctrine of abſolute decrees. Moſheim's Eccl. Hiſt. vol. iv.

LIBERTUS, or Libertinus, among the Romans, a *freedman*, or a perſon ſet free from a legal ſervitude.

Theſe ſtill retained ſome mark of their ancient ſtate; he who made a ſlave free having a right of patronage over the libertus; ſo that if the latter failed of ſhewing due reſpect to his patron, he was reſtored to his ſervitude; and if the libertus died without children, his patron was his heir. See Slave.

In the beginning of the republic, libertinus denoted the ſon of a libertus, or freed-man; but afterwards, before the time of Cicero, and under the emperors, the terms libertus and libertinus, as Suetonius has remarked, were uſed as ſynonymous.

LIBERTY, in *Geography*, a poſt-town of America, in Virginia; 15 miles from New London. This is the chief town of Bedford county; it has a handſome court-houſe, and contains 50 or 60 houſes.—Alſo, a county of Georgia, bounded N. by Brian, S. by Mackintoſh, W. by Alatamaha, and N. E. by the ocean. It is 40 miles long, and 22 broad. The productions are cotton and rice. An acre of land yields 25 or 30 buſhels of corn. It derives its name from the circumſtance, that its inhabitants were the firſt in the ſtate who declared for liberty, and ſent a delegate to the congreſs at Philadelphia. It is divided into five towns, and contains 5313 inhabitants, of whom 3940 are ſlaves.—Alſo, a poſt-town of Maryland, in Frederick county; 12 miles N.E. of Frederickſtown, and about 44 miles N.N.W. of the Federal city.

Liberty, *Libertas*, is uſually underſtood of that ſtate wherein a man acts freely; or that power by which he determines himſelf voluntarily either to good or evil, to this thing or that.

This is what ſome have denominated a liberty of *indifference*, *natural* liberty, *philoſophical* liberty, or liberty of choice; defining it to be a power of doing an action or its contrary, all the previous circumſtances remaining the ſame. In this ſenſe it ſtands oppoſed to *neceſſity*, and is diſtinguiſhed from *external* liberty, or liberty of *action*, which is defined to to be the power of doing what we pleaſe or will; or, in other words, the power of carrying our volitions or purpoſes into effect. This *external* liberty is oppoſed to *compulſion* from external force, as *philoſophical* liberty is to *neceſſity*, or the definite influence of motives, in definite circumſtances. Accordingly it is ſaid, that liberty of *action* may exiſt independently of liberty of *choice;* that is, the mind may be wholly unreſtrained in the execution of its volitions, though in the ſame circumſtances it could not have made a different choice. Liberty of *choice* likewiſe, if it exiſts at all, is perfectly independent of liberty of *action.*

Moſt of the ſchoolmen confound liberty and the will together, and make one definition ſerve for both. Whereas Mr. Locke obſerves, that liberty does not belong to the will, but to the man or agent; and therefore, that the queſtion, in the uſual manner of ſtating it, whether man's will be free or not, is abſurd and unintelligible. Liberty, which is but a power, belongs only to agents, and cannot be an attribute or modification of the will, which is alſo but a power. They diſtinguiſh liberty into a great many kinds; as liberty *of contrariety*, and liberty *of contradiction*. (See Freedom.) Alſo, *next* liberty, *proxima*. which is a full abſolute freedom of doing any thing: *remote* liberty, which is a liberty that comprehends a natural power, though embarraſſed with obſtacles, which it is in our power to remove, and to attain to a next liberty. Some writers have divided liberty into

Liberty, *Phyſical*, or *Philoſophical*, or *liberty of choice*, which is that principle of ſpontaneity or ſelf-determination, that conſtitutes us agents; or that gives us a command over our actions, rendering them properly our's and not effects of the operation of any foreign cauſe. Without this liberty, or being under a neceſſity of always following ſome will different from his own, man would be a machine acted upon by mechanical ſprings, having no principle of motion in himſelf or command over events: and, therefore, incapable of all merit and demerit.

Whether man is endued with this kind of liberty or ſelf-determining power has been a ſubject of much controverſy: it was agitated at the beginning of the laſt century, between Leibnitz, Collins, &c. on one ſide, and Clarke, Jackſon, &c. on the other; and has been more lately revived by Dr. Prieſtley.

Cicero defines liberty the power of living after a man's own wiſh, without any cauſe or impediment to oblige him to do one thing rather than another.

F. Malebranche gives us a ſtill more philoſophical definition: the will he defines to be that impreſſion, or natural motion, which inclines towards good in the general; and by liberty, he underſtands, that power which the mind has of determining this general impreſſion towards ſuch objects as pleaſe us; and ſo of directing our general inclinations to ſome particular things.

Whence it is eaſy to perceive, that though all natural inclinations be voluntary, yet they are not all free; not, we mean, with a liberty of indifference, which includes a power of willing, or not willing, or of willing quite the contrary to that which our natural inclinations lead us to. For though it is voluntarily and freely that we love good in general, it is abſurd to ſuppoſe we ſhould love any thing without the will, or that the will can ever be conſtrained; yet we do not love it freely (in the ſenſe juſt laid down) becauſe it is not in the power of the will not to deſire to be happy.

It muſt be obſerved, however, that the mind, conſidered as determined towards good in general, cannot divert its motion to any particular good, unleſs the ſame mind, conſidered as capable of ideas, have ſome knowledge of that particular good: that is, in plainer terms, the will is a blind power, that cannot direct itſelf to any thing but what the underſtanding repreſents to it; ſo that the power which the will has to determine its impreſſion towards general good, or its natural inclinations, variouſly, conſiſts in the power it has to command the underſtanding to repreſent ſome particular good.

Thus, a perſon, for inſtance, repreſents ſome dignity to himſelf, as a good to be wiſhed for, immediately the will deſires this good; that is, the impreſſion which the mind continually receives towards good in general, determines it to this dignity. But as that dignity is not the univerſal good, nor is perceived clearly and diſtinctly as ſuch by the mind (for the mind cannot conceive a thing clearly which is not), the impreſſion we have towards good in general, is not entirely exhauſted by that particular good; the mind has an inclination to go farther; it does not love that dignity neceſſarily or invincibly, and in this reſpect is free.

Now its liberty conſiſts in this, that, not being fully convinced that this good contains in it all the good it is capable of enjoying, it may ſuſpend its judgment and its deſire.

The caſe is nearly the ſame with regard to the knowledge of truth: we love this, as we do the enjoyment of good, by a natural impreſſion; which impreſſion is not invincible in the latter, excepting evidence be full, and our knowledge of the object complete. We have the ſame liberty in our falſe judgments, that we have in our irregular appetites. See Judgment and Will.

Mr. Locke defines liberty to be the power which a man has to do or forbear doing any particular action, according as its doing or forbearance has the actual preference in the mind, which is the ſame thing as to ſay, according as he himſelf wills it: and he obſerves, that ſo far as a man has power to think or not to think, to move or not to move, according to the preference or direction of his own mind, ſo far is a man free. The will, he acknowledges, is always determined by ſome, and for the moſt part, by the moſt preſſing uneaſineſs or deſire of happineſs. The liberty for which he contends, and for the exiſtence of which he appeals to experience, is a liberty of ſuſpending our determinations. The mind, he ſays, having in moſt caſes, as is evident in experience, power to ſuſpend the execution and ſatisfaction of any of its deſires, and ſo all, one after another, is at liberty to conſider the objects of them, examine them on all ſides, and weigh them with others. In this lies the liberty a man has. He has a power to ſuſpend the proſecution of this or that deſire, as every one daily may experience in himſelf. This ſeems to be the ſource of all liberty. In this ſeems to conſiſt, as he thinks, that which is improperly called free-will. And he adds farther, that perfect indifference in the mind, not determinable by its laſt judgment of the good or evil, that is thought to attend its choice, would be ſo far from being an advantage and excellency of an intellectual nature, that it would be as great an imperfection as the want of indifferency to act or not to act, till determined by the will, would be an imperfection on the other ſide. Eſſ. vol. i. book i. chap. 21.

From theſe conceſſions the advocates for neceſſity have pleaded the authority of Mr. Locke, though he does not ſeem to have been apprized of the conſequences of his principles. Mr. Hobbes, who ſeems to have been the firſt who underſtood and maintained the proper doctrine of philoſophical neceſſity, defines liberty to be the abſence of all impediments to action, that are not contained in the nature and intrinſic quality of the agent. And Mr. Collins, the principal writer on the ſide of neceſſity, defines liberty to be a power in man to do as he wills, or pleaſes; though he denies, that we are at liberty to will, or not to will; or to will one or the other of two or more objects, between which, all things conſidered, we perceive a difference; or that we are free in our choice among things different or alike.

Dr. Clarke has remarked, that, in the above definition, there is an ambiguity in the words, “wills or pleaſes;” becauſe they may either denote the laſt perception or judgment of the underſtanding, which is entirely paſſive; or the firſt exertion of the ſelf-moving power, which is eſſentially active. Now, though the ſelf-moving power is an adequate cauſe of action, yet underſtanding, or judgment, or aſſent, or approbation, or liking, or whatever name it is called by, can no more poſſibly be the efficient cauſe of action, than reſt can be the cauſe of motion. Nothing can poſſibly be the cauſe of an effect more conſiderable than itſelf. Nothing that is paſſive can poſſibly be the cauſe of any thing that is active: an occaſion indeed, it may be; and action may be conſequent upon perception or judgment; it may eaſily be ſuppoſed to be always conſequent upon it, and yet at the ſame time there may be no manner of phyſical or neceſſary connection between them. Beſides, the word “do,” in this definition of Mr. Collins, has no ſignification. For his meaning is not, that the man “acts” or “does” any thing; but the liberty or power in man to do as he wills or pleaſes, is with him exactly and only the ſame as the liberty or power in a balance would be to move as it wills or pleaſes; ſuppoſing the balance endued with ſuch a ſenſation or intelligence, as enabled it to perceive which way the weights turned it, and to approve the motion, ſo as to fancy that it moved itſelf, when indeed it was only moved by the weights. Mr. Collins makes the difference between a man and a clock, to conſiſt only in ſenſation and intelligence, not in any power of acting: whereas the whole eſſence of liberty conſiſts in the power of acting: ſo that action and liberty are identical terms.

The liberty of a moral agent, according to Dr. Reid, is a power over the determinations of his own will. If, in any action, he had power to will what he did, or not to will it, in that action he is free. But if, in every voluntary action, the determination of his will be the neceſſary conſequence of ſomething involuntary in the ſtate of his mind, or of ſomething in his external circumſtances, he is not free; he has not the liberty of a moral agent, but is ſubject to neceſſity. This liberty ſuppoſes the agent to have underſtanding and will; for the determinations of the will are the ſole object about which this power is employed; and there can be no will without ſuch a degree of underſtanding at leaſt, as gives the conception of that which we will. The liberty of a moral agent implies, not only a conception of what he wills, but ſome degree of practical judgment or reaſon. For if he has not the judgment to diſcern one determination to be preferable to another, either in itſelf or for ſome purpoſe which he intends, what can be the uſe of a power to determine? His determinations muſt be made perfectly in the dark, without reaſon, motive, or end. They can neither be right nor wrong, wiſe nor fooliſh. Whatever the conſequences may be, they cannot be imputed to the agent, who had not the capacity of foreſeeing them, or of perceiving any reaſon for acting otherwiſe than he did. The author now cited reſtricts his attention to the liberty of moral agents, who are capable of acting well or ill, wiſely or fooliſhly; and this liberty he calls, by way of diſtinction, “moral liberty.” By *neceſſity* he underſtands the want of this moral liberty. This moral liberty a man may have, though it do not extend to all his actions, or even to all his voluntary actions. He does many things by inſtinct, many things by the force of habit, without any thought at all, and conſequently without will. But in general this power over the determinations of his own will extends to every action for which he is accountable. This power may be impaired or loſt, by diſorder of body or mind, as in melancholy, or in madneſs; it may be impaired or loſt by vicious habits; and, in particular caſes, it may be reſtrained by divine interpoſition. In fact, man is a free agent in the ſame way as he is a reaſonable agent. His reaſon is liable to be impaired or loſt by his own fault, or by other means. It is alſo the caſe with reſpect to his freedom of action. The liberty above ſtated and explained has been repreſented by ſome philoſophers as inconceivable, and as involving an abſurdity. “Liberty,” ſay Hobbes and others who have adopted his reaſoning, “conſiſts only in a power to act as we will; and it is impoſſible to conceive in any being a greater liberty than this. Hence it follows, that liberty does not extend to the determinations of the will, but only to the actions conſequent to its determination, and depending upon the will. To ſay we have power to will ſuch an action, is to ſay, that we may will it, if we will. This ſuppoſes the will to be determined by a prior will; and for the ſame reaſon, that will muſt be determined by a will prior to it, and ſo on in an infinite ſeries of wills, which is abſurd. To act freely, therefore, can mean nothing more than to act voluntarily; and this is all the liberty that can be conceived in man or in any being.” The advocates of neceſſity maintain, that this is the only liberty that is poſſible, that is conceivable, and that does not involve an abſurdity. Dr. Reid, however, mentions three other kinds of liberty, to which the term is very commonly applied: ſuch are liberty, as oppoſed to external force or confinement of the body; liberty as oppoſed to obligation by law, or by by lawful authority; and liberty as oppoſed to neceſſity, in which latter ſenſe it extends to the determinations of the will only, and not to what is conſequent to the will. It has been a queſtion among philoſophers, whether, in every inſtance, the determination of the will, which is the firſt part of the action in every voluntary action, and upon which alone the moral eſtimation of it depends, be the neceſſary conſequence of the conſtitution of the perſon, and the circumſtances in which he is placed; or whether he has not power, in many caſes, to determine this way or that? This has, by ſome, been called the "philoſophical" notion of liberty and neceſſity; but it is by no means peculiar to philoſophers. The loweſt of the vulgar have, in all ages, had recourſe to this neceſſity for exculpating themſelves or their friends when they do wrong, though, in the general tenour of their conduct, they act upon the contrary principle. Whether the notion of moral liberty, above ſtated, be conceivable or not, every man muſt judge for himſelf. "To me," ſays Dr. Reid, "there appears no difficulty in conceiving it. I conſider the determination of the will as an effect. This effect muſt have a cauſe which had power to produce it; and the cauſe muſt be either the perſon himſelf, whoſe will it is, or ſome other being. The firſt is as eaſily conceived as the laſt. If the perſon was the cauſe of that determination of his own will, he was free in that action, and it is juſtly imputed to him, whether it be good or bad. But if another being was the cauſe of that determination, either by producing it immediately, or by means and inſtruments under his direction, then the determination is the act and deed of that being, and is ſolely imputable to him." Should it be ſaid, that nothing is in our power but what depends upon the will; and therefore the will itſelf cannot be in our power; it may be replied, that this is a fallacy ariſing from taking a common ſaying in a ſenſe which it was never intended to convey, and in a ſenſe contrary to what it neceſſarily implies. To ſay that what depends upon the will is in a man's power, but the will is not in his power, is to ſay that the end is in his power, but the means neceſſary to that end are not in his power, which is a contradiction.

The principal arguments in favour of liberty, as it is popularly underſtood, and as it is defined in the beginning of this article, are the following: this principle is neceſſary to conſtitute man an *agent* (ſee Agent); for, as far as it is true of a being that he acts, ſo far he muſt himſelf be the cauſe of the action, and, therefore, not neceſſarily determined to act: but if he has no abſolute power over his own actions, *i. e.* if he be not a free agent, the actions which he performs cannot properly be ſaid to be his own, but muſt be aſcribed to ſome other power, by which he is led on to perform them; as a good clock or watch performs the motions aſſigned to it by the artiſt. This argument is excellently illuſtrated by Dr. Clarke: man, ſays he, either has within himſelf a principle of action properly ſpeaking, *i. e.* a ſelf-moving faculty, a principle or power of beginning motion; or he has not. If he has within himſelf ſuch a principle, then he is a free, and not a neceſſary agent: for every neceſſary agent is moved neceſſarily by ſomething elſe; and then that which moves it, not the thing itſelf which is moved, is the true and only cauſe of the action. That any other thing operating upon an agent, ſhould efficiently and neceſſarily produce ſelf-motion in that agent, is a direct contradiction in terms. If man has not within himſelf a principle or power of ſelf-motion, then every motion and action of man is chiefly and properly produced by the efficiency of ſome extrinſic cauſe; which cauſe muſt be either what we uſually call the motive or reaſon upon which a man acts; or elſe it muſt be ſome inſenſible ſubtile matter, or ſome other being or ſubſtance making an impreſſion upon him. If the reaſons or motives upon which a man acts be the immediate and efficient cauſe of the action, then either abſtract notions, ſuch as all reaſons and motives are, have a real ſubſiſtence, that is, are themſelves ſubſtances; or elſe that which has itſelf no real ſubſiſtence can put a body into motion; either of which is manifeſtly abſurd. If inſenſible ſubtile matter, or any other being or ſubſtance, continually making impreſſion upon a man, be the immediate and efficient cauſe of his acting; then the motion of that ſubtile matter or ſubſtance muſt be cauſed by ſome other ſubſtance, and the motion of that by ſome other, till at laſt we arrive at a free agent; and then liberty is a poſſible thing, and man poſſibly may have liberty: and if he may poſſibly have it, then experience will prove that he probably, nay, that he certainly, has it. If we never arrive at any free cauſe, then there is either *in infinitum* a progreſſion of motions without any mover, of effects without any cauſe, of things acting without any agent; which is a manifeſt contradiction: or elſe motion exiſts neceſſarily of itſelf. If motion exiſts neceſſarily of itſelf, it muſt be either with a determination every way, or one certain way; if with a determination every way, this is no motion at all; if with a determination one certain way, then that determination is either neceſſary, and conſequently all other determinations impoſſible, which is contrary to experience; or elſe there muſt be a particular reaſon of that determination, and ſo backwards *in infinitum*, which comes to the forementioned abſurdity, of effects exiſting without any cauſe.

Farther, liberty is the dictate of our own conſciouſneſs: we have, really, the ſame conſtant and neceſſary conſciouſneſs of liberty that we have, that we think, chooſe, will, or even exiſt; and whatever men may ſay to the contrary, it is impoſſible for them, in earneſt, to think they have no active ſelf-moving powers, and are not the cauſes of their own volitions, or not to aſcribe to themſelves what they muſt be conſcious they think and do. Mr. Hume, though he denies the reality of liberty, grants that we have a feeling of it; that the divine plan required that we ſhould be ſo made, as to ſeem to ourſelves free; that the whole conſtitution of things is as if we were free; and that being under a neceſſity of approving and diſapproving actions and characters, we are ſo far under a neceſſity of believing ourſelves and others free. After theſe conceſſions, it can hardly be imagined that the conſtitution of nature ſhould be altogether impoſition and deceit.

"We have by our conſtitution," ſays Dr. Reid, "a natural conviction or belief that we act freely; a conviction ſo early and ſo univerſal, that it muſt be the reſult of our conſtitution, and the work of him that made us." And he adds, "the genuine dictate of our natural faculties is the voice of God no leſs than what he reveals from heaven; and to ſay that it is fallacious, is to impute a lie to the God of truth." Moreover, in favour of free-will an appeal has been made to "common ſenſe," that is, to the irreſiſtible conviction and univerſal conſent of mankind. To this purpoſe it has been ſaid, that very few have denied the exiſtence of liberty of choice even in theory; but "this," ſays a neceſſarian writer, "is only ſaying that there have been very few philoſophers," as if the denial of liberty of choice were a teſt of true philoſophy. All men, it has been alleged, without excepting profeſſed neceſſarians themſelves, are under the neceſſity of acting upon the principles of liberty, whatever their hypothetical ſpeculations may be.

All men agree in applauding ſome actions and condemning others, which would be abſurd upon the ſuppoſition that men were deſtitute of free will; all men make a diſtinction between harm and injury, *e.g.* between a blow given by deſign and another occaſioned by accident; and the laws of all nations agree to puniſh an action performed by a man in poſſeſſion of reaſon, when they excuſe a lunatic; the former being free, and the latter not.

Beſides, if man be not, in the ſtricteſt ſenſe of the word, a free agent, he can be no moral agent. It is hard to ſay, what virtue and vice, commendation and blame, mean, if they do not ſuppoſe agency, voluntary motion, free choice, and an abſolute dominion over our reſolutions. Can we applaud or reproach ourſelves for what we were no more the cauſes of than of our own beings, and what it was no more poſſible for us to prevent than the returns of the ſeaſons, or the revolutions of the planets? On the ſyſtem of neceſſity, conſcience is an inexplicable principle: its cenſures or applauſe are equally futile and groundleſs: the approbation of mankind is an inſult with regard to thoſe on whom it is beſtowed, becauſe they can have no merit; and the reproach of men unjuſt and cruel, becauſe there can be no demerit and ground of blame. Whatever difficulties, therefore, may attend the nature of that influence which we aſcribe to motives, (ſee Motive,) they cannot be the efficient neceſſitating cauſe of human actions: ſince, on this ſuppoſition, there could be but one agent in the univerſe; who muſt equally be the author of all the good and evil in the world, and on whom muſt ultimately be charged the ſin and miſery, as well as the virtue and happineſs of his creatures.

Moreover, it has been urged by the advocates of liberty, that if men's determinations and actions flow neceſſarily from the previous ſtate of their minds and the motives or influences reſulting from a nature or condition, impoſed upon them without their own conſent or choice, the idea of reſponſibility or accountableneſs muſt vaniſh, and there can be no propriety or uſe of rewards or puniſhments. God cannot reward without virtue, and there can be no virtue without a ſelf-determining power: he cannot puniſh without guilt, and there can be no guilt when men do what they cannot avoid doing, and when their actions ariſe from circumſtances in which their Creator placed them.

It is alſo equally unjuſt and uſeleſs to threaten puniſhment or inflict it on men to prevent crimes, when they are neceſſarily determined in all their actions. And if men are neceſſary agents, though we cannot well admit this verbal contradiction, it can be of no uſe to reaſon with them, to admoniſh or intreat them; and God muſt be inſincere in his addreſſes and invitations, and cruel in his requirements and commands. But ſuch is the whole tenour of revelation, and, therefore, the concluſion is neceſſary, that man is a free agent, capable of good or evil, and of determining his purſuit of either, from the ſole power of his own judgment or will.

"If we adopt the ſyſtem of neceſſity," ſays Dr. Reid, "the terms *moral obligation* and *accountableneſs*, *praiſe* and *blame*, *merit* and *demerit*, *juſtice* and *injuſtice*, *reward* and *puniſhment*, *wiſdom* and *folly*, *virtue* and *vice*, ought to be diſuſed, or to have new meanings given to them when they are uſed in religion, in morals, or in civil government; for upon that ſyſtem, there can be no ſuch things as they have been always uſed to ſignify." Another argument for proving that man has power over his own actions and volitions has been deduced from the conſideration that he is capable of carrying on wiſely and prudently, a ſyſtem of conduct, which he has before conceived in his mind, and reſolved to proſecute. If all the particular determinations, which concurred in the execution of the plan which ſuch a perſon had formed, were produced, not by himſelf, but by ſome cauſe acting neceſſarily upon him, then there is no evidence left that he contrived this plan, or that he ever ſpent a thought about it. The cauſe that directed all theſe determinations ſo wiſely, muſt be wiſe and intelligent. If it be ſaid, that this whole courſe of determinations was produced by motives, motives ſurely have not underſtanding to conceive a plan, and intend its execution. We muſt therefore revert to ſome intelligent being, who had the power of arranging theſe motives, and applying them, in their proper order and ſeaſon, ſo as to bring about the end. If man, then, had no concern in the execution, we have no evidence left, that he had any concern in the contrivance, or even that he is a thinking being. Man, with all his boaſted faculties, is reduced to the ſtate of a mere automaton or machine. Whereas, if wiſe conduct in a man demonſtrates that he has ſome degree of wiſdom, it demonſtrates, with equal force and evidence, that he has ſome degree of power over his own determinations. We ſhall cloſe this article with obſerving, that Mr. Abraham Tucker, the acute author of a work entitled "The Light of Nature purſued," by Edward Search, eſq. after having argued ſtrenuouſly againſt the exiſtence of a liberty of indifference, contends for the exiſtence of free-will, the exerciſe of which he conceives "to be only a particular ſpecies of action, performed in raiſing up ideas, or fixing them on the mind, which ſhall determine us to ſuch volitions as we want." He expreſsly diſavows the doctrine of neceſſity. See on this ſubject Collins's Enquiry concerning Human Liberty, firſt printed in 1717. Clarke's Remarks, 1717, and Collection of Papers which paſſed between Mr. Leibnitz and Dr. Clarke, in 1715 and 1716. Jackſon's Vindication and Defence of Human Liberty, 1730. Price's Review of the principal Queſtions, &c. in Morals, p. 315, &c. edit. 1758. Hartley on Man. Prieſtley's Doctrine of Philoſophical Neceſſity, 1777. Reid's Eſſays on the Active Powers of Man, eſſ. iv. Gregory's Philoſophical Eſſays. Edwards on the Will. Palmer on Liberty. Beattie on Truth. Belſham's Elements of the Philoſophy of the Mind, &c. For the objections againſt liberty, and the arguments in ſupport of neceſſity, ſee Necessity.

Liberty *of conſcience*, a right or power of making profeſſion of any religion, or of ſerving God in any manner that a man ſees fit.

This ſeems to be a natural right; it is vigorouſly oppoſed by the generality of the Romaniſts, and even by many of the reformed, though it ſeems as if the reformation could ſcarcely ſubſiſt without it. See Toleration and Persecution.

Liberty, *Moral*, is the power of following, in all circumſtances, our ſenſe of right and wrong; or of acting in conformity to our reflecting and moral principles, without being controlled by any contrary principles or habits. See Liberty, *ſupra*.

Liberty, *Religious*, is the ſame with liberty of conſcience, and ſignifies the power of exerciſing, without moleſtation, that mode of religion which we think beſt; or of making the deciſions of our own conſciences, reſpecting religious truths, the rule of our conduct, and not any of the deciſions of others.

Liberty, *Civil*, is the power of a civil ſociety or ſtate, to govern itſelf by its own diſcretion: or by laws of its own making, without being ſubject to any foreign diſcretion, or to the impoſitions of any extraneous will or power. Civil liberty, ſays judge Blackſtone, adopting the definition of the Inſtitutes, conſiſts in the power of doing whatever the laws permit; or it is natural liberty, or a power of acting as one thinks fit, without any reſtraint or controul, unleſs by the law of nature, ſo far reſtrained by human laws, and no farther, as is neceſſary and expedient for the general advantage of the public. Others have defined civil liberty, in contradiſtinction from political liberty, to be that power over their own actions, which the members of the ſtate reſerve to themſelves, and which their officers muſt not infringe. This extends no farther than to a man's own conduct, and ſignifies the right he has to be exempt from the controul of the ſociety or its agents, that is, the power he has of providing for his own advantage and happineſs. It is a man's civil liberty, which is originally in its full force, and part of which he ſacrifices when he enters into a ſtate of ſociety.

Civil liberty, according to the definition of archdeacon Paley, "is the not being reſtrained by any law, but what conduces in a greater degree to the public welfare." To do what we will, he ſays, is natural liberty; to do what we will, conſiſtently with the intereſt of the community to which we belong, is civil liberty; that is, the only liberty to be deſired in a ſtate of civil ſociety. The definition above laid down imports that the laws of a free people impoſe no reſtraints upon the private will of the ſubject, which do not conduce in a *greater degree* to the public happineſs; by which it is intimated, 1ſt, that reſtraint itſelf is an evil; 2dly, that this evil ought to be overbalanced by ſome public advantage; 3dly, that the proof of this advantage lies upon the legiſlature; 4thly, that a law, being found to produce no ſenſible good effects, is a ſufficient reaſon for repealing it, as adverſe and injurious to the rights of a free citizen, without demanding ſpecific evidence of its bad effects. This maxim, our author adds, might be remembered with advantage in a reviſion of many laws of this country; eſpecially of the game laws; of the poor laws, ſo far as they lay reſtrictions upon the poor themſelves; of the laws againſt papiſts and diſſenters; and amongſt a people enamoured to exceſs, and jealous of their liberty, it ſeems a matter of ſurpriſe that this principle has been ſo imperfectly attended to. The degree of actual liberty always bearing, according to this account of it, a reverſed proportion to the number and ſeverity of the reſtrictions, which are either uſeleſs, or the utility of which does not outweigh the evil of the reſtraint, it follows, among other concluſions of a more general nature, that we may hence be enabled to apprehend the diſtinction between *perſonal* and *civil* liberty. A citizen of the freeſt republic in the world may be impriſoned for his crimes; and though his perſonal freedom be reſtrained by bolts and fetters, ſo long as his confinement is the effect of a beneficial public law, his civil liberty is not invaded. Another idea of civil liberty places it in ſecurity; making it to conſiſt not merely in an actual exemption from the conſtraint of uſeleſs and noxious laws and acts of dominion, but in being free from the *danger* of having any ſuch hereafter impoſed or exerciſed. The definitions which have been framed of civil liberty are moſt of them adapted to this idea. Thus one political writer makes the very eſſence of the ſubject's liberty to conſiſt in his being governed by no laws but thoſe to which he hath actually conſented; another is ſatisfied with an indirect and virtual conſent; another again places civil liberty in the ſeparation of the legiſlative and executive offices of government; another in the being governed by *law*, that is, by known, preconſtituted, inflexible rules of action and adjudication; a fifth in the excluſive right of the people to tax themſelves by their own repreſentatives; a ſixth in the freedom and purity of elections of repreſentatives; a ſeventh in the controul which the democratic part of the conſtitution poſſeſſes over the military eſtabliſhment. Of theſe and ſimilar accounts of liberty, it may be obſerved, that they all labour under one inaccuracy, *viz.* that they deſcribe not ſo much liberty itſelf, as the ſafeguards and preſervatives of liberty; *e. g.* a man's being governed by no laws but thoſe to which he has given his conſent, were it practicable, is no otherwiſe neceſſary to the enjoyment of civil liberty, than as it affords a probable ſecurity againſt the dictation of laws, impoſing ſuperfluous reſtrictions upon his private will. The ſame remark is applicable to the reſt. We may farther obſerve, that in moſt of theſe definitions civil liberty and political liberty are confounded. Upon the whole we may remark, that whatever definitions of either kind of liberty we adopt, *that* people, government, and conſtitution is the *freeſt*, which makes the beſt proviſion for the enacting of expedient and ſalutary laws.

LIBERTY, *Political*, ſometimes uſed, but improperly, as ſynonimous with civil liberty, in a diſtinct ſenſe, conſiſts in the ſhare which the members of the ſtate poſſeſs in the direction of its affairs, and the power which they reſerve to themſelves of arriving at the public offices, or, at leaſt, of having votes in the nomination of thoſe who fill them: and this is that which a man may or may not acquire in the compenſation he receives for it. In a ſtate of civil liberty, a man retains the moſt important of his natural rights: in a ſtate of political liberty, he moreover acquires a controul over the conduct of others. It is, therefore, for his advantage to loſe as little of the former, and to gain as much of the latter as he can. In countries where every member of the ſociety enjoys an equal power of arriving at the ſupreme offices, and conſequently of directing the ſtrength and the ſentiments of the whole community, there is a ſtate of the moſt perfect political liberty. On the other hand, in countries where a man is, by his birth or fortune, excluded from theſe offices, or from a power of voting for proper perſons to fill them; that man, whatever be the form of the government, or whatever civil liberty or power over his own actions he may have, has no power over thoſe of another; he has no ſhare in the government, and therefore has no political liberty at all. Nay, his own conduct, as far as the ſociety does interfere, is, in all caſes, directed by others.

Political liberty is the only ſafe-guard of civil liberty; and it is chiefly valuable on that account. Civil liberty ſtands firſt in the order of things, and political liberty the ſecond. The former is the end, and the latter the means of preſerving it. Every man has an abſolute and unalienable right to civil liberty; and for the ſecurity of it, political liberty ſhould be extended as widely as poſſible. No man ſhould be excluded from the exerciſe of it, excepting from circumſtances of unavoidable neceſſity. It may appear, at firſt ſight, to be of little conſequence whether perſons in the common ranks of life enjoy any ſhare of political liberty or not. But without this, there cannot be that perſuaſion of ſecurity and independence, which alone can encourage a man to make great exertions. A man who is ſenſible that he is at the diſpoſal of others, over whoſe conduct he has no ſort of controul, has always ſome unknown evil to dread. He will be afraid of attracting the notice of his ſuperiors, and muſt feel himſelf a mean and degraded being. But a ſenſe of liberty, and a knowledge of the laws by which his conduct muſt be governed, with ſome degree of controul over thoſe who make and adminiſter the laws, give him a conſtant feeling of his own importance, and lead him to indulge a free and manly turn of thinking, which will make him greatly ſuperior to what he would have been under an arbitrary form of government. The diſtinction here made between *civil* and *political* liberty was, we believe, firſt laid down by Dr. Prieſtley in his "Treatiſe on Government."

Mr. Chriſtian, in his edition of Blackſtone's Commentary, has ſuggeſted the difference between civil and political liberty, unnoticed by the learned judge and by other eminent writers. He defines *political liberty* to be the ſecurity with which, from the conſtitution, form, and nature of the eſtabliſhed government, the ſubjects enjoy *civil* liberty.

The importance of liberty, civil and political, as well as religious, to the honour and proſperity of a nation, is ſufficiently evinced by both ancient and modern hiſtory. It has been obſerved by the ancients, that all the arts and ſciences aroſe among free nations; and that the Perſians and Egyptians, notwithſtanding their eaſe, opulence, and luxury, made but faint efforts towards a reliſh in thoſe finer pleaſures, which were carried towards ſuch perfection by the Greeks, amidſt continual wars, attended with poverty, and the greateſt ſimplicity of life and manners. Greece, ſays Mr. Hume, was a cluſter of little principalities, which ſoon became republics; and being united both by their vicinity, and by the ties of the ſame language and intereſt, they entered into the cloſeſt intercourſe of commerce and learning. There concurred a happy climate, a ſoil not unfertile, and a moſt harmonious and comprehenſive language; ſo that every circumſtance among theſe people ſeemed to favour the riſe of the arts and ſciences. Each city produced its ſeveral artiſts and philoſophers, who refuſed to yield the preference to thoſe of the neighbouring republics. Their contention and debates ſharpened the wits of men: a variety of objects was preſented to the judgment, while each challenged the preference to the reſt; and the ſciences, not being dwarfed by the reſtraint of authority, were enabled to make ſuch conſiderable ſhoots, as are, even at this time, the objects of our admiration. Hence, and from other circumſtances detailed by Mr. Hume, he concludes, that it is impoſſible for the arts and ſciences to ariſe, at firſt, among any people, unleſs theſe people enjoy the bleſſing of a free government. It has been further obſerved, that when the Greeks loſt their liberty, though they increaſed mightily in riches, by means of the conqueſts of Alexander; yet the arts, from that moment, declined among them, and have never ſince been able to raiſe their head in that climate. Learning was tranſplanted to Rome, the only free nation at that time in the univerſe; and having met with ſo favourable a ſoil, it made prodigious ſhoots for above a century; till the decay of liberty produced alſo the decay of letters, and ſpread a total barbariſm over the world. From theſe two experiments, of which each was double in its kind, and ſhewed the fall of learning in abſolute governments, as well as its riſe in popular ones, Longinus thought himſelf ſufficiently juſtified in aſſerting, that the arts and ſciences could never flouriſh, but in a free government; and in this opinion he has been followed by ſeveral eminent writers in our own country, particularly Mr. Addiſon and lord Shafteſbury, who either confined their views merely to ancient facts, or entertained, ſays Mr. Hume, too great a partiality in favour of that form of government eſtabliſhed among us. This writer has alleged, as inſtances which ſerve to reſtrain the extent of the opinion maintained by the celebrated authors above cited, thoſe of modern Rome and of Florence. The former carried to perfection all the finer arts of ſculpture, painting, and muſic, as well as poetry, though it groaned under tyranny, and under the tyranny of prieſts: while the latter made its chief progreſs in the arts and ſciences, after it began to loſe its liberty by the uſurpation of the family of Medici. Arioſto, Taſſo, Galileo, any more than Raphael and Michael Angelo, were not born in republics. And though the Lombard ſchool was famous, as well as the Roman, yet the Venetians have had the ſmalleſt ſhare in its honours, and ſeem rather inferior to the other Italians in their genius for the arts and ſciences. Rubens eſtabliſhed his ſchool at Antwerp, not at Amſterdam. Dreſden, not Hamburgh, is the centre of politeneſs in Germany. France has, at a former period, to ſay nothing now of its preſent condition, furniſhed an eminent inſtance of the flouriſhing of learning in abſolute governments. Although it had ſcarcely ever enjoyed any eſtabliſhed liberty, it has nevertheleſs carried the arts and ſciences as near perfection as any other nation. The Engliſh are perhaps greater philoſophers, the Italians better painters and muſicians, the Romans were greater orators; but the French, ſays Mr. Hume, are the only people, except the Greeks, who have been at once philoſophers, poets, orators, hiſtorians, painters, architects, ſculptors, and muſicians. With regard to the ſtage, they have excelled the Greeks, who far excelled the Engliſh. And in common life, continues the ſame author, they have, in a great meaſure, perfected that art, the moſt uſeful and agreeable of any, "l'art de vivre," the art of ſociety and converſation. He adds, if we conſider the ſtate of the ſciences and polite arts in our own country, Horace's obſervation, with regard to the Romans, may, in a great meaſure, be applied to the Britiſh.

"——— Sed in longum tamen ævum
Manſerunt, hodieque manent veſtigia ruris."

It has become an eſtabliſhed opinion, that commerce can never flouriſh but in a free government; and this opinion ſeems to be founded on a longer and larger experience than the foregoing, with regard to the arts and ſciences. If we trace commerce in its progreſs through Tyre, Athens, Syracuſe, Carthage, Venice, Florence, Genoa, Antwerp, Holland, England, &c., we ſhall always find it to have fixed its ſeat in free governments. The three greateſt trading towns in Europe now, ſays Mr. Hume at the time when he wrote, are London, Amſterdam, and Hamburgh; all free cities, and proteſtant cities; that is, enjoying a double liberty. Hume's Eſſays, vol. i. Eſſ. xii. and xiv. See *Liberal* ARTS and COMMERCE.

LIBERTY, *Perſonal*, conſiſts in the power of locomotion, or of changing ſituation, or removing one's perſon to whatſoever place one's own inclination may direct, without impriſonment or reſtraint, unleſs by due courſe of law. See HABEAS *Corpus*, IMPRISONMENT, and FALSE *Impriſonment*.

LIBERTY *of the Preſs*. See *Liberty of the* PRESS.

LIBERTY *of the Tongue*, in the *Manege*, is a void ſpace left in the middle of a bit, to give place to the tongue of a horſe, made by the bit's arching in the middle, and riſing towards the roof of the mouth. The bit, according to the various forms of the liberty, acquires different names; hence we ſay a *ſnatch-mouth*, a *Pignatelli*, *i. e.* with the liberty after Pignatelli's faſhion, and a *canon-mouth*, with the liberty like a pigeon's neck.

In forging the bit, care muſt be taken not to make the liberty too high, leſt it hurt, or at leaſt tickle the palate, and make the horſe carry low. See BITS.

LIBERTY, in *Mythology*, was a goddeſs both among the Greeks and Romans. Among the former ſhe was invoked under the title Eleutheria; and by the latter ſhe was called *Libertas*, and held in ſingular veneration; temples, altars, and ſtatues, were erected in honour of this deity. A very magnificent temple was conſecrated to her on mount Aventin, by Tiberius Gracchus, before which was a ſpacious court, called *atrium libertatis*. The Romans alſo erected a new temple in honour of Liberty, when Julius Cæſar eſtabliſhed his empire over them, as if their liberty had been ſecured by an event which proved fatal to it. In a medal of Brutus, Liberty is exhibited under the figure of a woman, holding in one

one hand a cap, the ſymbol of liberty, and two poniards in the other, with the inſcription IDIBVS MARTIIS.

LIBETEN, in *Geography*, a town of Hungary; 54 miles E.N.E. of Leopoldſtadt. N. lat. 48° 47′. E. long. 19° 37′.

LIBETHRA, in *Ancient Geography*, a town of Greece, placed by Pauſanias on mount Olympus, on the ſide of Macedonia. M. d'Anville places it upon the river Sus, at a ſmall diſtance from Heracleum, which lay to the eaſt, upon the ſea-coaſt. This is ſaid to have been the town where Orpheus was born, and whence his monument was transferred to Dion by the Macedonians, when Libethra was deſtroyed by an inundation of the river Sus.

LIBETHRIDES, in *Mythology*, a ſurname given to certain nymphs which were ſuppoſed to inhabit near mount Libethra in Bœotia, which was diſtant about 40 ſtadia from Coronæa; and the Libethridian fountain, in Theſſaly, led the poets to call the Muſes by this name. Virgil, Eclog. vii. v. 21.

LIBICI, in *Ancient Geography*, a people of Italy, who were planted eaſtward of the Salaſſi, in a diſtrict now called the lordſhip of Vercelli. Vercellæ, or Vercelli, the capital, ſtood on the right bank of the Seſſites, now Seſia, between Turin and Milan. Ictimulum, above Vercellæ, was ſituated at the foot of the Alps, near ſome gold mines. In that retired corner, there was a grove containing a temple ſacred to Apollo.

LIBILITZ, in *Geography*, a town of Sweden, in the government of Kuopio; 55 miles E.S.E. of Kuopio.

LIBISCHAU, a town of Bohemia, in the circle of Chrudim; 13 miles N. of Chrudim.

LIBITINA, in the *Roman Mythology*, a goddeſs which preſided over funerals. This goddeſs was the ſame with the Venus infera or Epithymbia of the Greeks. She had a temple at Rome, where was lodged a certain piece of money for every perſon who died, whoſe name was recorded in a regiſter called Libitinæ ratio. This practice was eſtabliſhed by Servius Tullius, in order to obtain an account of the number of annual deaths in the city of Rome, and conſequently the rate of increaſe or decreaſe of its inhabitants.

LIBITUM, in *Muſic*. Sometimes, in the courſe of a compoſition, the Latin words *ad libitum* occur, which ſignify, *at the pleaſure* of the principal performer, who is at liberty to do what he pleaſes, in order to manifeſt his fancy, taſte, and execution; and to return to the text of the compoſer whenever he pleaſes: as to the reſt of the band who accompany him, they are to remain inactive, and await his return to the written melody. The difference betwen *cadenza*, and *ad libitum* is, that a *cadence*, or *cloſe*, is terminated by a ſhake, whereas an *ad libitum* may be allowed to the performer by the compoſer, at any part of the piece he pleaſes. Theſe Latin words are likewiſe joined to ſome inſtrument of accompaniment, in the title page of a work; as at the beginning of a piece, to ſay that ſuch an inſtrument is *non obligato*, or not abſolutely neceſſary; as in a ſymphony, when the *corni*, or French horns, may be diſpenſed with; and in a compoſition for a pianoforte, when the violin has no ſolo parts or paſſages, that will be miſſed, notice is then given by the words *corni ad libitum*, or "with a violin accompaniment *ad libitum*."

LIBLE, in *Geography*, a town of Bohemia, in the circle of Konigingratz; 13 miles E.S.E. of Konigingratz.

LIBOBO, a ſmall iſland in the Eaſt Indian ſea; on the S.E. coaſt of Gilolo. S. lat. 10° 48′. E. long. 128° 25′.

LIBOCH, a town of Bohemia, in the circle of Leitmeritz; 14 miles S.E. of Leitmeritz.

LIBONA, in *Ancient Geography*, a town of Spain, in Celtiberia. Ptolemy.

LIBONATI, in *Geography*, a town of Naples, in Principato Citra; four miles E.N.E. of Policaſtro.

LIBONGO, a town of Africa, in the kingdom of Locango, on the Lufuna, near the ſea; 50 miles S.S.W. of Bombi.

LIBONOTUS, in *Phyſiology*, one of the twelve winds of the ancients. See WIND.

LIBORA, in *Ancient Geography*, a town of Spain, in the Tarragonenſis, in the country of the Carpetanians; ſituated on the Tagus, N.E. of Auguſtobriga, and almoſt bordering on Luſitania.

LIBOURNE, in *Geography*, a town of France, in the department of the Gironde, and principal place of a diſtrict. The place contains 8076, and the canton 17,370 inhabitants, on a territory of 117½ kiliometres, in nine communes. N. lat. 44° 55′. W. long. 0° 9′.

LIBRA, BALANCE, one of the mechanical powers. See BALANCE.

LIBRA is one of the twelve ſigns of the zodiac; exactly oppoſite to Aries; ſo called becauſe when the ſun is in this ſign, at the autumnal equinox, the days and nights are equal, as if weighed in a balance.

The ſtars in this conſtellation, according to Ptolemy, are ſeventeen; Tycho ten; Hevelius twenty; and Flamſtead fifty-one. See CONSTELLATION.

LIBRA alſo denotes the ancient Roman pound, borrowed, as ſome have ſaid, from the Sicilians, who called it *litra*, λιτρα.

Mr. Pinkerton (Eſſay on Medals, vol. i. § 7.), though he allows that the Greek pound in Sicily was called λιτρα, as it was in Greece, and divided into 12 ουγκιαι, or ounces, and that the Roman word libra is derived from the Greek λιτρα, will not admit the as or libra, a coin, to have been deduced from a Sicilian medal. The Sicilians had a coin called λιτρα, but it was of ſilver, and equal to the obolus of the Eginean ſtandard, ten of which conſtituted the Sicilian δεκαλιτρον. The Syracuſans, it is well known, were the chief people of Sicily, and they were a colony from Corinth. Gronovius takes pains to prove, that the ſtandard of Egina was uſed at Corinth, and of courſe in Syracuſe; but all the Corinthian coins now remaining are upon the Attic model, which circumſtance at once confutes all his arguments; and it appears from Ariſtotle, as quoted by Pollux, that the Sicilians had a money talent, or ſtandard, of their own. The λιτρα, or Sicilian ſilver obolus, contained alſo, like the Roman primitive *as*, 12 ουγκιαι, or chalci, ſo called at firſt becauſe they weighed an ounce, but afterwards becauſe twelve of them went to the ſilver λιτρα, as twelve ounces to the pound. It is of the Sicilian λιτρα, or libella, ſays Mr. Pinkerton, that Varro ſpeaks, when he ſays it was of ſilver; and not of the Roman libella, or as, which we may ſafely ſuppoſe was never ſtruck in that metal. For after the Punic wars, of which Sicily was the grand ſcene, the Sicilian coins muſt have been frequent at Rome, and the Roman in Sicily. But the Greeks, or Phœnicians, of which nations the chief towns of Sicily were colonies, never knew ſuch coins as the as libralis, or any of its parts; and it is well known that the ancient colonies commonly followed the plan of their parent countries. And though it muſt be granted, that the Sicilians had their own ſtandard, it yet bore a reſemblance of the Greek; their λιτρα being equal to the Eginean obolus, and their ἑξαλιτρα the drachma of Egina; and it is not to be ſuppoſed that when the Greek braſs coinage was always of the moſt minute form, they ſhould coin pieces of that metal weighing a pound. Mr. Pinkerton cannot agree in opinion with thoſe, who ſtrenuouſly maintain, that the Roman ſilver denarius owes its origin to the Sicilian Δεκαλιτρον. The Δεκαλιτρον, containing 10 λιτρα, or Egina oboli, would weigh about 180 grains, whereas the Roman denarii do not amount to above 60, or a third part. There ſeems, therefore, to be no connection between the two. Upon the whole Mr. Pinkerton is convinced, that the Romans did not derive one idea of their coinage from Sicily; but that the Sicilians had their λιτρα, divided into 12 ουγκιαι, from the Etruſcans; though, according to the more elegant Greek plan, they made the firſt a ſmall coin in ſilver, and never ſtruck any braſs coin larger than the ουγκιαι, or piece of an ounce weight; if, indeed, the Sicilians had not this idea of 12 ουγκιαι to the λιτρα from the Romans themſelves, which is much more probable, than that the Romans had it from Sicily. It is a further and ſtronger argument againſt the opinion of the Roman coinage being copied from the Sicilian, that, though we have innumerable Sicilian coins in every cabinet, yet not one of them reſembles the Roman As libralis, or its early diviſions, in the very ſmalleſt degree. This argument Mr. Pinkerton deems to be concluſive. Beſides, in moſt cabinets there are Etruſcan coins upon the exact ſcale of the As libralis, and of its ſeveral parts; whence it follows of courſe, that theſe, and theſe alone, muſt have afforded a pattern to the primitive Roman coinage. The Etruſcans, to whom the moſt ancient braſs coins found in Italy are known to belong, are more a colony from Lydia, a country to which Herodotus aſcribes the firſt invention of coinage. See Coinage.

The libra was divided into twelve unciæ, or ounces, and the ounce into twenty-four ſcruples.

The diviſions of the libra were the *uncia*, one-twelfth; the *ſextans*, one-ſixth; the *quadrans*, one-fourth; the *triens*, one-third; the *quincunx*, five ounces; the *ſemis*, ſix; the *ſeptunx*, ſeven; the *bes*, eight; the *dodrans*, nine; the *dextans*, ten; *deunx*, eleven; laſtly, the *as* weighed twelve ounces, or one libra.

Learned writers are not agreed as to the true weight of the Roman pound. Villalpandus and Greaves, relying on the congius of Veſpaſian for its ſtandard weight, have from hence attempted to determine this intricate queſtion. This Roman congius contained ten pounds weight of wine; Villalpandus found by filling it to the narrow part of the neck, with ſpring water, that it contained juſt ten modern Roman pounds, which are equal to 52560 Troy grains. Azout filled it to the ſame height, and, having weighed its contents twice, found a reſult very nearly agreeing with Greaves's meaſure, ſtated by Millet, in Phil Tranſ. vol. li. p. 790. His greater weight was 63024 Paris grains, equal to $51699\frac{1}{3}$ Troy; his leſſer, 62760 Paris grains, equal to $51482\frac{4}{5}$ Troy. The mean between both is $51591\frac{1}{15}$ Troy grains, which. divided by 10, give $5159\frac{1}{6}$ ſuch grains for the weight of the ancient Roman pound. Several objections have been made to this pound derived from the congius, which Mr. Raper, ubi infra, has collected into one view; from which he infers, that it is more probable, that this ſtandard ſhould give too great a Roman pound, than too ſmall a one. But as the reſult from hence muſt be uncertain, he has recourſe to the coins. Having weighed nine gold pieces in the Pembroke collection, containing $34\frac{1}{2}$ Roman ſcruples. he found their weight to amount to 608 Troy grains, which divided by $34\frac{1}{2}$, give $17\frac{43}{69}$ for the ſcruple, whence the Roman pound ſhould weigh $5075\frac{11}{23}$ grains. From ſome other coins of the ſame kind, a ſcruple appears to be $17\frac{1}{2}$ grains. Inſtead of this ſcrupular ſtandard, another was introduced by Sylla; and from the heavieſt of four pieces of this ſtandard, allowing thirty of them to have been coined out of the Roman pound, its weight is found to be 5040 grains. The ſtandard of forty in the pound, mentioned by Pliny, ſucceeded this of Sylla, and continued to the eſtabliſhment of the monarchy under Auguſtus: and from ten different coins of this ſtandard, he deduces a mean aureus of $126\frac{1}{17}$ grains; and ſuppoſing the aureus of forty in the pound to weigh 126 Troy grains, the Roman pound muſt weigh 5040. In Pliny's time forty-five aurei were ſtruck out of the pound; and the mean aureus from Nero to Titus, in whoſe reign Pliny died, was under 112 grains: and if the ſtandard weight of the imperial aureus of forty-five in the pound did not exceed 112 grains, the Roman pound will weigh 5040 grains, as it is found from the conſular aureus. Soon after the reign of Alexander Severus, in whoſe time the aureus came to be called ſolidus, the coinage became very irregular, till Conſtantine entirely modelled it anew, by coining ſeventy-two ſolidi of four ſcruples out of the pound of gold. From twenty-nine of theſe ſolidi in the interval from Conſtantine to Heraclius, it appears that the mean weight is 69 grains, which, multiplied by 72, gives but 4968 grains for the Roman pound. But if the ſtandard weight of this coin amounted to 70 grains, the pound will weigh 5040, as before. If we take 5040 Troy grains for the weight of the Roman pound, the ſcruple will weigh $17\frac{1}{2}$ grains; the conſular aureus 126; the imperial aureus 112, and the ſolidus 70; and the conſular denarius of 84 in the pound will weigh juſt 60 Troy grains. (Phil. Tranſ. vol. lxi. part ii. p. 462, &c) The common Roman pound, ſtill uſed at Rome, conſiſted of 12 ounces, of 458 grains each, equal to one ounce avoirdupois; but the money ounce ſeems to have had only 420 Troy grains in the pound 5040. See farther on this ſubject the articles Denarius and Miliarensis.

The Roman libra was uſed in France for the proportions of their coin till the time of Charlemagne, or perhaps till that of Philip I. in 1093, their ſols being ſo proportioned, as that twenty of them are equal to the libra.

By degrees, it became a term of account; and every thing of the value of twenty ſols, was called a *livre*.

Libra *Penſa*, in our *Law Books*, denotes a pound of money in weight.

It was uſual, in former days, not only to tell the money, but to weigh it; becauſe many cities, lords, and biſhops, having their mints, coined money, and often very bad too; for which reaſon, though the pound conſiſted of twenty ſhillings, they always weighed it.

LIBRARII, among the ancients, were a ſort of copyiſts, who tranſcribed in beautiful, or at leaſt legible, characters, what had been written by the notarii in notes and abbreviatures.

LIBRARY, an edifice or apartment deſtined for the placing of books; or the collection of books themſelves lodged therein. See Book.

Some authors refer the origin of libraries to the Hebrews; and obſerve, that the care theſe took for the preſervation of their ſacred books, and the memory of what concerned the actions of their anceſtors, became an example to other nations, particularly to the Egyptians. Oſmanduas, king of Egypt, is ſaid to have taken the hint firſt; who, according to Diodorus, had a library built in his palace, with this inſcription over the door, ΨΥΧΗΣ ΙΑΤΡΕΙΟΝ. Nor were the Ptolemies, who reigned in the ſame country, leſs curious and magnificent in books.

The ſcripture alſo ſpeaks of a library of the kings of Perſia, Ezra, v. 17. vi. 1. which ſome imagine to have conſiſted of the hiſtorians of that nation, and of memoirs of the affairs of ſtate; but in effect it appears rather to have been a depoſitory of laws, charters, and ordinances, of the kings. The Hebrew text calls it the *houſe of treaſures*, and afterwards the *houſe of the rolls*, where the treaſures were laid up. We may, with more juſtice, call that a library, mentioned in the ſecond of Eſdras to have been built by Nehemiah, and in which were preſerved the books of the prophets and of David, and the letters of their kings.

The firſt who erected a library at Athens, was the tyrant Piſiſtratus; and yet Strabo refers the honour of it to Ariſtotle. That of Piſiſtratus was tranſported by Xerxes into Perſia, and was afterwards brought back by Seleucus Nicanor to Athens. Long after, it was plundered by Sylla, and re-eſtabliſhed by Hadrian. Plutarch ſays, that under Eumenes there was a library at Pergamus, containing two hundred thouſand books. Tyrannion, a celebrated grammarian, contemporary with Pompey, had a library of three thouſand volumes. That of Ptolemy Philadelphus, according to A. Gellius, contained ſeven hundred thouſand, all in rolls, burnt by Cæſar's ſoldiers. See ALEXANDRIAN.

Conſtantine, and his ſucceſſors, erected a magnificent one at Conſtantinople; which, in the eighth century, contained three hundred thouſand volumes, all burnt by order of Leo Iſaurus: and, among the reſt, one in which the Iliad and Odyſſey were written in letters of gold, on the guts of a ſerpent.

The moſt celebrated libraries of ancient Rome, were the Ulpian, and the Palatine. They alſo boaſt much of the libraries of Paulus Æmilius, who conquered Perſeus; of Lucilius Lucullus, of Aſinius Pollio, Atticus, Julius Severus, Domitius, Serenus, Pamphilus Martyr, and the emperors Gordian and Trajan.

Anciently, every large church had its library; as appears by the writings of St. Jerom, Anaſtaſius, and others. Pope Nicholas laid the firſt foundation of that of the Vatican, in 1450. It was deſtroyed by the conſtable Bourbon in the ſacking of Rome, and reſtored by pope Sixtus V. and has been conſiderably enriched with the ruins of that of Heidelberg, plundered by count Tilly in 1622. One of the moſt complete libraries in Europe, was ſaid to be that erected at Florence by Coſmo de Medicis; over the gate whereof is written, LABOR ABSQVE LABORE: though it has been ſince exceeded by that of the late French king; begun by Francis I., augmented by cardinal Richelieu, and completed by M. Colbert.

The emperor's library at Vienna, according to Lambecius, conſiſts of eighty thouſand volumes, and fifteen thouſand nine hundred and forty curious medals.

The Bodleian library at Oxford, built on the foundation of that of duke Humphry, exceeds that of any univerſity in Europe, and even thoſe of all the ſovereigns of Europe, except the emperor's, and late French king's, which are each of them older by a hundred years. It was firſt opened in 1602, and has ſince found a great number of benefactors; particularly ſir Robert Cotton, ſir H. Savil, archbiſhop Laud, ſir Kenelm Digby, Mr. Allen, Dr. Pococke, Mr. Selden, and others. The Vatican, the Medicean, that of Beſſarion at Venice, and thoſe juſt mentioned, exceed the Bodleian in Greek manuſcripts; which yet outdoes them all in Oriental manuſcripts.

As to printed books, the Ambroſian at Milan, and that of Wolfenbuttle, are two of the moſt famous, and yet both inferior to the Bodleian.

LIBRARY, *King's*, at St. James's, was founded by Henry, eldeſt ſon of James I. and made up partly of books, and partly of manuſcripts, with many other curioſities, for the advancement of learning. It has received many additions from the libraries of Iſaac Caſaubon, and others.

LIBRARY, *Cottonian*, originally conſiſted of nine hundred and fifty-eight volumes of original charters, grants, inſtruments, letters of ſovereign princes, tranſactions between this and other kingdoms and ſtates, genealogies, hiſtories, regiſters of monaſteries, remains of Saxon laws, the book of Geneſis, thought to be the moſt ancient Greek copy extant, and ſaid to have been writ by Origen in the ſecond century, and the curious Alexandrian copy or manuſcript, in Greek capitals. (See ALEXANDRIAN.) This library is kept in the Britiſh Muſeum, with the large and valuable library of ſir Hans Sloane, amounting to upwards of forty-two thouſand volumes, &c. There are many public libraries belonging to the ſeveral colleges at Oxford and Cambridge, and the univerſities in North Britain. The principal public libraries in London, beſide that of the Muſeum, are thoſe of the College of Heralds, of the College of Phyſicians, of Doctor's Commons, to which every biſhop, at the time of his conſecration, gives at leaſt 20*l.* ſometimes 50*l.* for the purchaſe of books; thoſe of the Gray's Inn, Lincoln's Inn, Inner Temple, and Middle Temple; that of Lambeth, founded by archbiſhop Bancroft in 1610, for the uſe of ſucceeding archbiſhops of Canterbury, and increaſed by the benefactions of archbiſhops Abbot, Sheldon, Teniſon, and Secker, and ſaid to conſiſt of, at leaſt, fifteen thouſand printed books, and ſix hundred and ſeventeen volumes in manuſcript; that of Red-Croſs ſtreet, founded by Dr. Daniel Williams, a preſbyterian divine, and ſince enriched by many private benefactions, and by an annual ſum appropriated to its increaſe; that of the Royal Society, called the Arundelian or Norfolk library, becauſe the principal part of the collection formerly belonged to the family of Arundel, and was given to the ſociety by Henry Howard, afterwards duke of Norfolk, in 1666, which library has been increaſed by the valuable collection of Francis Aſton, eſq. in 1715, and is continually increaſing by the numerous benefactions of the works of its learned members, and others; that of St. Paul's, of Sion College, the queen's library, erected by queen Caroline, in 1737; and the ſurgeon's library, kept in their hall in Lincoln's Inn Fields; the Weſtminſter library, the library of the Royal Inſtitution, incorporated in 1800; the library of the London Inſtitution, eſtabliſhed in 1805, thoſe of the Surry Inſtitution and Ruſſell Inſtitution, &c. &c.

Where a library is erected in any pariſh, it ſhall be preſerved for the uſes directed by the founder; and incumbents and miniſters of pariſhes, &c. are to give ſecurity for it, and make catalogues of the books, &c. None of the books ſhall be alienable, without conſent of the biſhop, and then only when there is a duplicate of ſuch books. If any book ſhall be taken away and detained, a juſtice's warrant may be iſſued to ſearch for, and reſtore the ſame: alſo, action of trover may be brought in the name of the proper ordinary, &c. And biſhops have power to make rules and orders concerning libraries, appoint perſons to view their condition, and enquire of the ſtate of them in their viſitations.. (Stat. 7 Anne, cap. 14.) Bray's Inſtitution for parochial libraries is under the direction and management of a number of aſſociates, a treaſurer and ſecretary. See the biographical article THOMAS BRAY.

LIBRARY, *Muſical* Dr. Burney complains, in the ſecond vol. of his General Hiſtory of Muſic, p. 444, that in his travels through France, Italy, Germany, Holland, and the Netherlands, in ſearch of materials for his work, he was able to find no complete muſical library. "Something like a chain or ſeries of muſical theoriſts (he ſays) may perhaps be found at Vienna, where the emperor Leopold I. began to form a muſical library; and the elector of Bavaria another at Munich in the ſeventeenth century. But both have been long neglected, and are now in a very confuſed and imperfect ſtate. Nor is a complete ſeries of muſical compoſitions by the beſt maſters, from the earlieſt period of counterpoint to the preſent time, to be found in any public or private library in Europe, to which I have ever had acceſs. Indeed the collectors of books for royal, collegiate, or public libraries, ſeem never to have had an idea of forming any regular plan for making ſuch a collection; and though many individuals have been poſſeſſed of a rage for accumulating muſical curioſities, it has ſeldom happened that they have extended their ideas to muſical productions in *general;* ſo that no more than one claſs or ſpecies of compoſition has been completed by them, and even this, at the death of the proprietor, is uſually diſperſed.

"In a library, formed upon ſo large a ſcale as that of the king of France at Paris, the Bodleian, and Muſeum in England, it ſeems as if muſic ſhould be put on a level with other arts and ſciences, in which every book of character is procured. In a royal or ample collection of pictures, ſpecimens at leaſt of every great painter are purchaſed, and no private library is thought complete while the writings of a ſingle poet of eminence are wanting."

As the author, in a note upon this paſſage has given a ſketch of ſuch a muſical library as he thinks wanting, and which has been inſerted in the Ecyclopédie Methodique, we ſhall give it a place here, in his own words.

In forming ſuch a muſical library as would aſſiſt the ſtudent, gratify the curious, inform the hiſtorian, and afford a comparative view of the ſtate of the art at every period of its exiſtence, it were to be wiſhed that the books, when collected, were claſſed in a way ſomewhat like the following:

Maſſes Motets	to Latin words,	From the infancy of counterpoint to the year 1500.
Madrigals Songs in parts, and ſingle ſongs	In modern languages,	

The ſame continued to the year 1600; to which ſhould be added:

Services and full anthems Verſe and ſolo anthems Pſalmody, in two or more parts	To Engliſh words, as well as thoſe of other modern languages.

The ſame claſſes completed to the year 1700, with the addition of maſques, intermezzi, ſerenatas,

Operas, ſerious and comic.
Oratorios.
Cantatas.
Fantaſias and Recercari, for various inſtruments.

All the above continued to the preſent time, with an addition of full

Concertos, ſymphonies, and overtures.
Concertos, with ſolo parts for particular inſtruments.
Quintets.
Quatuors.
Sonatas, or trios, duets, and
Solos for every inſtrument for which muſic has been compoſed, including voluntaries for the organ, and leſſons for every ſpecies of keyed inſtrument.

The muſic publiſhed in ſingle parts ſhould be ſcored, and that publiſhed in partition tranſcribed, in ſingle parts; to be alike ready for the eye or the ear, for the theoriſt to examine, or the practical muſician to perform.

And in order that ſcience and criticiſm may keep pace with the mechaniſm and practice of the art, all the treatiſes, tracts, and eſſays, both in the dead and living languages, ſhould be collected, arranged chronologically, and aſſigned a particular portion of the library.

The Bodleian library, the Muſeum, and Royal Society, with ſome other libraries, have copies of new books ſent to them, by the Stationers' company, and by individuals either by law or by courteſy; and when once ſuch a foundation of old muſic is laid as we have here ſketched out, it would ſoon become a cuſtom, or might be made one by the legiſlature, for copies of all muſic that is publiſhed in England, as well as books on the ſubject, to be preſented by the authors or editors to the public library. And the ſame means ſhould be uſed for procuring all foreign muſical publications as are employed in accumulating books from all parts of the globe, where the preſs is at work.

The librarian, *cuſtode*, or keeper of theſe books, ſhould be a good practical muſician, as well as theoriſt and ſcholar, in order to know the worth of the productions he has in charge, and to be enabled to give inſtructions at leaſt how to draw ſingle parts from a ſcore, and ſcore ſingle parts; to explain difficulties to the ignorant, and diſplay curioſities to the learned; to know the rank each compoſer ſhould hold in every claſs, and perhaps record the degree of reſpect that has been paid to him by his contemporaries, and which is due to him from poſterity.

LIBRATA Terræ, a portion of ground, containing four oxgangs, and every oxgang thirteen acres.

It was anciently ſo much land as was yearly worth 20*s*. and in Henry III.'s time, he that had *quindecim libratas terræ*, was to receive the order of knighthood.

Some ſay, that as money is divided into pounds, ſhillings, pence, and farthings, the ſame degrees are to be obſerved in the diviſion of lands; and, therefore, as *quadrans* ſignifies a farthing, ſo *quadrantata* is the fourth part of an acre; *obolata*, an half; *denariata*, a whole acre; *ſolidata*, 12 acres; and *librata*, 20 times 12 acres; *i. e.* 240 acres.

This is the ſame with what in Scotland is called *pound-land* of old extent.

LIBRATION *of the Moon*, in *Aſtronomy*. Few perſons are unacquainted with the remarkable circumſtance, that the moon always preſents nearly the ſame face to the earth. Sometimes, however, we ſee rather more of the eaſtern, and ſometimes rather more of the weſtern hemiſphere than at other times. The ſame occaſional variation is likewiſe obſervable in the north and ſouth hemiſpheres. This ſenſible oſcillation, partly real and partly apparent, is called the libration of the moon.

Galileo was the firſt aſtronomer who obſerved and attempted to explain the libration of the moon; his explanation was, however, very imperfect, not being aware that the moſt conſiderable part of the libration ariſes from the unequal motion of the moon in its orbit, as was firſt diſcovered by Hevelius in 1654. Laplace gives the following popular explanation of the aſtronomical appearances connected with the libration. For the phyſical explanation the reader is referred to a memoir of Lagrange (Memoires de l'Academie) which obtained the prize in 1764, and likewiſe to the Berlin Memoirs, 1780, in which the ſame author has inveſtigated this ſubject at great length.

To form a juſt idea of the principal cauſes of this phenomenon, we ſhould conſider the diſk of the moon, when ſeen from the centre of the earth, as terminated by a great circle of the lunar globe, perpendicular to its radius vector (a line joining the centres of the earth and moon); on the plane of this great circle, that hemiſphere of the moon which is preſented to the earth is projected, and the various appearances of this hemiſphere are connected with the rotatory motion of the moon on its axis. If this motion did not exiſt, its radius vector would trace a great circle on its ſurface, every part of which would be ſucceſſively turned towards us, during every lunar revolution. But at the ſame time that the radius vector would deſcribe this circumference, the moon, by its revolution, brings very nearly the ſame point of its ſurface to the radius, and conſequently turns the ſame hemiſphere towards the earth. The inequalities in the moon's motion produce ſome ſlight variation in the appearance of this hemiſphere; for as the motion of rotation does not partake perceptibly of theſe inequalities, it is variable with reſpect to the radius vector, which thus interſects its ſurface at different points. The lunar globe, therefore, makes, with reſpect to this radius, oſcillations correſponding to the inequalities of its motion, which cauſe ſome part of its ſurface to be alternately concealed, and expoſed to our obſervation.

This libration, referred to the ecliptic, is called the *libration in longitude*. But the moon has another *libration in latitude* perpendicular to this, and by which the parts near the poles of the axis of rotation of this globe alternately appear and diſappear. To comprehend this phenomenon, let us ſuppoſe the axis of rotation to be perpendicular to the ecliptic. When the moon is in its aſcending node, theſe two poles will be at the northern and ſouthern extremity of the viſible hemiſphere. In proportion as the moon is raiſed above the ecliptic, the northern pole and the parts ſurrounding it will diſappear, while the regions near the ſouth pole will become more and more viſible, till the moon, having arrived at its greateſt northern latitude, will return again towards the ecliptic. Theſe phenomena will then be reproduced in the reverſe order; and when the moon, having reached its deſcending node, paſſes below the ecliptic, the north pole will preſent the ſame phenomena as the ſouthern one had offered.

The axis of rotation of the moon is not always perpendicular to the ecliptic, and its inclination produces appearances which may be underſtood by ſuppoſing the moon to move upon the plane of the ecliptic, ſo that its axis ſhould always remain parallel to itſelf; it is obvious that then each pole will be viſible during half a revolution of the moon round the earth, and inviſible during the other half, ſo that the regions which ſurround them will be alternately viſible and inviſible.

And laſtly, the obſerver is not at the centre of the earth but at the ſurface. It is the viſual ray drawn from his eye to the centre of the moon, which determines the middle of the viſible hemiſphere, and it is clear that from the effect of the lunar parallax, this radius cuts the ſurface of the moon at different points, according to its height above the horizon.

All theſe cauſes produce only an apparent libration of the lunar globe; they are mere optical illuſions, and do not affect its real motion of rotation; it is nevertheleſs true, that this rotation may be ſubject to ſome ſmall irregularities, but they have not yet been detected by obſervation.

It is not the ſame with the inequalities of the lunar equator. In endeavouring to determine its poſition by obſervations of ſpots on the moon, Dominique Caſſini was led to this remarkable reſult, which contains all the aſtronomical theory of the real libration of the moon. If we conceive a plane to paſs through the centre of the moon, perpendicular to its axis of rotation, which plane will coincide with that of the equator; if, moreover, we imagine a ſecond plane parallel to that of the ecliptic, and a third plane, which is the mean plane of the lunar orbit, theſe three planes will always have a common interſection. The ſecond plane, ſituated between the two others, forms with the firſt an angle of about $1° 30' 10''$, and with the ſecond, an angle of $5° 8' 49''$. Thus the interſections of the lunar orbit with the ecliptic or its nodes, always coincide with the mean nodes of the lunar orbit, and, like them, have a retrograde motion, whoſe period is $18^y\ 223^d\ 7^h\ 13'\ 17''.7$. In this interval the two poles of the equator and of the lunar orbit deſcribe ſmall circles parallel to the ecliptic, in ſuch a manner, that theſe three poles are conſtantly ſituated on a great circle of the heavenly ſphere.

LIBRATION *of the Earth*, is a term applied by ſome aſtronomers to that motion, whereby the earth is ſo retained in its orbit, as that its axis continues conſtantly parallel to the axis of the world. See PARALLELISM.

This Copernicus calls the *motion of libration;* and may be illuſtrated thus: Suppoſe a globe, with its axis parallel to that of the earth, painted on the flag of a maſt, moveable on its axis, and conſtantly driven by an eaſt wind, while it ſails round an iſland; it is evident, the painted globe will be ſo librated, as that its axis will be parallel to that of the world, in every ſituation of the ſhip.

LIBSHAUSEN, in *Geography*, a town of Bohemia, in the circle of Leitmeritz; 15 miles S.W. of Leitmeritz.

LIBUN, a town of Bohemia, in the circle of Bolcſlaw; 16 miles N.E. of Jung-Buntzel.

LIBURNIA, in *Ancient Geography*, a province of Illyria, along the Adriatic ſea, over-againſt Italy, between Dalmatia on the ſouth, and Iſtria on the north. This peninſula runs into the ſea between the rivers Tedanius and Titius, now the Zermagne and Kerka, the latter of which was in the Roman times the boundary between Liburnia and Dalmatia. Zara, anciently Jadera, and afterwards Diadora, was once the capital of Liburnia. The ruins of Burnum, the Liburnia of Strabo, are to be ſeen on the right hand of the Titius, or Kerka, in the deſert of Bukoviza.

LIBURNII, or LIBURNIANS, the denomination of one of the three nations which ſprang from the Illyrians, having left the country which bore their name in Illyria. They were probably the firſt people who penetrated into Italy by its northern part, about the ſixteenth century before the Chriſtian èra, and in proceſs of time ſettled along the ſea-coaſt. In Italy they were divided into three branches, *viz.* the Apuli, the Pædiculi, or Padicli, and the Calabri. The country which they inhabited was called Apulia by the Romans, or Japygia by the Greeks.

LIBYA, the name anciently given to that part of the world called *Africa* (which ſee), comprehending in its whole extent Egypt, Marmarica, Cyrenaica, the Syrtic region, Libya proper, Numidia, Mauritania, Libya or Africa interior, Ethiopia, &c.; and bounded on the N. by the Mediterranean, on the E. by the iſthmus of Suez, the Red ſea or the Arabian gulf, and the Eaſtern ocean; on the S. by the Ethiopian ſea; and on the W. by the Atlantic ſea. In a more reſtricted ſenſe, the name has been applied to that diviſion of Libya or Africa called “ Libya Interior,” which lay weſtwards with regard to the other diviſion of Ptolemy denominated Æthiopia ſub Ægypto. The line of diviſion between theſe two parts, marked by this geographer, paſſes through Darnis, a city on the confines of Cyrenaica. In this weſtern part, called Libya interior, the inhabitants conſiſted chiefly of the Gætuli, Garamantes, Nigritæ, and Heſperian Ethiopians, beſides many other people, leſs conſiderable and leſs known. See Gætulia, Garamantes, and Ethiopia.

Libya, a town of Hiſpania interior. Anton. Itin.

Libya *Palus*, a lake of Africa, properly ſo called. Ptolemy.

LIBYARCHÆ, a people of Africa, in Libya, and more particularly in Marmarica, of which they occupied the northern part. Ptolemy.

LIBYCUM Mare, or ſea of Libya, a name given by the ancients to part of the Mediterranean ſea, which adjoined the coaſt of the Maræotide Libya; bounded on the W. by the ſea of Africa, and on the E. by the ſea of Egypt.

LIBYCUS Mons, a mountain of Egypt, near the city of Thebes. The Nile ran between this mountain and the Sacred mountain.

LIBYPHÆNICES, a name given by ſome authors to the Phœnician colonies eſtabliſhed in Africa, in contradiſtinction to the Syro-phœnicians, or the Phœnicians of Aſia.

LIBYSSA, a maritime town of Aſia, in Bithynia, ſituated between Chalcedonia and Numidia. It was the place of Hannibal’s retreat for avoiding the hatred of the Romans.

LICANIA, in *Botany*, Aublet. Guian. 119. t. 45. See Hedycrea.

LICAVO, in *Geography*, a town of the iſland of Corſica; 20 miles E. of Ajazzo.

LICE. See Louse.

Lice *of trees*. See Aphis.

LICEA, in *Botany*, a genus of *Fungi*, Schrad. Nov. Gen. 16. Perſ. Syn. 195, the ſpecies of which have been, ſome of them, referred to *Trichia*, *Sphærocarpus*, (not the true *Sphærocarpus* of Micheli, which belongs to the order of *Algæ*), and *Didymium*. Its character is thus given by Perſoon.

Peridium, (or *caſe*,) naked, roundiſh, or ſomewhat indeterminate in ſhape, brittle. Internal *membrane* wanting. Seminal *powder* deſtitute of *fibres*.

The ſpecies he enumerates are five, all very minute productions, ſcarcely bigger than pins’ heads, found chiefly on rotten wood of the fir kind.

1. L. *bicolor*, the firſt ſpecies, (Didymium parietinum; Schrad. Nov. Gen. 24. t. 6. f. 1.) is ſingular for being found on white-waſhed mud walls. Its outer caſe is dark olive, encloſing a quantity of bright yellow *powder*, which, according to Schrader’s generic character of *Didymium*, ſhould be intermixed with *fibres*. Within is another, much ſmaller, brown, likewiſe globular, rather hard and rough *caſe*, full of a coarſer brown *powder*.

2. L. *circumſciſſa*, (Sphærocarpus ſeſſilis; Bulliard t. 417. f. 5.), is brown and cluſtered, opening by a circular diviſion. Found in autumn or winter, between the bark and wood of the Aſpen-tree.

3. L. *puſila*, Schrad. Nov. Gen. 19. t. 6. f. 4, is hemiſpherical, poliſhed, cheſnut-coloured, with a blackiſh powder.

4. L. *variabilis*, ibid. 18. t. 6. f. 5, 6, is various in figure and colour, reddiſh-brown; the powder dirty yellow.

5. L. *flexuoſa*, is deſcribed by Perſoon as creeping or oblong, ſhining red brown, ſomewhat wavy, with ſaw-like inciſions. Theſe three laſt are found on fir wood.

Some of Schrader’s ſpecies are removed by Perſoon to other genera. Albertini and Schweniz, in their *Conſpectus Fungorum*, have deſcribed two new ſpecies.

L. *ſtrobilina*, n. 303. t. 6. f. 3, found on the inner ſides of the ſcales of cones of *Pinus Picea*, growing regularly in cluſters, brown, with a dull yellow powder.

L. *incarnata*, n. 304. t. 10. f. 6, obſerved once only, on rotten fir wood in a moiſt foreſt, the beginning of October. It is crowded, fleſh-coloured with a ſteely gloſs; the powder at firſt white, then fleſh-coloured, finally deep roſe-coloured.

LICENCE, Licentia, in *Law*, a power or authority given to another to do ſome lawful act.

A licence is a perſonal power, and cannot be transferred to another; though a licence may be granted to a man and his aſſigns. (12 Hen. VII. 25.) There may be a parol licence, as well as by deed in writing; but if it be not for a certain time, it paſſes no intereſt. (2 Nelſ. Abr. 1123.) By licence a man may practiſe phyſic and ſurgery in London: licences are alſo neceſſary for carrying on various trades and profeſſions, on which a duty is laid, for the purpoſe of raiſing a revenue to government. If a leſſor licenſe his leſſee (who is reſtrained by covenant from aliening without licence) to alien; and ſuch leſſor dies before he aliens, this is no countermand of the licence: ſo it is if the leſſor grants over his eſtate. (Cro. Jac. 133.) But where a lord of a manor for life granteth a copyhold tenant to alien, and dieth, the licence is deſtroyed, and the power of alienation ceaſeth. (1 Inſt. 52.) Copyhold tenants leaſing their copyhold for a longer time than one year, are to have a licence for it; or they incur a forfeiture of their eſtates. (1 Inſt. 63.) If any licence is given to a perſon, and he abuſes it, he ſhall be adjudged a treſpaſſer *ab initio*. 8 Rep. 146.

Licence *to alien in mortmain*. Alienations in mortmain to eccleſiaſtical perſons, &c. are reſtrained by ſeveral ſtatutes; but the king may grant licence to any perſon or bodies politic, &c. to alien or hold lands in mortmain. 27 Ed. I. 7 & 8 W. III. cap. 37.

Licence is alſo uſed, in the *Civil Law*, for a permiſſion or leave granted by a ſuperior.

Juſtinian appointed four years to be ſpent in the ſtudy of the law; after which, thoſe who had diſcharged this obligation, were ſaid to have licence or permiſſion to retire from ſtudy.

Licence is alſo applied to the letters, or certificates, taken out in univerſities, whether in law, phyſic, or divinity.

Licence in the Sorbonne, denotes a period of two years, which the bachelors are obliged to paſs in aſſiſting at acts, and diſputing in them, to qualify themſelves for being admitted doctors. See Degree.

Licence, *letter of*. See Letter.

Licence *to ariſe*, in *Law*, *Licentia ſurgendi*, is a liberty, or ſpace of time given by the court to a tenant, who is eſſoined *de malo lecti* in a real action, to riſe out of his bed, and go about his buſineſs.

Licence *for election of biſhops*. See Conge *d’Elire*.

Licence *of marriage*. Biſhops have power to grant licences for this purpoſe; and perſons marrying any perſon without publiſhing the banns of matrimony, or without licence, incur a forfeiture of 100*l*. &c. by 7 & 8 W. III. cap. 35. See alſo ſtat. 26 Geo. II. c. 33. See Marriage.

Licence, in *Painting*, are the liberties which the painter takes in diſpenſing with the rules of perſpective, and the other laws of this art.

LICENCE, *poetical*, is the liberty which poets claim of diſpenſing with the ordinary rules of grammar.

Anciently poets had much greater licences than are now allowed. The Greeks, by having recourſe to the ſeveral dialects of their tongue, could lengthen out a word, if it were too ſhort, or retrench ſomething from it, if it were too long. The old poets did what they pleaſed with their language, and ſubjected it not only to all their neceſſities, but their caprices too:

> “ Et data Romanis venia eſt indigna poetis.”

But theſe became ridiculous in courſe of time; and the poets are now deſpoiled of moſt of their ancient privileges.

LICENCE, in *Muſic*, a ſeeming breach of rule.

There are licences in harmony as well as in melody. As the laws of counterpoint were at firſt arbitrary, and formed of narrow and contracted principles, they became ſubject to change at the caprice or taſte of the compoſer, and at all times, the breach of an old rule by a great maſter became the eſtabliſhment of a new one for a compoſer of inferior fame. At preſent, except the two fundamental prohibitions of *two* 5ths and *two* 8ths in regular progreſſion, there is no rule that has not been happily infringed, at one time or other, by ſome man of genius; ſo that it may be ſaid, perhaps, that whatever does not offend a cultivated ear in harmony or melody, is allowable in muſic. Of the diſallowances of former times, there was none that ſeemed ſo inviolable as falſe relation, ſuch as naturals againſt ſharps, or ſharps againſt naturals: in the perfect concords, as a redundant 5th, a diminiſhed 4th, or a falſe octave. Yet theſe licences, of late years, have been ſo frequently practiſed, as almoſt to eſtabliſh them into rules. The good or bad *effect* determines the expediency.

If the effect be good, it is a *licence*, if bad, a *fault*. Emanuel Bach, we believe, was the firſt who ventured to *hazard* a falſe 8th, or a ſharp againſt a natural in melody. But Haydn and Mozart having ſince frequently violated the rule with effect, it almoſt ceaſes to be a licence, and every ſonatteur in compoſition aſſumes the ſame privilege. Theſe licences, however, can only be defended on the principle of *appoggiaturas*, as they are certainly inharmonic.

LICENSED CURATE. See CURATE.

LICENSING *of Books*. See *Liberty of the* PRESS, and PRINTING.

LICENTIA CONCORDANDI, in *Law*, is that licence for which the king's ſilver is paid in paſſing a fine, mentioned in 12 Car. II. cap. 12.

LICENTIA *loquendi*. See EMPARLANCE.

LICENTIA *transfretandi*, a writ or warrant directed to the keeper of the port of Dover, or other ſea-port, commanding them to let ſuch perſons paſs over ſea, who have obtained the king's licence for the purpoſe. Reg. Orig. 193.

LICENTIATE, or LICENCIATE, he who has obtained the degree of a licence.

Moſt of the officers of judicature in Spain are known by no other name than that of licentiates. To paſs licentiate in the common law, civil law, or phyſic, they muſt have ſtudied ſeven years; in divinity, ten.

LICENTIATE, among us, is uſually underſtood of a phyſician, who has a licence to practiſe, granted him by the College of Phyſicians, or by the biſhop of the dioceſe.

A perſon practiſing phyſic without ſuch licence, in caſe his patient dies under his hands, is guilty of felony in the eye of the law.

LICETO, FORTUNIO, in *Biography*, a celebrated phyſician and philoſopher, was born at Rapallo, in the ſtate of Genoa, on the 3d of of October, 1577, where his father, Joſeph Liceto, was alſo a phyſician. His education was conducted with great care, and he afterwards ſpent four years in ſtudy at Bologna, which he quitted in 1599. He then ſettled at Piſa, where he ſoon obtained the profeſſorſhip of philoſophy, which he filled with ſo much reputation, that he was invited to the ſame chair in the univerſity of Padua in 1609, which he occupied until 1636. He removed at that time to Bologna, in conſequence of failing to obtain the profeſſorſhip of medicine, which became vacant by the death of Cremonini. But the Venetian ſtates very ſoon perceived, and acknowledged the loſs which the univerſity of Padua had ſuſtained by the retirement of Liceto; and when a vacancy occurred in the firſt chair of the theory of phyſic in 1645, he was induced, by the preſſing invitations which were made to him, to return to Padua, where he held the profeſſorſhip, at an advanced ſalary, till his death in 1657. He was a very copious writer, having publiſhed upwards of fifty treatiſes upon medical, moral, philoſophical, antiquarian, and hiſtorical ſubjects; but they are no longer ſufficiently intereſting to require a detail of their titles. He was a man of conſiderable erudition, and an ardent admirer of the doctrines of Ariſtotle; but diſplayed little acuteneſs in reſearch or originality of conception. He wrote a treatiſe “ De Lucernis Antiquorum reconditis,” in which he maintains the opinion, that the ancients were poſſeſſed of a ſecret proceſs for making inconſumable lamps, by ſome mode of condenſing the vapour into oil, which returned to the reſervoir, and was extremely credulous in reſpect to the pretended diſcoveries of ſepulchral lamps of this ſort. But his opinions were poſitively refuted by profeſſor Ferrari of Padua, in a treatiſe, “ De veterum lucernis ſepulchralibus.” Among his medical writings, his treatiſe, “ De Monſtrorum Cauſis, Naturâ, et Differentiis,” is beſt known; but it is replete with inſtances of credulity, and with the fables and ſuperſtitions of his predeceſſors, and contains a claſſification of the monſters, which had been previouſly deſcribed, without any correction from his own obſervations. The beſt edition is that of Gerard Blaſius, in 1668. Eloy Dict. Hiſt. Gen. Biog.

LICETO, in *Ornithology*. See CENOTZQUI.

LICH, in *Geography*, a town of Germany, in the principality of Hohen-Solms, on the Wetter; 12 miles E.S.E. of Wetzlar. N. lat. 50° 31′. E. long. 8° 49′.

LI-CHAN, a town of Corea; 17 miles E.S.E. of Het-ſin.

LICHANOS, in the *Ancient Muſic*, is the name of the 3d ſound of the two loweſt tetrachords in the ſyſtem of the Greeks; as this ſound was produced by the index or fore-finger, which was called *lichanos*. The 3d ſound of the loweſt tetrachord aſcending, was that of the *hypate*, and called lichanos-hypaton, ſometimes hypaton-diatonos, enharmonic, or chromatic, according to the genus. That of the 2d, or mean tetrachord, was called lichanos-meſon, or Meſon diatonos.

LICHEN, in *Botany*, λειχην, a name borrowed by the Romans from the Greeks for the diſeaſe called a tetter, or ringworm, and applied by both to ſome plant of a moſſy nature, growing on ſtones, which was thought a cure for ſuch complaints. What the *Lichen* of the ancients may have been is very obſcure, and the enquiry is given up by

Dillenius himſelf in deſpair. He has applied this name to the *Marchantia* of other writers, under which he comprehends the very diſtinct genera of *Targionia*, *Riccia* and *Sphærocarpus*; ſee his *t.* 78. Linnæus much more happily adopts the *Lichen* of Tournefort and Micheli, whoſe cruſtaceous and ſcurfy nature, in many inſtances, is aſſociated with the original idea of the word. This Dillenius terms *Lichenoides*, from which he diſtinguiſhes *Coralloides* and *Uſnea*, but all three are comprehended in the Linnæan *Lichen*.—Linn. Gen. 566. Schreb. 767 Mart. Mill. Dict. v. 3. Hudſ. 523. Juſſ. 7. Tourn. t. 325. Mich. Gen. t. 36—53. Hedw. Theor. 120. t. 30, 31. Lamarck. Illuſtr. t. 878. (Lichenoides; Dill. Muſc. 124. t. 18—30. Coralloides; ibid. 75. t. 14—17. Uſnea; ibid. 56. t. 11—13.)—Claſs and order, *Cryptogamia Algæ*. Nat. Ord. *Algæ*, Linn. Juſſ.

Eſſ. Ch. Male, ſcattered powdery warts?—Female, ſhields or tubercles, in whoſe diſk the ſeeds are lodged.

Obſ. Linnæus takes for male what are now known to be the female flowers, and, *vice verſâ*, takes for the female thoſe powdery heads, warts or fiſſures in the frond, which are by ſome thought buds, by others the male bloſſoms. We have therefore ventured to reverſe his character of this vaſt genus, which properly embraces an entire natural order. (See Lichenes.) It is neceſſary however here to give a compendious view of *Lichen*, as underſtood by Linnæus. The ſpecies defined in the 14th edition of his *Syſtema Vegetabilium* amount to 130; but the inſufficiency of this catalogue, to comprize all the Lichens in the world, will be ſtrikingly evident, when we conſider that about 345 Britiſh ſpecies have already appeared in Engliſh Botany, and that ſeveral more remain to be publiſhed there. We ſhall on this occaſion prefer illuſtrating the nine ſections, into which Linnæus has divided his genus, by ſpecies of his own, rather than by new ones. Moſt of theſe exiſt in his herbarium, few or none of them being adopted from Dillenius or other cryptogamiſts, which cannot ſo generally be ſaid of the Linnæan proper *Muſci*.

Sect. 1. *Leproſi tuberculati*. Twenty-one ſpecies.

Theſe conſiſt of a leprous perennial cruſt, of more or leſs denſity, hardneſs and ſmoothneſs, its ſurface often granulated, ſometimes powdery, of various colours, (white, grey, greeniſh, or yellowiſh,) in different ſpecies; the internal ſubſtance however is generally very white, often with a green ſtratum immediately below the actual ſurface. This cruſt ſpreads circularly, with more or leſs regularity, over ſtones, rocks, earth, the bark of trees, or even dead wood, to which it frequently adheres ſo ſtrongly, that, being moreover in ſome caſes very thin, it cannot be ſeparated entire. Fibrous roots, of the cartilaginous or chalky ſubſtance of the cruſt, may be detected in ſpecies that grow upon uneven bodies, or on the ground. The circumference or border of the cruſt is always thin; often marked with a dark-coloured line; occaſionally beautifully fibrous and branched. The central part firſt decays, and finally crumbles away, young plants, of the ſame or a different ſpecies, ſoon afterwards ſpringing up there from ſeed; while the marginal boundary of the original cruſt, if its ſituation be convenient for the purpoſe, is ſometimes extended to ten times its uſual limits.

The cruſt of the thicker or tartareous ſpecies, more eſpecially, is liable to aſſume a red or purpliſh hue, from the acceſs of volatile alkali; which is ſeen when certain animal ſubſtances fall upon theſe plants in their native ſituations. The obſervation of this has led to the uſe of ſome of them in dyeing; but ſeveral of the next and following ſections are preferable for this purpoſe.—The female fructification, or rather the fruit itſelf, of this firſt ſection, is, or ought to be, convex, without any border; except in a young ſtate, when there is uſually a thin margin of its own ſubſtance. The diſk is moſt frequently black, in ſome brown, pale grey, or reddiſh; and in its ſolid internal ſubſtance are innumerable, vertical, cloſed cells, each containing about eight minute ſeeds. It may be obſerved that the increaſing convexity of this diſk ſeems well calculated to allow room for the ſwelling of the ſeeds; and finally, by ſeparating or expanding the cells, to promote the eſcape of their contents. The ſubjacent cruſt, under each tubercle, is elevated into its core or centre, ſo as to form a nucleus there.—Diſcoveries ſubſequent to the time of Linnæus have found this ſection to be rather heterogeneous, as to the affinities of the ſeveral kinds, as will be explained hereafter. (See Lichenes.) Our purpoſe is now merely to indicate the moſt remarkable ſpecies, for the elucidation of our author.

L. *ſcriptus*. Syſt. Veg. ed. 14. n. 1. Linn. Sp. Pl. 1606. (Lichenoides cruſtâ tenuiſſimâ, peregrinis velut literis inſcripta; Dill. Muſc. 128. t. 18. f. 1. Opegrapha ſcripta; Engl. Bot. t. 1813.)—Leprous, whitiſh, bearing ſmall, black, branched, letter-like lines.—Common on the ſmooth bark of young trees. The *cruſt* is a fine, inſeparable, whitiſh film. The *fructification* conveys an idea of Hebrew or Chineſe writing, in a very ſtriking manner. This plant however, as underſtood by Linnæus, Dillenius, and moſt of their followers till lately, embraces at leaſt 30 known ſpecies, together conſtituting a moſt natural and diſtinct genus, of which we ſhall ſpeak hereafter more than once, under the name of *Opegrapha*.

L. *geographicus*. n. 2. Sp. Pl. 1607. Engl. Bot. t. 245. (Lichenoides nigro-flavum, tabulæ geographicæ inſtar pictum; Dill. Muſc. 126. t. 18. f. 5.)—Leprous, yellowiſh, with black lines reſembling a map.—Frequent on the hard rocks of mountainous countries, and almoſt as hard itſelf, at leaſt to the touch, forming broad inſeparable patches, of a vivid greeniſh-yellow, or lemon-colour, curiouſly ſtreaked and dotted with black marks, compoſed of the *tubercles*, which are flat, not elevated above the *cruſt*, frequently confluent or crowded.

Of this ſpecies, *atrovirens*, n. 3, is thought to be a variety, or rather an early ſtage of its growth.

L. *ſanguinarius*. n. 9. Sp. Pl. 1607. Engl. Bot. t. 155. (Verrucaria ſanguinaria; Hoffm. Pl. Lich. t. 41. f. 1.)—Cruſt tartareous, white, poliſhed, uneven. Tubercles black, without a border; bright red within. Found on granite rocks; copiouſly upon Cromford Moor, Derbyſhire; very rarely on the rugged barks of trees. This is extremely remarkable for the internal ſtains of bright red, perceived when the *tubercles*, and even ſome parts of the *cruſt*, are broken; which reſembling blood, gave occaſion to the very apt name. Several ſpecies, deſtitute of that property, and which otherwiſe but imperfectly reſemble this, are confounded with it by Linnæus, Hudſon, Lightfoot, and others.

L. *ventoſus*. n. 17. Sp. Pl. 1607 Engl. Bot. t. 906. (L. cruentus; Web. Goett. 184. t. 1. L. flaveſcens; Jacq. Miſc. v. 2. 79. t. 9. f. 1. L. gelidus; Hudſ. 528. Lichenoides tartareum lividum, ſcutellis rufis, margine exili; Dill. Muſc. 133. t. 18. f. 14.)—Cruſt tartareous, rugged, pale ſulphur-coloured. Shields irregular, a little ſwelling, blood-red, with a narrow pale border. Found on large expoſed granite or ſand-ſtones, in mountainous places, forming patches as broad as the hand, eaſily pared from the rock when moiſt. The cruſt is of an elegant pale lemon or ſulphur-colour, turning white the ſecond year, but in either caſe it is ſtrikingly contraſted with the crimſon *ſhields*. Theſe having a permanent border, of a different ſubſtance and colour from their diſk, are *ſhields*, not *tubercles*, ſo that the plant belongs properly to the ſecond ſection of its genus, of which we ſhall next give a few examples, and to which it is referred by Murray in Syſt. Veg. ed. 14, under Jacquin's name of *flaveſcens*, ſo that it occurs twice in that edition.

Sect. 2. *Leproſi ſcutellati*. Twelve ſpecies.

The cruſt of theſe is almoſt univerſally tartareous, ſometimes very thick, leſs hard than in ſeveral of the former, and more eaſily ſeparable from the ſtones or bricks on which it may happen to grow. The eſſential difference reſides in the fructification, which conſiſts of flattiſh ſhields, or, as Dillenius terms them, ſaucers, whoſe elevated permanent margin is of the ſubſtance and colour of the cruſt, not of the diſk.

L. *tartareus*. n. 25. Sp. Pl. 1608. Engl. Bot. t. 156. (Lichenoides cruſtaceum et leproſum, acetabulis majoribus luteis, limbis argenteis; Dill. Muſc. 132. t. 18. f. 13.)—Cruſt tartareous, rugged, granulated, whitiſh. Shields tawny buff-coloured, with a white margin.—The largeſt of the cruſtaceous Lichens; very frequent upon rocks in the north, and important as an article of commerce. The diameter of the *cruſt* is ſix, eight or ten inches, and its thickneſs a quarter or half an inch. The *ſhields* are frequently half an inch wide, conſpicuous for their full buff colour, and white, ſmooth, wavy border. This ſpecies is much uſed in dyeing, being ſcraped from the rocks when fully grown, which is about the fifth year of its age, and mixed with volatile alkali and alum. It is ſold to the dyers in the form of a purple powder, called *Cudbear*, which being boiled with woollen yarn, communicates any ſhade of its own colour that may be deſired, but does not dye vegetable ſubſtances. This colour is by no means permanent, being far inferior, in that reſpect, to what is given by the Orchall of the Levant, *Lichen Roccella*.

L. *frigidus*. n. 24. Swartz Meth. Muſc. 36. t. 2. f. 4. Engl. Bot. t. 1879, found on the Scottiſh mountains, is pretty generally believed to be a mere variety of *tartareus*, with a thinner *cruſt*; but it ſeems to differ in throwing out ſlender branched briſtly proceſſes, not found in the former.

L. *Perellus*. n. 32. Linn. Mant. 132. Engl. Bot. t. 727, is like *tartareus* on a ſmaller ſcale, with *ſhields* of the ſame white colour as the *cruſt*, and is uſed likewiſe for dyeing purpliſh colours, chiefly in the ſouth of France.

L. *upſalienſis*, n. 33. Sp. Pl. 1609. Engl. Bot. t. 1634, differs from *Perellus* as *frigidus* does from *tartareus*, in having ſlender awl-ſhaped briſtles protruded from the cruſt.

L. *ſubfuſcus*. n. 30. Sp. Pl. 1609. Engl. Bot. t. 2109. (Lichenoides cruſtaceum et leproſum, ſcutellis ſubfuſcis; Dill. Muſc. 134. t. 18. f. 16.)—Cruſt thin, continued, ſmoothiſh, browniſh-white. Shields ſeſſile, ſlightly convex, reddiſh-brown, with a tumid, whitiſh, entire border.—This is one of the thinneſt, and uſually leaſt tartareous, of the preſent ſection, and is very common every where on the ſmooth barks of trees, being diſtinguiſhed by its copious, bay or cheſnut *ſhields*, whoſe white ſmooth border renders them conſpicuous. Their diſk is ſometimes curiouſly proliferous, which happens alſo in *tartareus*. Sometimes it is parti-coloured, or mixed with a pale waxy hue, as if withered or abortive there. Numerous ſpecies greatly reſemble this, but have been diſtinguiſhed from it and from each other, generally very ſucceſsfully, by the acuteneſs of the learned profeſſor Acharius and others.

In this ſame ſection Linnæus places his *candelarius*, ſee Engl. Bot. t. 1794, but improperly; doubtleſs from his having, at one time or other, confounded with it, as others have done, the *vitellinus* of authors, Engl. Bot. t. 1792, and *citrinus*, t. 1793. Theſe are all yellow in their *cruſt* or *frond*, as well as the *ſhields* of their margins; and ſerve to give a golden colour to candles, uſed on feſtival days in the Swediſh churches, by being mixed with the melted wax or tallow.

Some of this ſection have a lobed, though not eaſily ſeparable, cruſt, as *lentigerus*, n. 29. Engl. Bot. t. 871; and *gelidus*, t. 699. The true *ſhields* of the latter, whoſe diſk is of a fine pink colour, were not known to Linnæus, who miſtook for the fructification of this rare ſpecies certain brown warts, or proliferous excreſcences of the cruſt, which he termed *peltæ*; ſee his *Mantiſſa*, 133. Having nevertheleſs true ſhields, it properly belongs to this ſecond ſection. *L. muſcorum*, n. 31. Engl. Bot. t. 626, on the contrary, having only a black and evaneſcent border to its black convex tubercles, ſhould have been placed in the firſt.

Sect. 3. *Imbricati*. Thirteen ſpecies.

The plants of this ſection do not conſiſt of an adherent cruſt, but approach more or leſs to a leafy ſtructure, being either of a membranous, cartilaginous or gelatinous texture. The ſegments ſpread from a centre, lying over one another like tiles, the central ones being moſt divided and elevated, the marginal part more depreſſed, rather plaited than deeply cut, and moſt dilated outwards. The two ſides differ remarkably; the upper being uſually either pitted, wrinkled, warty, or beſprinkled with mealy cracks, but deſtitute of hairs, and frequently poliſhed, variouſly coloured; the under opaque, ſometimes pale or white, ſometimes quite black, always beſet with innumerable fibrous perpendicular radicles, by which it is firmly attached to the bark, wood, earth or ſtones on which the plants grow. The ſhields are horizontal, ſcattered over the upper ſurface, to which they are attached chiefly by their central part. Their border is of the ſubſtance and colour of the frond; the diſk ſomewhat deeper in hue, and much inclined to a cheſnut or tawny caſt. The mealy warts or cracks in the upper ſide of the frond are preſumed to be the male bloſſoms, becauſe no other are known. This is a miſcellaneous and unnatural combination of ſpecies, as will be explained under the next ſection.

L. *centrifugus*. n. 34. Sp. Pl. 1609. Fl. Lapp. ed. 2. 357. n. 448. t. 11. f. 2.—Imbricated, membranous; greeniſh-white and ſmooth above; white, with browniſh fibres, beneath: ſegments linear, divaricated, bluntiſh. Shields ſcattered towards the circumference, reddiſh-brown, with an inflexed, almoſt entire, border.—This is, according to Linnæus, extremely common on large ſtones throughout Lapland, where Lichens that grow on ſtones are more rare than in other places. It is of all others moſt remarkable for its centrifugal mode of growth, forming circles a foot or two in diameter, and indeed ſometimes, as we are told, eight or ten feet, conſiſting of a whitiſh band two or three inches broad, while the central part is quite decayed and obliterated. Linnæus errs in citing under this a ſynonym of Dillenius, t. 24. f. 75, which is the *conſperſus* of Acharius and Engl. Bot. t. 2097, a ſpecies found in various parts of Europe, of a more compact manner of growth and greener colour, with broader lobes and larger, concave, dark cheſnut ſhields.

L. *ſaxatilis*. n. 35. Engl. Bot. t. 603; and *omphalodes*, n. 36. Engl. Bot. t. 604; are of a more lax and leafy habit than the laſt, as well as different in colour. The former of them is very common; the latter confined to mountainous rocky heaths or moors. Both are uſed to dye browns or dull reds in the ruder ſtates of human ſociety, or amongſt the inhabitants of the alps

L. *parietinus*. n. 43. Sp. Pl. 1610. Engl. Bot. t. 194.

(Lichenoides vulgare ſinuoſum, foliis et ſcutellis luteis; Dill. Muſc. 180. t. 24. f. 76.) Imbricated, membranous, ſtellated, roundly lobed and criſped, orange-coloured; pale and fibrous beneath. Shields of the ſame colour, with a thin entire border.—One of the moſt common of its genus, very conſpicuous on old walls, as well as on rocks, wooden buildings, trees and buſhes. Its rich golden colour is moſt vivid in expoſed ſituations; aſſuming an olive, greeniſh, or greyiſh caſt in the ſhade and damp. Several ſpecies however are perhaps confounded under this by Linnæus and his followers.

L. *ſtellaris*. n. 45. Sp. Pl. 1611. Engl. Bot. t. 1697, coloured too green.—"Imbricated; leaflets oblong, laciniated, narrow, aſh-coloured. Shields brown." *Linn.*—Very common on trees. Under this a great number of ſpecies are undoubtedly confounded by Linnæus, though Acharius may poſſibly have gone too far in dividing them. Some are green when wet; others continue grey, whether moiſt or dry. The *ſhields* in all of them are of a greyiſh-black, not verging towards red, and are uſually plentifully produced.

Sect. 4. *Foliacei.* Twenty-ſix ſpecies.

What Linnæus refers to this ſection are all naturally allied to one or other ſpecies of the laſt, ſo that the two ſections ought to form but one, thoſe of the preſent being only more leafy, leſs imbricated, and in ſome caſes quite erect. Nothing however can be more miſcellaneous than this diviſion of the genus.

L. *Burgeſſii*. n. 48. Lightf. Scot. 827. t. 26. Engl. Bot. t. 300.—Gelatinous, membranous, criſped and fringed, of a dark glaucous green. Shields depreſſed, dark brown, with a leafy, criſped, elevated border.—Found on the trunks of old trees in Scotland and Wales. One of the moſt elegant of its tribe, conſiſting of dark-green patches as broad as the hand, of delicate pellucid curled and wavy *leaves*, bearing numerous *ſhields*, very remarkable on account of their leafy, complicated, wreath-like borders. *L. ornatus*, n. 71, is the very ſame ſpecies. When dry the whole frond becomes more opaque, verging towards a lead colour. This belongs to a tribe called gelatinous Lichens, which conſtitute a very natural genus, now named *Collema*. All agree in their peculiar dark-green colour, ſemi-pellucid pulpy texture, and reddiſh or tawny-olive, generally ſmall, ſhields. Some of them are placed by Linnæus in the former ſection, others in this.

L. *ciliaris*. n. 49. Sp. Pl. 1611. Engl. Bot. t. 1352; is of the ſame natural family as *ſtellaris* of the laſt order; only larger, more lax, and remarkably fringed.

L. *caperatus* n. 65. Sp. Pl. 1614. Engl. Bot. t. 654; is in like manner allied to *ſaxatilis*, &c. and is properly an imbricated ſpecies.

L. *iſlandicus*. n. 50. Sp. Pl. 1611. Engl. Bot. t. 1330. Fl. Dan. t. 155. Hoffm. Pl. Lich. t. 9. f. 1; is celebrated as a reſtorative medicine in conſumptive complaints. This with the three following of this ſection, *nivalis*, n. 51. Engl. Bot. t. 1994; *juniperinus*, n. 64. Hoffm. Pl. Lich. t. 7. f. 2; and *glaucus*, n. 67. Engl. Bot. t. 1606, all elegant ſpecies, form a natural aſſemblage, which Acharius has ſeparated, with ſome others, under the generic name *Cetraria*. See LICHENES.

L. *ampullaceus*. n. 54. Sp. Pl. 1613. (Lichenoides tinctorium glabrum veſiculoſum; Dill. Muſc. 188. t. 24. f. 82.), ſee Hoffm. Pl. Lich. t. 13. f. 2. is only a morbid variety of the laſt, *glaucus*, cauſed apparently by the wound of ſome inſect, which produces a ſort of gall. The original ſpecimen of this, having been ſtolen by a foreigner, more curious than honeſt, from the Dillenian herbarium about thirty or thirty-five years ago, was detected by the late profeſſor Sibthorp when abroad, in this perſon's collection, and recovered. It is not however reſtored to its original place, where the figure only is now found. But this is of the leſs conſequence, as Mr. Menzies has gathered the plant in the very ſame ſtate, which has been diſſected in our preſence, and its importance as a ſpecies thus falls to the ground. By the manner in which the hiſtory of this Lichen is related by our friend Mr. Turner, Tr. of Linn. Soc. v. 7. 112, it might ſeem that the excellent profeſſor Von Jacquin was the thief, from which we think it eſſential to exculpate him, nor did Mr. Turner mean to imply any ſuch thing.

To the ſection in queſtion belong ſeveral ſpecies of a very diſtinct tribe, named *Phyſcia* by Acharius (but ſince ſunk in his *Parmelia*, the above *Cetrariæ* being ſeparated from it), of which the following are examples.

L. *farinaceus*. n. 56. Sp. Pl. 1613. Engl. Bot. t. 889. (Lichenoides ſegmentis argutioribus, ad margines verrucoſis et pulverulentis; Dill. Muſc. 172. t. 23. f. 63.)—Leafy, much-branched, upright, leathery, glaucous-aſh-coloured, ſmooth, pitted; the branches tapering, ſtudded with lateral, convex, pale, mealy warts. Shields ſcattered, ſtalked, flat, pale-buff.—Common on trees, but the ſhields are extremely rare, whence L. *faſtigiatus*, Ach. Prod. 175. Engl. Bot. t. 890, came to be taken for the ſame thing. Its very abundant ſhields are nearly of the greeniſh-white hue of the frond, and the mealy warts are wanting.

L. *fraxineus*. n. 61. Sp. Pl. 1614. Engl. Bot. t. 1781, is ſo common on trees, conſpicuous for its large ſize, and lanceolate figure, that nothing need be ſaid of it.

L. *fuciformis*. n. 61. Sp. Pl. 1614. Engl. Bot. 728. (Lichenoides fuciforme tinctorium, corniculis longioribus et acutioribus; Dill. Muſc. 168. t. 22, 23. f. 61.)—Leafy, divided, pointed, flat, nearly upright, tapering at each end, greyiſh-white, obſcurely downy, with white mealy warts. Shields convex, blackiſh.—This is found on granite rocks upon the Corniſh coaſt, but more plentifully in the Mediterranean, the Canary iſlands, and the Eaſt Indies, in which laſt climate it grows to the length of a foot. It is extremely important as an article of commerce, being uſed indiſcriminately with, and according to ſome preferred to, the famous *L. Roccella*, for dyeing. See ſection 8.

Sect. 5. *Coriacei.* Thirteen ſpecies.

This is in itſelf a very natural ſection, but Linnæus has referred to it one or two ſpecies totally foreign to the nature of the reſt; as *perlatus*, n. 82. Engl. Bot. t. 341. (Lichenoides glaucum perlatum, ſubtùs nigrum et cirroſum; Dill. Muſc. 147. t. 20. f. 39.)—This is in habit, texture, and natural affinity, cloſely allied to *ſaxatilis*, in ſect. 3.—L. *aquaticus*, n. 73. Sp. Pl. 1615; for which a ſynonym of Dillenius, t. 20. f. 44, is quoted with doubt, has always been involved in much obſcurity. The plant of Dillenius is *perforatus* of Jacquin and others, well figured in Hoffm. Pl. Lich. t. 13. f. 1. That of Linnæus, preſerved in his herbarium, is ſaid in the Flora Suecica to have been found in moſſy boggy places at Norrby, near Upſal, his own country reſidence; but no one has ever diſcovered what was meant. On a careful examination of the ſpecimen, it proves to be

L. *corrugatus*. Sm. Tr. of Linn. Soc. v. 1. 83. Engl. Bot. t. 1652. Ach. Prodr. 122. (Lichenoides acetabulis cutaneis et rugoſis; Dill. Muſc. 185. t. 24. f. 79.), a plant found on trees throughout Europe, though long neglected by Linnæan botaniſts, ſome of the moſt diſtinguiſhed of whom have miſtaken it for *olivaceus*.

The real coriaceous Lichens, which conſtitute this fifth ſection, are, as their denomination implies, of a tough leathery texture; ſmoothiſh above; ſtrongly veined and bearing numerous coarſe radicles beneath. Their ſhields, called *peltæ*, or targets, are peculiar, perfectly ſeſſile, and as it were glued to the frond towards its margin, ſometimes at its under ſide! They are oblong or kidney-ſhaped, often ſlightly convex; their border merely a thin film which, in a tender ſtate, covers their diſk, and finally recedes to the edge as it withers. The plants of this ſection moſtly grow on the ground, either at the roots of trees, or on ſhady moſſy banks.

L. *reſupinatus*. n. 74. Sp. Pl. 1615. Engl. Bot. t. 305. (Lichenoides fuſcum, peltis poſticis ferrugineis; Dill. Muſc. 206. t. 28. f. 105.)—Coriaceous, creeping, lobed, browniſh-grey. Targets oblong, at the under ſide of each ſmall aſcending lobe.—Native of moiſt ſhady rocks, or of the moſſy roots of trees in mountainous countries. The *fronds* are imbricated, ſmooth, of a dull browniſh lead-colour, compoſing broad depreſſed patches; the *targets* reddiſh-brown, concave, plentifully produced, but each ſolitary at the concave extremity of its own ſmall lobe.

L. *arcticus*. n. 77, and *antarcticus*. n. 78, both one ſpecies, are united by Acharius under the name of *Peltidea polaris*, being found in very high northern or ſouthern latitudes only. They are remarkable for the great ſize of their *targets*, which grow at the back of the greeniſh-white *frond*, and are as big as the thumb-nail, orbicular, of a dark livid fleſh-colour.

L. *caninus*. n. 79. Sp. Pl. 1616. Engl. Bot. t. 2299. (Lichenoides digitatum cinereum, lactucæ foliis ſinuoſis; Dill. Muſc. 200. t. 27. f. 102.)—Coriaceous, dilated, aſcending, furrowed, grey; white, with brown veins and fibres beneath; lobes very broad, with marginal fruit-bearing proceſſes. Targets in front, vertical, revolute, roundiſh, red-brown, with a pale border. The largeſt, moſt common, and moſt famous of its tribe, being the celebrated "Aſh-coloured Ground Liverwort," ſo extolled by Dr. Mead as a cure for the bite of a mad dog, whence the above ſpecific name. It was given with black pepper in milk, the patient being firſt bled, and afterwards bathed in cold water; but whatever accidental circumſtances might confirm that famed phyſician in his opinion, the medicine has long been entirely laid aſide.

L. *ſaccatus*. n. 83. Sp. Pl. 1616. Engl. Bot. t. 288. (Lichenoides lichenis facie, peltis acetabulis immerſis; Dill. Muſc. 221. t. 30. f. 121.)—Slightly coriaceous, roundiſh, creeping; green above; white beneath. Targets ſcattered, blackiſh, ſunk in pits. Found on the ground among rocks in mountainous countries.

L. *croceus*. n. 84. Sp. Pl. 1616. Fl. Lapp. t. 11. f. 3. Engl. Bot. t. 498. (Lichenoides ſubtùs croceus, peltis appreſſis; Dill. Muſc. 221. t. 30 f. 120.)—Coriaceous, creeping, rounded at the extremities; green above; orange and veiny beneath. Targets ſcattered, brown, flat.—Found only in the moſt alpine ſituations, near the limits of perpetual ſnow, growing on the ground.—Theſe two laſt, elegant and rare productions, are not exactly of the habit of the reſt. Acharius, in Schrader's New Journal, v. 1. faſc. 3. 20, 21, has referred them to his new genus *Arthonia* (ſee LICHENES); from the true ſpecies of which they differ in their leafy, not cruſtaceous, habit, nor is it eaſy to ſay to what family they properly belong.

Sect. 6. *Umbilicati*. Eleven ſpecies.

A moſt diſtinct and natural tribe, conſtituting the genus *Gyrophora* of Acharius, of which we have ſpoken in its proper place. (See GYROPHORA.) Linnæus defines theſe plants as umbilicated, or attached by their centre, and dirty as it were with ſoot. The latter perhaps may be their male warts. The fruit exhibits the moſt eſſential character in the concentric folds obſervable in its diſk. The firſt ſpecies however, *miniatus*, n. 86. Engl. Bot. t. 593, though it agrees with the reſt in its umbilicated habit, differs from them in fructification, in which latter reſpect it accords with *Endocarpon*; ſee that article. True *Gyrophoræ* are

L. *velleus*. n. 87. Sp. Pl. 1617. (Lichenoides coriaceum, latiſſimo folio umbilicato et verrucoſo; Dill. Muſc. 545. t. 82. f. 5.)—Umbilicated, ſtalked, dilated, wavy; browniſh-grey and ſmooth above; covered beneath with black, branched, crowded fibres. Tubercles cluſtered, flat.—Native of rocks in Lapland and North America. Often as broad as both the hands, tough and leathery, remarkable for its denſe, black, hairy clothing beneath. In this laſt reſpect indeed it accords with the much ſmaller, green or olive-coloured, Britiſh *pellitus*, Engl. Bot. t. 931, which Hudſon miſtook for *velleus*.

L. *puſtulatus*. n. 88. Sp. Pl. 1617. We need not repeat what is ſaid of this under the article GYROPHORA.

L. *viridis*. n. 96. Linn. Suppl. 451, gathered at the Cape of Good Hope by Thunberg, is *Endocarpon Thunbergii*, Ach. Meth. 129, has nothing of the character of a *Gyrophora*.

Sect. 7. *Scyphiferi*. Nine ſpecies.

The natural family of cup-bearing Lichens, or *pyxidati*, being one of the moſt diſtinct and ſtrongly characterized, has been ſeparated as a genus of itſelf by moſt who have conſidered the ſubject. (See LICHENES.) The ſpecies are extremely confuſed and difficult to define, being variable in themſelves and much reſembling each other. Their frond or baſis conſiſts of ſmall, rounded, more or leſs diſperſed, horizontal ſcales, or leaflets; ſmooth and green or greyiſh above; pure white beneath, as well as at the edges and withinſide. In ſome few inſtances they are dilated, and lobed or pinnatifid. From theſe ariſe upright ſtalks, terminating in a cup-ſhaped figure, of a large proportion compared with the leaflets, of a greeniſh-grey colour, and mealy or ſcaly ſurface; the edges of the cup producing the fructification, which conſiſts of ſmall globular tubercles, either brown, or of a moſt beautiful ſcarlet, ſeſſile, or variouſly ſtalked. Sometimes the cup is proliferous from its edges or centre; ſometimes obſolete, or, as it were, ſtarved. Theſe plants come under the *Coralloides* of Dillenius, t. 14, 15.—Examples are

L. *cocciferus*. n. 97. Sp. Pl. 1618. Engl. Bot. t. 2051. (Coralloides ſcyphiforme, tuberculis coccineis; Dill. Muſc. 82. t. 4. f. 7.)—Cup-ſhaped, leathery, pale greeniſh-grey, mealy. Cups dilated, ſomewhat toothed. Tubercles fungous, ſcarlet. Leaves minute, lobed and crenate.—A beautiful ſpecies, not uncommon in woods, or on heaths among ling, or in various dry ſandy places. The large ſcarlet *tubercles* render it very conſpicuous. Several other ſpecies indeed have the ſame-coloured fructification, but ſmaller, and they differ in other reſpects. The *cups* in this are ſhorter, broader, and more perfect than in any other with ſcarlet tubercles.

L. *pyxidatus*. n. 99. Sp. Pl. 1619. Engl. Bot. t. 1393. (Coralloides ſcyphiforme, tuberculis fuſcis; Dill. Muſc. 79. t. 14. f. 6.)—Cup-ſhaped, leathery, greyiſh-green, ſcaly, often proliferous. Cups dilated, nearly entire. Tubercles brown. Leaves minute, imbricated, crenate.—The moſt common of this tribe, occurring every where, in broad patches, on heaths, ſandy banks, and under hedges. Its cup-like ſhape is uſually pretty regular, at leaſt before the *tubercles* appear; but the edges of the cup, or its centre, occaſionally throw up others, even to four or five ranks or ſtages, one upon another, in beautiful luxuriance. More frequently the firſt cup bears unequal and imperfect cups, or tubular ſtalks, crowned with the brown *tubercles*. The *ſtalks* of all are frequently leafy or ſcaly, eſpecially their lower part.

L. *gracilis*. n. 101. Sp. Pl. 1619. Engl. Bot. t. 1284. (Coralloides ſcyphiforme ſerratum elatius, caulibus gracilibus glabris; Dill. Muſc. 88. t. 14. f. 13.)—Cup-ſhaped, long, ſlender, ſmooth, cartilaginous, greeniſh-brown; at length ſomewhat branched. Cups conical, ſharply toothed. Tubercles brown. Leaves minute.—In heathy dry mountainous places, or in woods, in the north, not unfrequent. The character of this is widely different from the two preceding, diſplayed in its brown hue, tall ſlender form, and ſharp teeth or terminal branches. The *tubercles* are dark brown. *Leaves* very minute, and frequently obliterated.

L. *flammeus*. n. 105. Linn. Suppl. 451. Hoffm. Pl. Lich. t. 3. f. 1; is very improperly referred to this ſection by Murray, merely, as it ſeems, on account of its tubular ſtem and branches. It ought, according to the Linnæan arrangement, to ſtand in ſection 3, after *parietinus*, n. 43, and before *phyſodes*, n. 44, agreeing with the former in colour, with the latter ſomewhat in ſtructure. We mean not, however, to ſay there is any conſiderable real affinity between theſe three ſpecies.

Sect. 8. *Fruticuloſi.* Ten ſpecies.

A vague ſection, compriſing, though ſmall, ſeveral diſcordant things, of which no general definition can be given, except that they are of an upright buſhy habit.

L. *rangiferinus*. n. 106. Sp. Pl. 1620. Engl. Bot. t. 173. (Coralloides montanum, fruticuli ſpecie, ubique candicans; Dill. Muſc. 107. t. 16. f. 29; et corniculis rufeſcentibus; 110. t. 16. f. 30.)—Buſhy, tubular, very much branched, white and hoary; the little branches divaricated and drooping. Tubercles terminal, globoſe, moſtly cluſtered, dark brown.—This is the Reindeer Lichen, ſo celebrated by Linnæus, in his Flora Lapponica and Lapland Tour, as the food of that animal. In the wide heathy tracts and foreſts of thoſe northern regions, it covers the ground like ſnow, riſing to the height of a foot or more; with us it is much humbler and more diſperſed; always chooſing the moſt ſterile heathy ſoil, and not very generally producing fruit. Its texture is thin and brittle, ſoft to the graſp of the hand, and excellent for package, the only uſe for which it can ſerve in this climate. The *branches* are occaſionally, not always, perforated at their divarications. The ſurface is hoary, or rough with minute warts. *Tubercles* very ſmall, terminal, abundant when they occur at all.

L. *uncialis*. n. 107. Sp. Pl. 1621. Engl. Bot. t. 174.

L. *vermicularis*. n. 108. Swartz Meth. Muſc. 37. Engl. Bot. t. 2029.

L. *ſubulatus*. n. 109. Sp. Pl. 1621. (Coralloides corniculis longioribus et rarioribus; Dill. Muſc. 102. t. 16. f. 26.)

Theſe three are naturally akin to *rangiferinus*. The following are very different.

L. *globiferus*. n. 110. Mant. 133. Engl. Bot. t. 115. (Coralloides cupreſſiforme, capitulis globoſis; Dill. Muſc. 117. t. 17. f. 35.)—Shrubby, ſolid, much branched, cylindrical, browniſh and poliſhed; branches with minute divaricated terminations. Fruit globular, ſmoothiſh, encloſing a ball of black powder.—This very pretty coral-like production occurs on mountainous rocky heaths, or in dry ſtony woods. Its *ſtems* compoſe looſe entangled tufts, of a tawny light poliſhed brown, and are white and ſolid within; the ultimate branches are innumerable, ſhort, ſlender, tufted, and divaricated. The *fructification* is altogether different from every thing we have hitherto deſcribed, conſiſting of terminal ſolitary balls, the ſize of a vetch ſeed, ſmooth, of the ſubſtance of the ſtem, opening by a wide irregular perforation at the top, and containing a globular maſs of black condenſed powder, preſumed to be the ſeeds. This plant therefore, by its fructification and habit, has every right to conſtitute a diſtinct genus, and is now, with the two following, admitted as ſuch by the name of *Sphærophoron*. See Lichenes.

L. *fragilis*. n. 113. Fl. Suec. ed. 2. 425. Fl. Lapp. n. 440. t. 11. f. 4. (Coralloides fragile; Hoffm. Pl. Lich. 34. t. 33. f. 3. Sphærophoron fragile; Ach. Meth. 135. t. 3. f. 5.)—Shrubby, ſolid, brittle, aſhy brown; branches level-topped, cylindrical, crowded, naked. Fruit globular, rugoſe, encloſing a ball of black powder.—Found in ſimilar places with the laſt, with which moſt botaniſts, in Britain and elſewhere, have confounded it, taking the following for the true *fragilis*.

L. *compreſſus*. (L. fragilis; Ach. Prodr. 211. Hudſ. 558. Engl. Bot. t. 114. L. melanocarpus; Swartz Prodr. 147. Sphærophoron compreſſum; Ach. Meth. 135. Coralloides alpinum, corallinæ minoris facie; Dill. Muſc. 116. t. 17. f. 34.)—Shrubby, ſolid, cartilaginous, white, branched, compreſſed; branches cluſtered, ſomewhat palmate. Fruit depreſſed, containing a cake of black powder.—The moſt elegant of this new genus, remarkable for its white coral-like appearance, having the ſplendour of porcelain when freſh. The above characters mark it ſufficiently. The *fruit* is rare, produced in moiſt ſhady ſituations only. This ſpecies ſeems to prefer limeſtone rather than granite rocks.

To a very different family belongs

L. *paſchalis*. n. 111. Sp. Pl. 1621. Engl. Bot. t. 282. (Coralloides criſpum et botryforme alpinum; Dill. Muſc. 114. t. 17. f. 33.)—Shrubby, ſolid, clothed with minute cruſtaceous leaves. Tubercles terminal, prominent, brown.—This Lichen, found on micaceous alpine rocks, is deſtined to perform an important office in the economy of nature, being the firſt vegetable that takes root upon lava, whoſe porous ſurface will admit no cruſtaceous ſpecies. Thus it compoſes in decaying a portion of vegetable mould, fit for the reception of the ſeeds of other plants. Its *roots* and *ſtem* are very tough and ſtrong, and the aſſemblage of minute greyiſh-brown *leaves*, that cover the whole, gives it a peculiar and diſtinct aſpect. The tubercles are ſolid, white within, convex, without any border.

Three ſpecies only remain, having little or no affinity to any of the above, or to each other.

L. *triſtis*. n. 112. Web. Goett. t. 5. Swartz. Meth. Muſc. 37. Engl. Bot. t. 720. This alpine Lichen has real ſhields. It occurs among the imbricated ſpecies, by Jacquin's name of *rigidus*, n. 42; and it is curious that Murray, the editor, has quoted in both places the ſame ſynonym of Haller, n. 1966. t. 47. f. 1.

L. *verrucoſus*. n. 114. Suppl. 451. (Stereocaulon tabulare; Ach. Meth. 316. t. 7. f. 3.)—Found at the Cape of Good Hope. It conſiſts of denſe, broad, white tufts of low branched *ſtalks*, tumid and globoſe at their ſummits, and agrees altogether in genus, very nearly in ſpecies, with Mr. Dickſon's *oculatus*, Engl. Bot. t. 1833. Yet profeſſor Acharius conſiders the fructification of *verrucoſus* as unknown, and refers the plant to his genus *Stereocaulon*, of which *paſchalis*, n. 111, above-mentioned, is a genuine example.

L. *Roccella*. n. 115. Sp. Pl. 1622. Engl. Bot. t. 211. (Coralloides corniculatum faſciculare tinctorium, fuci teretis facie; Dill. Muſc. 120. t. 17. f. 39.)—This we have mentioned in ſpeaking of *tartareus*, n. 25, and *fuciformis*, n. 61.

It agrees very much with the latter, except in being cylindrical, and leſs ſoft or flexible, and their ſhields are exactly alike.—A Cape variety, as it is thought to be, of *Roccella*, is partly cylindrical, partly flat, and much dilated.

Sect. 9. *Filamentoſi.* Fifteen ſpecies.

A very curious, ſtriking, and, for the moſt part, very natural aſſemblage. Many of them hang in long, black, grey, or white cluſters, from the branches of aged pines, oaks, or cheſnuts, in alpine foreſts, to which they give a ſingular and romantic aſpect. Their fronds are filamentous, often a foot or more in length, repeatedly branched, either ſolid, or apparently jointed, in a beard-like manner, with a central tough fibre; ſometimes they are compreſſed, ſometimes pitted; in one nondeſcript ſpecies exquiſitely reticulated like lace. The fructification is various and uncertain; in ſome perfect ſhields with a true diſk, and a border like the frond; in others a ſpurious kind of ſhield, *orbillus*, is found, along with coloured ſeed-bearing tubercles; in others, again, powdery warts only are diſcoverable.

A few examples will ſuffice.

L. *plicatus*. n. 116. Sp. Pl. 1622. Engl. Bot. t. 257. (Uſnea vulgaris, loris longis implexis; Dill. Muſc. 56. t. 11. f. 1.)—Filamentous, cylindrical, pendulous, whitiſh; branches entangled. Shields (ſpurious) whitiſh-green, radiated. Tubercles yellowiſh.—Found in ancient woods. The *fronds* are exceſſively and finely branched, a foot or two long, pendent in denſe cluſters from the trees. Their ſurface is minutely warty. The proper *tubercles*, deſcribed by Acharius, we have never ſeen. The ſpurious *ſhields*, his *orbilli*, are rare. The latter are improperly made reddiſh in Engliſh Botany.

L. *divaricatus*. n. 119. Syſt. Nat. ed. 12. v. 2. 713. (Uſnea mollis, ramis longis compreſſis; Dill. Muſc. 62. t. 12. f. 5. U. flaccida; Hoffm. Pl. Lich. t. 67.)—Filamentous, pendulous, angular, jointed, pale ſulphur-coloured; branches divaricated. Shields ſeſſile, cheſnut-coloured, with a narrow border of the ſubſtance of the frond.—Native of fir woods on the alps of Savoy, Switzerland, &c. Often a foot and a half long, ſoft and flexible, conſpicuous for its yellowiſh hue. The *ſhields* are thoſe of an Acharian *Parmelia*. See Lichenes.

L. *aurantiaco-ater*. n. 128. Jacq. Miſc. 369. t. 11. f. 2, (very badly drawn,) ſeems to us alſo a true *Parmelia*, though retained in *Uſnea* by Acharius; ſee his Methodus, 307.

L. *capenſis*. n. 130. Suppl. 451. (Uſnea capenſis; Hoffm. Pl. Lich. t. 10. f. 1.) is properly referred by Acharius to his *Parmelia*.

L. *floridus*. n. 129. Sp. Pl. 1624. Engl. Bot. t. 872. Ehrh. Crypt. 148. Uſnea vulgatiſſima tenuior et brevior, cum orbiculis; Dill. Muſc. 69. t. 13. f. 13.)—Filamentous, with a central thread, buſhy, erect, greeniſh-grey; branches round, fibrous, warty, with radiated ſpurious ſhields. Tubercles on the branches, lateral, fleſh-coloured, rugged.—Not uncommon on dead branches of oaks in old woods, but the *orbilii* ſeldom occur except on the higher trees, and the real *tubercles* are extremely rare. The latter were ſuppoſed to have been publiſhed for the firſt time in Engl. Bot. vol. xiii. in 1801, but the celebrated Schrader appears to have deſcribed though not figured them two years earlier. They are conformable to what have long been known in other genuine ſpecies of this tribe. We cannot but think L. *hirtus*, n. 125, Engl. Bot. t. 1354, ſpecifically diſtinct from *floridus*, of which profeſſor Acharius makes it a variety. The *tubercles* of *hirtus* grow chiefly on the ſtem or large branches, which are continued ſtraight beyond them, not ſtrongly bent backwards, as in *floridus*. Theſe ſpecies boiled with wool, without alum, dye it of a rich tawny yellow.

The moſt minute ſpecies of this great genus, or natural order, hold a much more important place in the economy of nature than is apparent to ſuperficial obſervers. They are the firſt beginning of vegetation on ſtones of all kinds expoſed to the air, whoſe decompoſing ſurfaces are the receptacle of their imperceptible ſeeds, and ſoon afford nouriſhment to the ſprouting plants, whoſe minute fibrous roots ſtill further inſinuate themſelves. The larger ſpecies take poſſeſſion of every cavity and fiſſure, both of ſtones and the decaying external bark of trees. In time they all decay, and furniſh a portion of vegetable mould, capable of nouriſhing moſſes, or ſtill larger plants. The reſiduum of theſe, being ſtill more conſiderable, is waſhed by rains into larger cavities, where even foreſt trees can ſcatter their ſeeds, by the penetrating power of whoſe roots, great maſſes are diſlodged from the moſt lofty rocks. Thus the vegetable kingdom exerciſes dominion over the tributary foſſil world, and, in its turn, affords the ſame no leſs neceſſary aid to animal exiſtence. Nothing in nature is allowed to remain ſtationary, idle, or uſeleſs, and the moſt inconſiderable agents frequently appear, in the hands of Divine Providence, to be the moſt irreſiſtible. S.

Lichen, in the *Materia Medica*. The *Lichen iſlandicus* is a native of Britain, particularly on the mountains of Wales and Scotland. In Iceland this is uſed as food. For this purpoſe, a diſh of it is prepared by chopping it ſmall, boiling it in three or four ſucceſſive portions of water to take off its natural bitterneſs, and then for an hour or two in milk. When cold this preparation has the form of a jelly, which is eaten with milk or cream, and makes a very palatable diſh. The medicinal qualities of this lichen have of late been ſo well eſtabliſhed at Vienna, that the plant is admitted into the Materia Medica of the Edinburgh Pharmacopeia, and into the London Pharmacopeia of the year 1809. It is extremely mucilaginous, and to the taſte ſomewhat bitter and aſtringent; but its bitterneſs, as well as the purgative quality which it manifeſts in its recent ſtate, are in a great meaſure diſſipated by drying, or, as we have already obſerved, may be extracted by infuſion in water. An ounce of this lichen boiled a quarter of an hour in a pint of water, yielded ſeven ounces of a mucilage as thick as that procured by the ſolution of one part of gum arabic in three pints of water. Lord Dundonald (Phil. Mag. vol. x.) has given the following directions for preparing the mucilage from the lichen. The lichen has an outer ſkin, covering a green reſinous ſubſtance; and the remainder of the plant conſiſts chiefly of gum and of fibrous matter, on which water does not act. In order to ſeparate the outer ſkin from the reſinous matter, the plant muſt be ſcalded two or three times with boiling water, which cauſes the ſkin to crack, ſwell, and peel off. It is then put into a boiler with about three quarts of water for every pound of the plant, and about half an ounce of potaſh or ſoda, and the boiling ſhould be continued till the liquor acquires a conſiderable degree of gummy conſiſtence. The liquor is then to be taken out and ſtrained from the plant, and freſh water added to the ſame material, for the purpoſe of further exhauſting the gum. The ſeveral liquors, after ſtanding ſome hours to ſettle, and then removing the dregs, are to be boiled down in a regulated heat to the conſiſtence which is required for uſe, but not further, leſt it ſhould burn and become coloured. Two or three boilings will be neceſſary for entirely exhauſting the lichen of its mucilage.

The medical virtues of this lichen were probably firſt learned from the Icelanders, who employ it in its freſh ſtate as a laxative; but deprived of this quality and properly prepared, it is ſaid to be an efficacious remedy in conſumptions, coughs, dyſenteries, and diarrhœas. Dr. Crichton informs us (Med. Journ. vol. x.), that during a reſidence of ſeven months at Vienna, he had frequent opportunities of ſeeing the lichen iſlandicus tried in phthiſis pulmonalis at the General Hoſpital, and he confeſſes, "that it by no means anſwered the expectation he had formed of it." He adds, however, "from what I have ſeen, I am fully convinced in my own mind, that there are only two ſpecies of this diſeaſe, when this ſort of lichen promiſes a cure. The two ſpecies I hint at, are the *phthiſis hæmoptaica*, and the *phthiſis pituitoſa*, or *mucoſa*. In ſeveral caſes of theſe I have ſeen the patients ſo far get better of their complaints, as to be diſmiſſed the hoſpital cured; but whether they remained long ſo or not, I cannot take upon me to ſay." That this lichen ſtrengthens the digeſtive powers, and proves extremely nutritious, there can be no doubt; but the great medicinal efficacy attributed to it at Vienna will not readily, ſays Dr. Woodville, be credited at London. It is commonly given in the form of a decoction, an ounce and a half of the lichen being boiled in a quart of milk. Of this a tea-cup full is directed to be drank frequently in the courſe of the day. If milk diſagree with the ſtomach, a ſimple decoction of the lichen in water is to be uſed. Care ſhould be taken to boil it over a ſlow fire, and not longer than a quarter of an hour. In the London Pharmacopeia the decoction is directed to be prepared by boiling down an ounce of the lichen in a pint and a half of water to a pint, and then ſtraining it.

The *lichen caninus*, or *cinereus terreſtris*, which grows on heaths, dry paſtures, and woods, has a weak faint ſmell, and a ſharpiſh taſte. It was for a long time extolled as a medicine of ſingular virtue in preventing and curing that dreadful diſorder which is produced by the bite of rabid animals. The "pulvis antilyſſus," a powder compoſed of equal parts of this lichen and black pepper, was firſt recommended as a preſervative againſt the rabies canina by Mr. Dampier, brother of the celebrated circumnavigator, and by the authority of ſir Hans Sloane, it was publiſhed in the Philoſophical Tranſactions, (vol. xx. p. 49.) The quantity of pepper having been found to render the medicine too hot, the powder was afterwards prepared of two parts of the lichen and one of pepper. This powder was afterwards adopted in the London Pharmacopeia in 1721, at the deſire of Dr. Mead, who ſeems to have had repeated experience of its good effects, and who declares that he had never known it to fail, where it had been uſed, with the aſſiſtance of cold-bathing, before the hydrophobia came on. He directs the patient to be blooded to the extent of nine or ten ounces; afterwards a dram and a half of the powder is to be taken in the morning faſting, in half a pint of cow's milk warm, for four mornings ſucceſſively. After theſe four doſes are taken, the patient is directed to go into the cold-bath every morning for a month, and then three times a week for a fortnight longer. On the character of Mead, the pulvis antilyſſus was long retained in the London Pharmacopeia; but on the reviſion of that book in 1788, it was deſervedly expunged. Woodv. Med. Bot. See Antilyssus *Pulvis*.

Lichen, in *Medicine*, a cutaneous eruption, conſiſting of *papulæ* (pimples), affecting adults, connected with internal diſorder, and uſually terminating in ſcurf. It is not contagious.

Such is the character of an eruption, to which Dr. Willan has appropriated the term *lichen*, in his valuable treatiſe on cutaneous diſorders. (Order i. Genus ii.) In the writings of Hippocrates, he remarks, the term lichen, or lichenes, (λειχηνες,) is employed to expreſs an eruption of papulæ, and he did not include under that appellation any puſtular diſeaſe. There is, however, an extreme confuſion, as in the caſe of almoſt every other denomination of cutaneous affections, among the ſubſequent writers, in the acceptation of the word. The later Greek authors extend the application of it, ſo as to comprehend a puſtular affection of the face, ſometimes called *ſycoſis*, and likewiſe the *mentagra*, a contagious diſeaſe, together with the ſimple and rank lichen (λειχην ἀγριος). Pliny in one paſſage (Nat. Hiſt. l. xx. cap. 1.) ſeems to uſe the term lichen as ſynonimous with the *impetigo* of the Latins: he is, however, inconſiſtent with himſelf in other places. The only author to whom we can refer for a definition of *impetigo* is Celſus; and his account of it does not, in any reſpect, correſpond to that which the Greeks have given of the lichenes. Under the denomination of *papula*, Celſus has compriſed, and accurately deſcribed, two varieties of lichen, the L. agrius, and L. circumſcriptus; and he has correctly ſtated the real relation between the lichen and impetigo, when he ſays, that "the papula agria, through neglect or improper treatment, is often changed into impetigo." (De Med. lib. v. cap. 28.) Nevertheleſs, all the tranſlators of the Greek medical writers have uſed impetigo as ſynonimous with the original term lichen; and their example has been followed by many reſpectable authors on the ſubject of cutaneous diſorders.

By more modern writers, again, the lichen has been arranged under other genera of diſeaſe, with which it has ſtill leſs affinity than with impetigo. Thus Sauvages deſcribes it under the title of herpes farinoſus; and Lorry confounds both lichen and impetigo with herpes: while Plater, Hafenreffer, and others, arrange lichen under the genus ſcabies. By adopting the character of the lichen, ſtated by Dr. Willan, we may avoid this extreme degree of confuſion.

An eruption, thus characterized, occurs under five or ſix varieties of form, to which Dr. Willan has appropriated the following titles: 1. Lichen *ſimplex* is preceded by ſymptoms of feveriſhneſs, or rather by a ſtate of irritation not amounting to fever, which is relieved after five or ſix days, on the appearance of the eruption. This conſiſts of diſtinct red papulæ, with but little inflammation round their baſe, firſt appearing on the face or neck, and ſpreading thence over the body and limbs. In about a week, the colour of the eruption fades, and the cuticle ſeparates in ſcurf. The duration of the complaint, however, is ſeldom in two caſes alike; from fourteen to twenty, or thirty days, ſometimes intervene between the eruption and the renovation of the cuticle. It occurs, as well as ſome other of the ſpecies, annually about the beginning of ſummer, or in autumn, in perſons of a very weak and irritable conſtitution. 2. Lichen *pilaris* is merely a modification of the foregoing ſpecies, the papulæ appearing only at the roots of the hairs of the ſkin. 3. In the lichen *circumſcriptus*, or papulated *ring-worm*, the papulæ are arranged in cluſters, or patches, which are of an irregular form, but with a well-defined margin, and appear in ſucceſſion on the limbs or trunk of the body, ſometimes by repeated eruptions, laſting for ſix or eight weeks. It is excited both by internal and external cauſes of irritation, and is at firſt attended with ſlight febrile ſymptoms for a day or two. 4. Lichen *agrius* is preceded by nauſea, pain in the ſtomach and limbs, with ſhivering and depreſſion of ſtrength for ſeveral days, which ſometimes diminiſh when the eruption appears. The papulæ are diſtributed in great numbers in various parts of the body, face, and limbs, having a high red colour, and being attended with itching, heat, and painful tingling. The redneſs is augmented, and a ſenſation of burning and ſmarting is excited by the warmth of bed, by waſhing, eſpecially with ſoap, by violent exerciſe, or wine. Its duration is uncertain. Women are more liable to it than men; and it affects thoſe eſpecially who have undergone long continued fatigue, watching, and anxiety. In men it is often produced by the intemperate uſe of ſpirituous liquors.

Cure.—Every thing heating or ſtimulating ſhould be avoided, whether great exerciſe, or ſtimulant food and liquors; gentle laxatives ſhould be uſed; and the ſkin ſhould be waſhed with warm-water, or thin gruel, by which the irritation and itching are alleviated. All ſtrong applications are improper, and aggravate the complaint, producing intolerable ſmarting. Mild cooling ointments, as the roſe-pomatum, relieve the uneaſy ſenſations of heat and itching.

Two other varieties of lichen are noticed by Dr. Willan, one of which he terms lichen *lividus*, and the other L. *tropicus*. The former of theſe is characteriſed by papulæ of a dark or livid hue, is more permanent than the ſpecies before deſcribed, and principally affects perſons of weak conſtitutions, who live on a poor diet, and labour hard, or reſide in cloſe ſituations. The lichen is ſometimes intermixed with *petechiæ* in the latter caſes, or larger purple patches, which point out its affinity with the *purpura*, or land-ſcurvy. It is cured alſo by the ſame means as are ſucceſsful in the latter diſorder; namely, by nouriſhing food, moderate exerciſe in the open air, with the uſe of cinchona and ſulphuric acid, or the tincture of muriate of iron. The lichen tropicus ſignifies the eruption which is well known in hot climates by the appellation of *prickly heat*, of which we have already given ſome account. See Heat, *Prickly*.

LICHENASTRUM, in *Botany*, ſo called by Dillenius, from its affinity to *Marchantia*, his *Lichen*. See Jungermannia.

LICHENES, a Natural Order of vegetables of the Cryptogamic claſs, (*Aſpidoferæ* of Wiggers's Holſat. 85.) allied on one hand to the *Algæ*, in which it was included by Linnæus, and on the other to the *Fungi*, with many of which it nearly agrees in habit, and with ſome of them very ſtrikingly in the character and ſituation of its ſeeds. This family has riſen gradually to the conſequence it now holds among botaniſts, firſt by the labours of Dillenius and Micheli, and next by thoſe of Linnæus and his pupils; but the celebrated Dr. Acharius, profeſſor at Vadſtena in Sweden, has finally elucidated it fully, with reſpect to characters and ſynonyms, in ſeveral ſeparate works; not merely as a genus, but as a natural order, compriſing many genera. Profeſſor Hoffmann indeed, and other German botaniſts, had already conſidered it in the ſame light; but none has ſo completely treated the whole ſubject as this learned Swede. For a general view of the nature of this family, with the leading ſections to which its ſpecies have been reduced, ſee Lichen. We ſhall now proceed to explain what has been done towards its generic ſub-diviſion, the firſt attempt at which, by the fruit, was made in Wiggers's *Primitiæ Fl. Holſaticæ*, a work of which Weber, in a copy before us, claims being the author.

It would be tedious and difficult to trace minutely every ſtep in the progreſs of thoſe who have at any time adverted to the generic diſtribution of Lichens. Weber's is but a rude attempt. The labours of Hoffmann, having led the way to Acharius, require ſome previous explanation.

That writer, in his Flora Germanica, v. 2, publiſhed in 1795, eſtabliſhed an order of *Cryptogamia Scutellata*, as diſtinct from *Algæ*, which is intended to embrace all the certain *Lichenes*, though it does not, in fact, admit all that are reckoned ſuch by Acharius. It is thus defined.

Scutellata. Female fructifications in orbicular, flat or convex ſhields, radiated or naked, bordered or without a border, or ſpirally twiſted, fixed to the frond either by their centre or their margin; and this frond is either gelatinous, coriaceous, umbilicated, cauleſcent, ſtrap-like, filamentous, leafy, tartareous, or leprous; its duration perennial, throwing out various buds or offſets. Each ſhield contains ſeeds within its fibrous or ſpongy ſubſtance.—This order contains nine genera.

1. *Collema*. Frond pellucid, gelatinous. Shields bordered.—This comprehends the gelatinous Lichens of other authors, of which 26 ſpecies are here deſcribed as natives of Germany. (See Lichen; ſect. 4. n. 48.) *Collema* is recently admitted as a genus in Engl. Bot. v. 32. t. 2284, where the eſſential character is "*Shields* orbicular, horizontal, nearly ſeſſile, ſuperficial, with a gelatinous acceſſory border." There can be no doubt of its conſtituting one of the moſt natural genera to be found in any order.

2. *Peltigera*. Frond coriaceous. Shields (or targets) compreſſed, attached by their margin.—The true coriaceous Lichens, ſect. 5, as *reſupinatus*, *caninus*, &c.; nine ſpecies in Germany.

3. *Umbilicaria*. Frond leafy, peltate. Shields contorted.—Ten ſpecies. The umbilicated Lichens, ſect. 6; *Gyrophoræ* of Acharius.

4. *Cladonia*. Frond cauleſcent, cylindrical, hollow. Shields tubercular.—Thirty-ſeven ſpecies.—This genus embraces not only thoſe of the Linnæan *fruticuloſi*, ſect. 8, to which *rangiferinus* belongs, but likewiſe all the *ſcyphyferi* (or *pyxidati*) ſect. 7.—Thirty-ſeven ſpecies are deſcribed.

5. *Stereocaulon*. Frond cauleſcent, cylindrical, ſolid. Shields tubercular, globoſe.—This is, perhaps, the moſt exceptionable genus, confounding L. *paſchalis*, (ſee Lichen, ſect. 8. n. 111.) along with the powdery-fruited kinds, *globiferus*, *fragilis*, and *compreſſus*; and with theſe the coral-cruſted tribe, which make the Acharian genus *Iſidium* hereafter mentioned. Even L. *niger* of Hudſon and Linnæus, Engl. Bot. t. 1161, perhaps more akin to *Collema*, though its ſhields have no border, is joined with them. The whole however make but nine ſpecies.

6. *Uſnea*. Frond ſtrap-like, or filamentous. Shields radiated or naked.—Equivalent to the *filamentoſi*, ſect. 9, of Linnæus. Sixteen German ſpecies.

7. *Lobaria*. Frond lobed, laciniated, much divided, erect, or depreſſed. Shields bordered.—This large and rather multifarious genus, comprehending 62 German ſpecies, is divided into four ſections, which perhaps run ſo much into each other as to juſtify the whole aſſemblage. They are

* *Platiſma*. Frond (moſtly) pitted.

To this belong many of Linnæus's ſect. 4, *foliacei*, as the *farinaceus*, *fraxineus*, and their allies. To theſe *rigidus*, which is *triſtis*, n. 112. of the Linnæan arrangement, is ſubjoined. Then follow *iſlandicus*, &c.; then *furfuraceus*, Linn. n. 53. Engl. Bot. t. 984, and *ciliaris*. All theſe are characteriſed as having a pitted or cellular frond, which is more or leſs erect. They are however a very various tribe.—Five ſpecies have a pitted depreſſed frond, as *ſaxatilis*, and *pulmonarius*, Linn. n. 52. Engl. Bot. t. 572.—Twelve are defined as having a dilated frond, in which *ſaccatus* is included, with *caperatus*, *perlatus*, *parietinus*, and others, which are by no means naturally allied, nor is the character expreſſive, if it means abſolutely that the frond is never pitted, or that it is more dilated than in the preceding ones.

** *Phyſcia*. Frond inflated, as in L. *phyſodes*, Linn. n. 44. Engl. Bot. t. 126.

*** *Squamaria.* Frond narrowly divided, as in *ſtellaris*, and its numerous allies.

**** *Placodium.* Frond cruſtaceous, obſcurely imbricated. In the beginning of this ſection, ſeveral ſpecies occur which are not really cruſtaceous, and which are cloſely akin to *ſtellaris*, though more depreſſed. True examples of *Placodium* are L. *ſaxicola*, Engl. Bot. t. 1695; as well as *candicans*, t. 1778; and *gelidus*, Linn. n. 23.

8. *Pſora.* Cruſt figured. Shields bordered, convex.—Twenty-ſix German ſpecies are enumerated under this genus, many of which are among the imbricated Lichens of Linnæus, others amongſt his leprous or cruſtaceous ones. In all of them the cruſt is either formed into leaflets, or granulations of a determinate ſhape, ſeated on a homogeneous white chalky baſis, the outer ſurface being variouſly coloured.

9. *Verrucaria.* Cruſt leafleſs, leprous, tartareous. Shields with or without a border.—This genus comprehends moſt of the leprous Lichens of Linnæus. See LICHEN, ſect. 1 and 2. Seventy-one German ſpecies are defined, diſpoſed according to the colours of their ſhields.

Such is the method of Hoffmann, who in his ſumptuous and truly excellent work, entitled *Plantæ Lichenoſæ*, conſiſting of three thin folio volumes, with ſeventy-two fine coloured plates, has deſcribed and figured a great number of ſpecies from all parts of the world. This book however does not exactly agree in generic diſtribution with his *Flora Germanica*, but they are eaſily compared together. The ſame writer has left unfiniſhed an *Enumeratio Lichenum*, in quarto, begun in 1784, of which we have 102 pages, and 22 uncoloured plates, very finely drawn by the author. In this book *Lichen* ſtands as one genus, divided into ſeveral *ſections*; improperly termed *orders*.

Profeſſor Acharius, above-mentioned, having previouſly in ſeveral papers, with plates drawn by himſelf, in the Stockholm Tranſactions, elucidated various ſpecies or tribes of Lichens, publiſhed in 1798 his *Lichenographiæ Suecicæ Prodromus*, in one volume octavo, with coloured figures of five ſpecies only. This work marks an era in cryptogamic botany. Though it profeſſes to treat of Swediſh Lichens only, it in fact indicates all of which the learned writer could diſcover any tidings, with their ſpecific characters, ſynonyms, and places of growth, beſides innumerable valuable obſervations. The whole are ranged under the name of *Lichen*, as one genus, but divided into twenty-eight *tribes*, or ſections, of which the genera of Hoffmann form the baſis. Theſe tribes compoſe three families, under whoſe ſubdiviſions we ſhall indicate them all. The peculiar terms which occur will be explained hereafter.

Family 1. CRUSTACEOUS LICHENS.

Having a cruſtaceous, more or leſs expanded, baſe.

A. Cruſt irregular, powdery, or in fibrous flakes.

1. *Lepraria.* Receptacles ſcarcely known.—(Moſt of theſe come under the genus *Byſſus* in Linnæus.)

B. Cruſt ſolid, flattiſh, uniform, nearly orbicular.

2. *Verrucaria.* Receptacles (*thalami*) hidden in the cruſt, roundiſh, concave, opening by a perforation at the top.

3. *Opegrapha.* Clefts (*lirellæ*) cloſely attached to the cruſt, and opening longitudinally.

4. *Variolaria.* Powdery little maſſes (*glomeruli*) attached to the ſurface of the cruſt.

5. *Urceolaria.* Shields hollowed, ſunk in portions or warts of the ſurface of the cruſt.

6. *Patellaria.* Shields attached to the ſurface of the cruſt, either concave or flat, with a border, or convex and hemiſpherical, with ſcarcely any.

7. *Bæomyces.* Tubercles ſmooth and even, nearly globoſe, fungus-like, terminating elevated ſtalks.

8. *Calicium.* Tubercles ſtalked, lenticular, opening by a torn border, diſcovering a powdery elevated diſk.

C. Cruſt unequal, compoſed of coral-like, crowded little branches.

9. *Iſidium.* Tubercles terminal.

D. Cruſt rather leafy.

10. *Pſoroma.* Cruſt irregular, covered with minute ſomewhat imbricated ſcales. Shields lateral, as well as marginal.

11. *Placodium.* Cruſt cloſe-preſſed, flat, orbicular, with a lobed permanent margin. Shields lateral.

Family 2. LEAFY LICHENS.

Without a ſtem, and conſiſting of a ſimple or multiplied, ſeſſile, divided, ſomewhat membranous leaf.

E. Receptacles ſcattered, ſeſſile on the leaf.

12. *Imbricaria.* Shields and powdery maſſes (*glomeruli*) lateral. Leaves membranous, depreſſed, imbricated, ſpreading circularly, minutely fibrous underneath.

13. *Collema.* Shields lateral and marginal. Leaves gelatinous.

14. *Endocarpon.* Receptacles (*thalami*) hollow, immerſed in the leaf, opening by a prominent mouth See ENDOCARPON.

15. *Umbilicaria.* Receptacles (*tricæ*) convoluted, raiſed. See GYROPHORA.

16. *Lobaria.* Shields and powdery maſſes lateral. Leaves ſomewhat coriaceous, widely ſpreading, aſcending, villous underneath.

17. *Sticta.* Shields ſcattered; or Targets marginal. Leaves ſomewhat coriaceous, ſtamped beneath with little bald pits, amongſt down.

18. *Peltidea.* Targets lateral and ſomewhat marginal, on the front or back of the leaf. Leaves coriaceous, moſtly veiny, as well as downy, beneath.

19. *Platiſma.* Shields target-like, ſcattered. Leaves membranous, aſcending, criſped, naked on both ſides.

20. *Phyſcia.* Shields ſcattered. Leaves rather cartilaginous, ſmooth, tufted, linear and jagged.

F. Receptacles elevated far above the leaves, on the tops of ſtalks.

21. *Scyphophorus.* Tubercles on hollow ſtalks, dilated upwards, and cloſed.

22. *Helopodium.* Tubercles fungous, on nearly ſolid, ſimply ſub-divided ſtalks, ſcarcely dilated upwards.

23. *Cladonia.* Tubercles nearly globoſe, on taper-pointed, elongated, tubular, branched and ſhrubby ſtalks.

Family 3. CAULESCENT LICHENS.

Stems either ſolid, branched, round and ſhrubby, or elongated and thread or ſtrap-like.

G. Shrubby, with ſolid rigid ſtems.

24. *Stereocaulon.* Shields globoſe, ſolid, ſcattered.

25. *Sphærophorus.* Cellules terminal, finally burſting.

26. *Cornicularia.* Shields radiated, at length rather convex, terminal.

H. Filamentous, elongated.

27. *Setaria.* Shields and powdery maſſes lateral. Branches naked, ſmooth and contiguous.

28. *Uſnea.* Shields flat and radiated, or convex and ſlightly bordered, ſcattered; as well as powdery maſſes. Branches with a cruſtaceous, ſomewhat jointed, coat.

It will eaſily be ſeen, by compariſon, how far theſe ſections anſwer to Hoffmann's genera. The firſt five have nothing correſponding with them. *Patellaria* is equivalent to his *Ver-*

Verrucaria, at leaſt in idea. *Bæomyces*, *Scyphophorus*, *Helopodium*, and *Cladonia*, are included in his *Cladonia*. *Pſoroma* and *Placodium* are his *Pſora*. *Collema*, *Peltidea*, (his *Peltigera*,) *Umbiliaria*, and *Uſnea*, agree with his. *Calicium*, *Iſidium*, *Endocarpon*, *Sticta*, *Sphærophorus*, and *Cornicularia*, are not found in his ſyſtem, except that *Sphærophorus* is, in his *Pl. Lich.*, called *Coralloides*. *Imbricaria*, *Lobaria*, *Platiſma*, and *Phyſcia* are nearly comprehended under his *Lobaria*.

It is to be remarked that, in his generic characters, Hoffmann takes the habit into conſideration. To this perhaps Acharius, as a philoſophical Linnæan, had objections, which induced him to conſider theſe different aſſemblages of ſpecies rather as ſections of one great natural genus, the fructification being ſtill much in the dark. In 1803 however he publiſhed his *Methodus*, in 8vo. with eight coloured plates, and, ſoon after, a ſupplement. In this new work, ſtill keeping the Linnæan principle in view, he aimed at diſtinguiſhing the *Lichenes*, as a natural order, into ſeveral genera, by the fructification alone. Before we detail theſe, it is neceſſary to take a view of the phyſiology of the order, as explained in his able preface, as well as of his technical terms. Both theſe ſubjects are treated alſo in the preface to his *Prodromus;* but it is beſt to conſider here his latter view of them only, and they are ſo united together, that an explanation of the terms will ſufficiently elucidate the phyſiological ideas of the author.

Thallus is uſed by Acharius for the whole plant, or herbage, of a *Lichen*, the *frons* of Linnæus (ſee Frond) ; diſtinct from every thing belonging to the fructification. It is root, ſtem, ſtalk, and leaf, all in one, its ſubſtance ſeeming to aſſume the nature of either, according to circumſtances ; but this is, in ſome meaſure, the caſe with every vegetable body, and by no means peculiar to a *Thallus* or *Frond.* Acharius is unwilling to uſe the latter word for a mere ſhapeleſs cruſt or maſs of powder ; but we confeſs ourſelves unable to diſcover any uſe, or indeed any diſtinct meaning, in the new term, unleſs it were reſtricted to ſuch cruſt or powder. Its meaning moreover, ϑαλλος, *a green bough*, is preciſely equivalent to *frons ;* but this objection is not material.—Of the different forms and textures of this part, we have ſufficiently ſpoken under the article Lichen. It is an eſſential part, though ſometimes nearly or quite deſtroyed by age, though the fructification may ſtill, for a while, remain.

Apothecium (αποϑηκη, *a receptacle*), is the *receptaculum* of Linnæus, the part where the ſeeds are formed and brought to maturity. Acharius defines it as " bearing, encompaſſing, or containing the organs ſubſervient to the propagation of Lichens ; diſtinct in figure, generally in colour and nature, from the *thallus*, or frond, on which it is ſituated, and which ſometimes furniſhes it with an exterior covering." The fecundation having taken place, in ſome manner unknown to us, within the frond, theſe receptacles, (as we muſt ſtill beg leave to call them,) gradually increaſe, and finally expoſe their internal part, which is either occupied by a fibrous texture, more or leſs denſe, or is, when moiſt, in ſome meaſure gelatinous, rarely appearing hollow. Their ſhape is moſt frequently roundiſh, but otherwiſe very various, as has been already explained. (See Lichen, ſect. 1.) When ripe they diſcharge their ſeeds, either naked, or contained in caſes. Sometimes, though rarely, their under-ſide produces naked ſeeds. To the various ſituations of theſe receptacles, the generic characters already explained have ſufficiently alluded ; their various kinds have alſo been mentioned, but will now be more fully deſcribed. Hedwig and Gærtner differ about the ſeeds of Lichens ; the latter ſuppoſing them (for it is entirely ſuppoſition) to be rather of the nature of buds or offsets, which he terms *propagines*, and not actual ſeeds produced by ſexual impregnation. The reaſon for this opinion ſeems to be, that the mode of ſuch impregnation has not been diſcovered, any more than in ferns or ſea-weeds.

Acharius defines thirteen ſorts of receptacle, or *apothecium.*

1. *Scutellæ*, ſhields. Theſe are open, orbicular, compared by Dillenius to a ſaucer ; their border, and under-ſide, of the ſubſtance, and uſually of the colour of the cruſt, or leaf. Their diſk, (*ſtratum proligerum* of Acharius) almoſt always differing in colour, and totally diſtinct in ſubſtance from the margin, contains the ſeeds in the vertical parallel cells of its internal ſubſtance. Their border is termed an *acceſſory*, not a *proper*, one. The ſhields are either thick, tumid, entirely ſeſſile, or even ſunk, as in many cruſtaceous Lichens ; or membranous, often elevated, ſomewhat ſtalked ; very rarely they become perforated in the centre.

2. *Patellulæ*. Spangles. (See Dillenius, p. 133.) Open and orbicular, like ſhields, but ſeſſile, and by no means formed of any part of the cruſt, from which they differ in colour, being moſt uſually black. The ſeeds are lodged beneath the membrane that covers their diſk, as in the former ; and the diſk is ſurrounded by a *proper* border, that is, of its own ſubſtance and colour. Their ſeeds are obſerved to be naked in the cellular ſubſtance of the diſk, not incloſed in caſes. The figure of the *patellulæ* is not liable to much variation, except that the diſk is ſometimes concave, ſometimes flat, but more frequently convex, and in an advanced ſtate often globoſe, ſo that the border diſappears. This kind of receptacle is properly that of the *leprous tuberculated* Lichens of Linnæus, and belongs to the genus *Lecidea* of Acharius.

3. *Cyphellæ*. Pits. Open cup-like little naked, white or yellow, ſpots, on the under, generally downy, ſide of the leaf, in the Acharian genus *Sticta ;* ſee Engl. Bot. t. 2298. 2359. They are at firſt minute dots, globoſe, and immerſed in the ſubſtance of the leaf ; at length they burſt, with an irregular margin, and diſcharge a powder, which Acharius, who has firſt defined and named them, ſuppoſed to be of " a ſpermatic nature ;" by which we preſume he means of the nature of pollen.

4. *Lirellæ*. Clefts. Open, elongated, ſeſſile, black receptacles, with a ſomewhat ſpongy, very narrow, or quite linear diſk, and a proper border, parallel to it on each ſide. Sometimes there is an acceſſory border from the cruſt beſides. This is the peculiar fructification of the genus *Opegrapha* of Perſoon ; ſee Engl. Bot. v. 25 and 26 eſpecially. The *lirellæ* are either ſimple and ſolitary, or aggregate, confluent, and branched. Theſe differences often occur in the ſame ſpecies. L. *ſcriptus* of Linnæus is a ſpecimen of the genus.

5. *Pilidia.* (πιλιδιον, a little cap or hat.) Puffs.—Little round bordered knobs, whoſe diſk, at firſt covered with a membrane, and often clothed with fine grey hoarineſs, finally turns to powder. They are elongated below into a ſtalk, fixed to the cruſt, but totally different from it. *Calicium* of Perſoon has this ſort of fructification.

6. *Orbillæ.* Orbs. Flat, orbicular and dilated, of the ſubſtance of the frond, terminal, peltate, without a border, but often ſurrounded with radiating ſhoots. The membrane, or diſk, under which the ſeeds are lodged, is ſmooth, moſtly of the colour of the frond. Theſe are ſeen in the filamentous Lichens, or *Uſneæ*. Spurious *orbillæ*, bordered like ſhields or ſpangles when young, are found in ſome *Corniculariæ* of Acharius.

If *orbillæ* produce real ſeeds, the filamentous Lichens have two kinds of fruit, for they bear alſo proper tubercles, or rather *cephalodia*; ſee n. 12. But we cannot eaſily aſſent to this; ſee *Uſnea* hereafter.

7. *Peltæ.* Targets. Flat, cloſely preſſed, and attached by their whole under-ſide, as if glued, to the frond, ſometimes at its back. They are broad, kidney-ſhaped or oblong, rarely irregular, covered with a thin coloured diſk, with no border, except occaſionally a very minute acceſſory one, which ſeems to circumſcribe them. In an early ſtage they are concave, and concealed by a thin gelatinous fugacious membrane, or veil. (See Lichen, ſect. 5.)—The genus *Cetraria* is thought by Acharius to have ſpurious *peltæ*, with a more evident border, entire, crenate or lobed, which is unconnected with the frond beneath, though the greater part of the receptacle is cloſely attached thereto, and ſometimes ſunk into its ſubſtance.

8. *Tricæ.* Buttons; (*Dill.*)—Roundiſh, ſeſſile, unexpanding receptacles, of a peculiar, compact, black, ſolid ſubſtance, continued along their whole ſurface. Their upper ſide is diſtinguiſhed by concentric or plaited and twiſted folds, covered by one common membrane through all their convolutions, and lodging in their inſide naked ſeeds, deſtitute of caſes, or cells. See Gyrophora, to which theſe buttons are peculiar.—Sometimes the preſence of but one marginal fold gives this kind of receptacle the appearance of a *patellula*, ſee n. 2; but others will uſually be found with more, on the ſame plant, even in *Gyrophora puſtulata*, Engl. Bot. t. 1283.

9. *Thalamia.* Hollows.—Spherical, nearly cloſed receptacles, lodged in the ſubſtance of the frond, lined with a proper coat, under which, in their ſpongy texture, are cells, each containing from two to four ſeeds. Each hollow finally opens by an orifice in the ſurface of the frond above, which ſometimes ſupplies it with a ſpurious border. Theſe are the proper receptacles of *Endocarpon*; ſee that article.

10. *Tubercula.* Tubercles.—Spherical, or ſlightly conical, nearly cloſed, cruſtaceous, black, more or leſs immerſed in the ſurface of the cruſtaceous frond, or *thallus*, which they elevate; or ſometimes they are expoſed, being merely ſeſſile. Each contains a ball or maſs of connected ſeeds, deſtitute of cells, but enveloped in one common membrane, and the whole are finally diſcharged together by an orifice at the top of the tubercle. Such is the fruit of *Verrucaria*, and if this account be correct, that genus is certainly as diſtinct in fructification as in habit from *Endocarpon*. The nature of theſe minute parts is very hard to determine, eſpecially as the tubercles of *Verrucaria* often come under our inſpection after they are emptied of their contents.

It muſt be remembered that Acharius here uſes the term tubercle in a reſtricted ſenſe, and not with that latitude habitual to Linnæus and his followers, amongſt whom it commonly, when applied to Lichens, means almoſt any thing that is not a *ſhield*.

11. *Ciſtulæ.* Cellules.—Globoſe terminal receptacles, formed out of the ſubſtance of the frond, filled with uncoated ſeeds intermixed with fibres, and at length burſting irregularly; as in *Sphærophoron*. See Lichen, ſect. 8.

12. *Cephalodia.* Knobs.—Convex, or more or leſs globular, covered externally with a coloured ſeed-bearing cruſt, and placed generally at the extremities of ſtalks originating from the frond (being rarely ſeſſile and ſcattered as in *Stereocaulon*), permanent. Such are ſeen in *Bæomyces*, or the Cup-bearing Lichens. (See Lichen, ſect. 7.) In ſome of the filamentous tribe, *Uſneæ*, they are at firſt like *patellulæ*, and ſeſſile, becoming afterwards convex and irregular. See *orbillæ*, n. 6.—*Cephalodia* are ſometimes ſimple, ſometimes compound or conglomerated.

13. *Globuli.* Globules.—Globoſe, ſolid and cruſtaceous, formed of the ſubſtance of the frond, and terminating its points or branches, from whence they fall off entire, leaving a pit or cavity. They are ſuppoſed to be covered all over with a coloured ſeed-bearing membrane, and are taken for one of the modes of fructification in the *Iſidium* of Acharius; ſee hereafter.

Acharius explains as follows certain terms uſed in his deſcriptions of Lichens.

Thecæ are the caſes or cells containing the ſeeds, in the diſk of moſt receptacles, at leaſt in *ſcutellæ*.

Sporæ are the ſeeds, of whoſe nature very little is known. This author declines calling them *ſemina*, becauſe they are preſumed to have no cotyledons; but that is no ſufficient reaſon. The queſtion is, whether they are produced by ſexual impregnation; if not, they are *gemmæ* (buds or offſets). We need not here repeat what is ſaid under the article Gemma.

Propagula are thoſe little roundiſh deciduous bodies, commonly termed *powder* in ſpeaking of theſe plants, but which may be called the *effloreſcence*. Theſe bodies are either diſperſed or cluſtered on the ſurface of the frond, and each of them is aſſerted by Schreber to be a hollow veſicle, and by Hoffmann to diſcharge, through an orifice, a quantity of fine duſt. They are alſo not unfrequently powdery at their outſide; ſometimes interwoven with very ſhort and ſlender threads, and finally paſs into what is ſuppoſed by Acharius to be an aſſemblage of minute buds, *gemmæ*.

Acharius obſerves, that "ſome have taken theſe bodies for pollen, or male flowers; but that this conjecture is utterly contrary to the obſervations of Micheli and Schmidel, who ſaw them germinate, and produce offſpring." Schmidel's remarks we have not ſeen, but Micheli certainly aſſerts, in his *Nova Plantarum Genera*, 74, t. 41, Q, R, that he ſaw this powdery matter germinate, and produce plants, in the cup-bearing tribe of Lichens. He therefore takes the ſhields and their contents, which he has delineated in his t. 52, for male bloſſoms, and this opinion was adopted by Linnæus. Hedwig nevertheleſs, in his *Theoria*, p. 120, ſtrongly combats this doctrine, aſſerting that Micheli might eaſily be miſtaken, as the real ſeeds, viſible only with a very high magnifier, would eſcape obſervation, when fallen among the powder, and vegetating there, would cauſe the young plants to ſeem the offſpring of the latter. Gærtner thinks the powder is of the nature of buds; but his opinion is equally theoretical with that of Adanſon, who takes the contents of the ſhields for ſeeds. Acharius adopts both theſe opinions, and offers an ingenious conjecture of his own, which is, that the powdery buds may be deſtined to produce individual plants that propagate themſelves ſubſequently by the ſame mode; while the ſeeds of the ſhields or tubercles may produce complete fructifying plants, which go on to increaſe by ſeed. Hence, his genus of *Lepraria*, as he preſumes, propagates itſelf by the former means, without any other. We confeſs this genus is very puzzling; but when ſo conſpicuous a plant as *Lemna* has ſo long flowered and fruited without obſervation, and ſuppoſed *Leprariæ* are from time to time detected with ſhields, we are diſpoſed to attribute much to our ignorance. We certainly cannot agree with Dr. Acharius when he goes ſo far as to ſuggeſt that the ſeeds, which originate from the ſhields, may ſometimes produce ſhields alone without any frond! The latter is well known to be now and then fugacious, and ſo is invariably the root of *Cuſcuta*, though abſolutely eſſential to the young plant. It is very deſirable that ſome perſon ſhould ſee the germination of the ſeeds of Lichens, taken from the ſhields; though there ſeems little reaſon to doubt their being ſuch, whatever the powdery maſſes or warts may be. We are chiefly led by the obſervation of Hoffmann, above-mentioned, to perſiſt in the opinion of Hedwig. If the powdery granules in queſtion be really vaſcular, and emit a duſt, it is ſo analogous to the anthers of all other known plants, and ſo unlike the nature of *gemmæ*, that, if the contents of the ſhields can be proved to be ſeeds, of which indeed we have no doubt, there would be little reaſon to heſitate reſpecting the others. We do not mean that every granular appearance about the fronds of Lichens muſt be anthers. Much of it, doubtleſs, is gemmaceous, but anthers may accompany it; and the latter may in *Lepraria* impregnate minute or ſolitary ſeeds, that alſo accompany the granules, and that have hitherto eſcaped detection.

Soredia are aſſemblages of the above powdery bodies, collected on a ſort of receptacle. This Acharius exemplifies by *Variolaria*, as will be mentioned in ſpeaking of that genus. Some *ſoredia* originate from cracks in the frond.

Pulvinuli are excreſcences found occaſionally on the ſurface of the frond, often cluſtered or branched, whoſe uſe and nature are unknown. They occur in *Gyrophora puſtulata;* but are moſt remarkable in *Lichen glomuliferus* of Lightfoot. See Engl. Bot. t. 293.

Verrucæ are variouſly-ſhaped protuberances, ſolid, and uſually ſmooth, originating from the cruſt, and ſometimes, though rarely, bearing or lodging the fructification, as in *Lichen pertuſus* of Linnæus. See Engl. Bot. t. 677; alſo t. 2317. 2336.

Podetia are ſtalks elevating the fruit, as in the Cup Lichens, and are either ſolid or hollow.

Lorula are the long thread-like branches of the *Uſnea* tribe.

We are now to take a compendious view of the genera of the *Lichenes*, as defined in the *Methodus* of Acharius, upon principles dependent on the parts of fructification, or, at leaſt, propagation. Theſe genera are 23, diſpoſed in three ſections.

Sect. 1. STEREOTHALAMI; (from ϛερεω, *to deprive*, and ϑαλαμος, *a bed.*)

Receptacle none. Organs of propagation naked, ſcattered or aggregate.

1. *Pulveraria.* Efflореſcence powdery, collected into tufts by fine, ſlender, interwoven threads. (Frond none.)

This genus is now reduced by its author to the following. See *Lepraria chlorina*, Engl. Bot. t. 2038, a moſt beautiful production, which covers rocks with a coat many inches, or ſome feet, broad, reſembling bright lemon-coloured cloth or velvet.

2. *Lepraria.* Efflореſcence ſomewhat globular, ſcattered looſe over a cruſtaceous baſe, which it often entirely covers ſuperficially. (Frond cruſtaceous, indeterminate.)

This, like *Pulveraria*, comes under the *Byſſus* of Linnæus, who has deſcribed ſome ſpecies of it. The moſt common is *L. botryoides*, Ach. n. 7. Engl. Bot. t. 2148, ſeen every where on the trunks of trees, and on poſts, to which it gives a green colour in winter. Another very common ſpecies, *incana*, n. 2, has been found with *patellulæ*, which make it a *Lecidea* of Acharius. See Engl. Bot. t. 1683; as has his *leiphæma*, n. 3, which is his *Lecidea* (or rather *Parmelia*) *Stonei;* Meth. 65; *Lichen Hæmatomma;* Engl. Bot. t. 486. *Lepraria rubens*, n. 6, is *Conferva lichenicola;* Engl. Bot. t. 1609; and probably Micheli's Lichen cruſtaceus, arboribus adnaſcens, tenuiſſimus, pulverulentus, ruber; Nov. Gen. 100. n. 73.

Wiggers, or rather Weber (ſee the beginning of this article), places this genus (under the name *Lepra*, by which Haller had previouſly diſtinguiſhed it), in his order of *Aſpermæ*, defined as "deſtitute of fructification." But many of the plants, which he refers to that order, are now known to have ſeeds, and his genera are liable otherwiſe to much exception.

3. *Spiloma.* Efflореſcence? in ſhapeleſs, ſuperficial maſſes, woolly and powdery, rigid. (Frond cruſtaceous, indeterminate, thin, uniform.)—Of this genus ſeveral ſpecies may be ſeen in Engl. Bot. v. 29 and 30. Notwithſtanding the above character, the cruſt may be ſeen to be determinate, or limited, in Engl. Bot. t. 2150, where it has a very diſtinct and curious border.

4. *Variolaria.* Efflореſcence globoſe, collected in diſtinct aſſemblages (*ſoredia*). (Frond cruſtaceous, moſtly determinate.)—Great light has been thrown upon this genus ſince the publication of the *Methodus* of Acharius. See Turner Tr. of Linn. Soc. v. 9. 137—140, and Engl. Bot. v. 28. t. 2008; v. 29. t. 2061; ſo that it is now removed by Acharius himſelf to the ſecond ſection of his *Lichenes*, as having true receptacles. It ſeems indeed, in our opinion, to give no ſmall ſupport to the theory of the powdery efflореſcence (*propagula*), above-deſcribed, being the male part of the fructification *Variolaria* has true receptacles, ſeated on a thick tartareous cruſt, which ſupplies them with an acceſſory border, of more or leſs thickneſs or regularity. Their diſk, or ſpace within the border, is occupied with an aſſemblage of the powdery ſubſtance in queſtion, of which ſo much has already been ſaid, and under which has been obſerved, in ſeveral ſpecies, a coloured fleſhy or waxy diſk, lodging ſeeds (as we all preſume them to be) in vertical cells; like a true ſhield. Here then the two ſexes ſeem united in one receptacle. In ſome caſes the male is moſt abundant and predominant, and the waxy diſk is ſcarcely diſcernible; at leaſt at that period of growth when ſuch ſpecimens have happened to come under examination, which is when the powdery ſubſtance renders them moſt obvious; but it is moſt likely, from analogy of other plants, that the diſk may ſubſequently increaſe. In other inſtances, as in *Lichen multipunctus*, Engl. Bot. t. 2061, the powder is in leſs proportion, ſooner almoſt diſappears, and the diſk is very evident beneath it. Some traces of a diſk may be found, in what we would term the flowering ſtate of the original *Variolaria faginea*. See Engl. Bot. t. 1713.—The Hedwigian theory of the impregnation of *Lichenes* appears to us greatly confirmed by theſe obſervations, and we cannot but think that the opinion of the germination of their powdery efflореſcence has been too haſtily admitted by recent naturaliſts.

Sect. 2. IDIOTHALAMI; (from ιδιος, *proper*, and ϑαλαμος.)

Receptacle compoſed of a peculiar compact hardiſh ſubſtance, not in any manner formed out of the frond, from which it differs in colour (being moſtly black).

The ſeeds are naked, not encloſed in proper cells, except in *Endocarpon;* upon which we ſhall offer ſome remarks hereafter.

* *Receptacles open.*

5. *Opegrapha.* Clefts black, ſeſſile, oblong or linear, ſimple, confluent, or branched, ſtraight or zigzag, bordered; their diſk flat or ſlightly concave, naked or powdery, narrow, linear, rarely dilated; their border (of their own ſubſtance) often very narrow and ſcarcely perceptible, ſometimes tumid, elevated, and ſomewhat inflexed. Sometimes there is a ſpurious acceſſory border, or mere ſwelling of the cruſt. (Frond cruſtaceous, uniform, thin, generally indeterminate; occaſionally leprous.)

Lichen ſcriptus of Linnæus, with about thirty known ſpecies beſides, compoſe this genus. See Engl. Bot. v. 25, 26. 32, &c.

5*. *Arthonia.* Achar. in Schrad. N. Journ. v. 1. faſc. 3. 13. 3. Receptacles flattiſh, ſhapeleſs, ſmooth, without a border, ſeſſile.

We introduce this, as deſcribed by the author ſince the publication of his *Methodus.* A genuine example of it is *A. Swartziana,* ſee as above, p. 13. t. 4. f. 1. Engl. Bot. t. 2079. We conceive ſeveral plants are improperly referred to this genus by Acharius, as *Spiloma verſicolor,* Engl. Bot. t. 2076, and *Opegrapha aſtroidea,* Ach. Meth. 25. Engl. Bot. t. 1847; to ſay nothing of *Lichen croceus,* t. 498, and *ſaccatus,* t. 288; whoſe ſhields or targets have no irregularity of ſhape, and whoſe fronds are of ſo totally different nature from the cruſt of *A. Swartziana.* In ſhort, we can ſcarcely find another certain ſpecies to aſſociate with this; except poſſibly *A. gyroſa,* Ach. as above, p. 14. t. 4. f. 3.

6. *Lecidea.* Spangles ſeſſile, with a flattiſh or convex diſk. (Frond various; cruſtaceous, whether uniform and limited, or ſcattered and indeterminate; or even leafy, ſomewhat membranous, or ſtellated. Acharius adds "rarely umbilicated;" from an idea now proved erroneous, that *Gyrophora puſtulata* was a *Lecidea*). See GYROPHORA.

This is an extenſive genus, excellent as far as only cruſtaceous ſpecies are admitted, ſuch being the genuine *Lichenes leproſi tuberculati* of Linnæus. See LICHEN, ſection the 1ſt; and the term *patellulæ* in the preſent article.—Theſe conſtitute the firſt ſection named *catillaria,* compriſing 80 ſpecies, 45 of which have black or blueiſh receptacles, the reſt red, yellow, or browniſh.—The ſecond ſection, *lepidoma,* has a figured or lobed cruſt, often imbricated, and embraces 14 ſpecies, among which are *Lichen niger,* Engl. Bot. t. 1161, and *decipiens,* t. 870.—The third is a ſmall ſection, with a leafy cruſt, *ſaphenaria,* into which ſhould be admitted *Lichen dædaleus,* Engl. Bot. t. 2129.—The fourth, *omphalaria,* contains only *Gyrophora puſtulata,* with its near relation *penſylvanica,* and ought to be aboliſhed.

7. *Calicium.* Puffs (*pilidia*) turbinate, lenticular, or nearly globoſe. They are generally elevated on a rigid ſimple ſtalk, of a totally different ſubſtance from the cruſt. (Frond cruſtaceous, either leprous, or tartareous, uniform or ſcattered, powdery and granulated, or ſolid and checquered, or ſomewhat leafy and imbricated; ſee *Lichen phæocephalus,* Turn. Tr. of Linn. Soc. v. 8. 260. t. 6.) Acharius deſcribes 18 ſpecies, to which ſeveral have ſince been added by diſcoveries in Lapland and England. They are minute productions, long confounded with *fungi,* from which they were firſt diſtinguiſhed by Perſoon on account of their cruſt. It muſt be acknowledged that they bear the ſame analogy to ſeveral genera of fungi, that other Lichens, with proper ſhields, do to others, the *Octoſporæ* of Hedwig. Examples of *Calicium* are ſeen in Engl. Bot. t. 1465. 1539, 1540. 1832. &c.

** *Receptacles cloſed, at length opening.*

8. *Gyrophora.* Buttons (*tricæ*) ſuperficial, flattiſh. (Frond leafy, peltate, between membranous and leathery.) See GYROPHORA, in its proper place.

9. *Bathelium.* Receptacles ſeſſile, ſomewhat globoſe, opening by a deciduous lid, hollow, of one to three cells, lined with ſeeds. (Frond cruſtaceous, indeterminate, uniform.) This genus conſiſts of only *B. maſtoideum,* Ach. Meth. 111. t. 8. f. 3, found on the bark of trees at Sierra Leone by Dr. Afzelius.

10. *Verrucaria.* Tubercles elevated, diſcharging their concatenated ſeeds by a terminal pore, or elſe falling out entire. (Frond thin cruſtaceous, uniform.)

A minute tribe, of which about 40 ſpecies are known. See *Lichen Schraderi,* Engl. Bot. t. 1711; and *analeptus,* t. 1848.

11. *Endocarpon.* Hollows (*thalamia*) hidden in the ſubſtance of the frond, each opening by a little mouth. Seeds encloſed in cells. (Frond membranous, ſomewhat cruſtaceous, of a determinate figure.) See ENDOCARPON in its proper place.

As the ſeeds are certainly encloſed in cells, like the genera of the next ſection, it ſeems deſirable to range this genus with them. We are moreover now well aware that it differs ſufficiently from *Verrucaria* in having parallel cells, lodged in a diſk lining the cavity of the receptacle; whereas, in that, the concatenated naked ſeeds, cluſtered into a ball, fill the cavity. Their habits indeed are alſo totally unlike.

The receptacles of *Endocarpon* are, moreover, ſo united to the ſubſtance of the frond, that they may perhaps be conſidered as belonging to it, though ſomewhat different in colour; ſee Hedw. Crypt. v. 2. t. 20, A.

Sect. 3. CŒNOTHALAMI; (from κοινος, *common* or *general,* and ϑαλαμος.)

Receptacle formed of the frond itſelf, with which it agrees in ſubſtance and colour. Seeds incloſed in proper cells, except in *Sphærophoron.*

* *Receptacles compound, either pierced or gaping.*

12. *Thelotrema.* Receptacle compound; the outer one wart-like, elevated, of the ſubſtance of the cruſt; inner ſomewhat globular, with a concave diſk. (Frond a firm, continued, indeterminate cruſt.)—Examples are *Lichen pertuſus,* Linn. Mant. 131. Engl. Bot. t. 677; and *L. incluſus,* t. 678. Acharius ſeems to have had the former in view when he defined the receptacles as "compound and opening by ſeveral little mouths." They are, in that ſpecies, generally aggregate or confluent, but each is internally diſtinct; and in others they are uſually as diſtinct and ſeparate as the ſhields of any other Lichen.

** *Receptacles nearly globular, cloſed, at length burſting*

13. *Sphærophoron.* Cellules nearly globoſe, each encloſing a roundiſh ball of naked compact ſeeds, which turns to black powder, and is diſcharged by the torn orifice, leaving the cellule hollow and empty. (Frond ſhrubby, branched, ſolid, rigid; tartareous or minutely fibrous within; with a ſmooth cartilaginous coat.)—This elegant genus is exemplified by *Lichen globiferus,* Engl. Bot. t. 115; and *fragilis,* t. 114; which, with the real *fragilis* of Linnæus, make up the liſt of known ſpecies; ſee LICHEN, ſect. 8 *fruticuloſi.*

14. *Iſidium.* Receptacle of the ſeeds terminal, ſomewhat diſcoid, ſolid, various in thickneſs, covered with, and ſhining through, the cruſt of the *papillæ* of the frond, which at length burſts, and each receptacle appears coloured, and partly expoſed. *Globules* alſo either terminate each of the *papillæ,* or are nearly ſeſſile on the cruſt itſelf. Theſe are coloured, and finally fall out, each leaving a little pit at the ſummit of the *papilla* or branch. The globule is internally ſolid, and both ſides are covered with a ſeed-bearing coat. (Frond cruſtaceous, leprous and tartareous, cracked, rather indeterminate, either papillary only, or throwing up ſolid branches.)

Such is, as preciſely as we can give it, the character of *Iſidium,* a genus founded by Acharius. He allows in a note that this genus is doubtful and ambiguous, neareſt to *Sphærophoron,* but differing in having a properly cruſtaceous frond, or baſis, and eſpecially in the nature of its *ſtratum proligerum,* (diſk, or receptacle of the ſeeds,) which does not turn to duſt; as well as in the preſence of terminal *globules* (ſee the explanation of this term, n. 13, among the kinds of receptacles,) even when the other receptacles are wanting. He adds that this double ſort of fruit in *Iſidium* demands further enquiry, for he is firmly perſuaded that theſe globules belong to the organs of fructification.—We preſume that *Lichen oculatus*, Engl. Bot. t. 1833, (ſee *Stereocaulon* hereafter) exhibits the former kind of receptacle, and *L Weſtringii*, t. 2204, the latter; but of this we have no certain knowledge.—*Iſidium gonatodes* of Acharius appears by his *Supplementum* to be a mere variety of the cruſt of *L. tartareus* of Linnæus.

*** *Receptacles orbicular, open; their border of the colour of the frond, ſurrounding a variouſly-coloured diſk.*

15. *Urceolaria.* Shields or ſpangles cup-ſhaped, variouſly coloured, ſunk into the ſubſtance of the cruſt, or of its fragments or warts. Diſk concave, rarely becoming flattiſh by age, but never elevated above the cruſt. Proper border often ſcarcely manifeſt, of the colour of the diſk; the acceſſory one ſometimes formed of the cruſt, which is elevated like a ring, ſurrounding the diſk of each ſhield; but it is generally ſpurious, not united to the ſhield throughout. (Frond cruſtaceous, tartareous, uniform, determinate, checquered or cracked, rarely figured or lobate.)—Examples of this genus are the common *Lichen ſcrupoſus*, Engl. Bot. t. 266; the rare *exanthematicus*, t. 1184. Tr. of Linn. Soc. v. 1. t. 4. f. 1; and *Urceolaria calcarea*, Ach. Meth. 142, very common on grey marble tombſtones, in expoſed country churchyards, where it forms inſeparable hard white patches, two or three feet broad. This laſt is *Patellaria multipuncta*, Hoffm. Pl. Lich. t. 63. f. 1—3; *Lichen cinereus*, Engl. Bot. t. 820, but not that of Linnæus. It is erroneouſly made a *Parmelia* in Ach. Meth. 158.

16. *Parmelia.* Shields ſuperficial, or elevated, thick or ſomewhat membranous, flattiſh, convex, or concave, crowned with a free acceſſory border. (Frond various, cruſtaceous, leafy, branched or laciniated, cartilaginous, membranous or gelatinous.) This vaſt and various genus ſwallows up the greater part of the natural order; *Lecidea*, n. 6, being far inferior to it in number of ſpecies, though greatly ſuperior as a natural and conſiſtent genus. 204 *Parmeliæ* are defined in the *Methodus*, beſides ſeveral in the *Supplementum* of Acharius. This author is often in doubt to which genus ſome ſpecies belong, for want of knowing them in every ſtate of growth. The true *Parmeliæ* have an acceſſory border of the colour and ſubſtance of their cruſt, but no proper border formed of the ſubſtance of the diſk. The ſections of this genus are eleven, diſtinguiſhed by the nature of their frond, the firſt three being cruſtaceous, as in *Lichen tartareus* (ſee Lichen, ſect. 2.); the two next are leafy, more or leſs depreſſed. The ſixth ſection conſiſts of Hoffmann's *Collema*, (ſee the early part of the preſent article,) and has been lately reſtored to the rank of a genus in Engl. Bot. t. 2284, with this character. "Shields orbicular, horizontal, nearly ſeſſile, ſuperficial, with a gelatinous acceſſory border." The five remaining ſections are the moſt miſcellaneous poſſible, nearly as much ſo as the original genus *Lichen* in Linnæus.

**** *Receptacles flattened, nearly deſtitute of a border; their upper ſide entirely covered with a thin ſeed-bearing diſk, of conſiderable ſolidity at the ſurface.*

17. *Sticta.* Shields on the upper ſide of the frond, ſeſſile, cloſe-preſſed, orbicular, membranaceous; their diſk flat, rarely ſomewhat convex; their border acceſſory, thin, entire, free, ſlightly tumid, rarely fringed, of the colour of the frond. Pits amongſt the down of the under ſide, ſcattered, ſeſſile, minute, coloured; their diſk roundiſh, powdery; border elevated, a little inflexed, entire or jagged, ſometimes obliterated. (Frond leafy, membranous or in ſome meaſure coriaceous, lobed or jagged, downy or ſhaggy beneath.)

A beautiful and natural genus, of which the pits (*cyphellæ*) at the back of the frond form the moſt eſſential character. Acharius ſeems to have admitted them as a part of the fructification. If ſo, they ſhould ſeem to be the male bloſſoms. The ſpecies of this genus, however, often abound with powdery effloreſcence. See *Lichen limbatus*, Engl. Bot. t. 1104; alſo *ſylvaticus*, t. 2298; *crocatus*, t. 2110; and *auratus*, t. 2359. Acharius has fourteen ſpecies in all, ſeveral of them extra-european.

18. *Peltidea.* Targets cloſely attached to the frond, about the margin, on the upper or under ſide, rarely lateral, or towards the middle, each entirely conſiſting of a flattiſh, very rarely concave, coloured diſk; border acceſſory, very thin and ſcarcely diſcernible, united with the frond, and of the ſame colour. (Frond leafy, rather leathery; with downy veins and fibres beneath, rarely naked; the circumference lobed, its barren lobes depreſſed, fertile ones elongated, aſcending, naked at the back.)

One of the moſt natural genera, the *Peltigera* of Hoffmann; moſt allied to *Sticta* in habit, but wanting the *cyphellæ*, inſtead of which the prominent veins or ribs underneath are remarkable.—See *Lichen caninus*, Engl. Bot. t. 2299; *rufeſcens*, t. 2300; and the more rare *venoſus*, t. 887; *aphthoſus*, t. 1119; and *collinus*, t. 1834; which laſt Dr. Acharius now admits as diſtinct from *rufeſcens*, and the ſame plant with his *Peltidea ſcutata*. He alſo informs us that his *P. chlorophylla*, n. 7, is no other than his *Cetraria ſepincola β*. For mention of other ſpecies, ſee Lichen, ſect. 5.—*Lichen croceus*, Engl. Bot. t. 498; and *ſaccatus*, t. 288, ſeem to us much better placed in this genus, as in Ach. Meth. 290, than in *Arthonia* above-mentioned.

19. *Cetraria.* Targets ſhield-like, thickiſh, flat, cloſe-preſſed, ſeſſile, near the margin; their circumference looſe, rounded, deformed or wavy; diſk coloured, ſlightly convex; border acceſſory, very narrow, entire or crenate, of the colour of the frond. (Frond leafy, membranous or ſomewhat cartilaginous, rigid, ſmooth and naked on both ſides; ſometimes cellular or pitted; lobed and jagged, often criſped at the edges.)

The receptacles of this genus are, as it were, of an intermediate kind between ſhields and targets, rather moſt akin to the latter. The nature of the frond however, its ſmoothneſs, poliſh, and membranous, ſomewhat rigid, texture, render *Cetraria* very diſtinct, on the ſcore of habit, from the laſt. But eight or nine ſpecies are deſcribed; among which are *Lichen iſlandicus*, Linn. n. 50. Engl. Bot. t. 1330; *cucullatus*, Sm. Tr. of Linn. Soc. v. 1. 84. t. 4. f. 7; *glaucus*, Linn. n. 67. Engl. Bot. t. 1606. See Lichen, ſect. 4.

20. *Cornicularia.* Orbs ſhield-like, terminal, peltate, thickiſh, cartilaginous, orbicular, flat; at length rather convex, uneven, and irregular; diſk generally of the colour of the frond; border ſcarcely any, except in a young ſtate, a ſlight acceſſory one, entire, naked, or radiated, at length reflexed. (Frond cartilaginous, rigid, ſmooth, rather ſolid, ſpongy within, of a ſhrubby, tufted, branched habit, the branches acute.)—This genus is about as numerous in ſpecies as the laſt. It is conceived by Acharius to be intermediate betwixt *Parmelia* and *Uſnea*, approaching the former moſt in the frond, the latter in the fruit, except that the occaſionally deeper colour of the diſk, and the preſence of an early border, betray more affinity to the latter.—Examples of *Cornicularia* are, *Lichen triſtis* of

Weber, Linn. n. 112, deſcribed in Engl. Bot. t. 720; and *hiſpidus*, t. 452; which laſt is *C. ſpadicea* of Acharius: alſo *L. bicolor*, Engl. Bot. t. 1853, which has lately been ſhewn by the Rev. H. Davies to be the *Uſnea lanæ nigræ inſtar ſaxis adhærens;* Dill. Muſc. 66. t. 13. f. 8, a long-diſputed and uncertain plant; t. 13. f. 9. being *L. lanatus*, Engl. Bot. t. 846.

21. *Uſnea.* Orbs ſomewhat coriaceous, flattened, peltate, naked and ſmooth on both ſides, moſtly very much dilated; diſk firſt concave, then flat, even; ſubſequently rather convex and cracked, or warty, ſcarcely coloured; border either none at all, or an acceſſory one, which is entire or toothed in the circumference, very often radiated. Knobs (*cephalodia*) on the ſame, or a different plant, ſeſſile, lateral, ſcattered; at firſt ſhield-like, and ſometimes, in a manner, bordered; finally convex and warty, coloured.

This apparently double mode of fructification in the *Uſneæ*, or proper filamentous Lichens, ſee Lichen, ſect. the laſt, involves as great a myſtery as the *propagula* and ſeeds. Experiments are requiſite to determine whether the *orbillæ* produce ſeeds, as well as the *cephalodia.* Till this is proved, we cannot but feel perſuaded that the former are more probably the male bloſſoms; or poſſibly they may be abortive or imperfect female ones. Being much the moſt frequent and conſpicuous of the two, and greatly reſembling ſhields, they have been of courſe taken for the fruit, the *cephalodia* having nearly eſcaped obſervation, till lately; ſee Sm. Tour on the Continent, ed. 2. v. 1. 335, and Engl. Bot. t. 872.—(The frond of *Uſnea* is branched, with elongated, cylindrical, thready ſhoots, either nearly erect, proſtrate or pendulous, beſet with ſmall fibres, and tapering towards the extremities; their coat cruſtaceous, more or leſs diſtinctly jointed like a necklace, and roughiſh, having a central or medullary thread, which is ſemipellucid and elaſtic.)

There can be little doubt of the natural diſtinctneſs of the preſent genus, though ſome *Parmeliæ*, (as *L. divaricatus* of Linnæus,) greatly reſemble it in general aſpect. The jointed frond is very curious, and we believe eſſential. See examples of *Uſnea* in *Lichen floridus*, Engl. Bot. t. 872; *hirtus*, t. 1354; *plicatus*, t. 257; and *articulatus*, t. 258. Many ſpecies referred by Hoffmann and others to the ſame genus, as *L. divaricatus;* and *jubatus*, Engl. Bot. t. 1880; make a ſection in the *Parmelia* of Acharius, called *tricharia.*—If the knobs be the true female fructification, *Uſnea* rather belongs to the following ſection.

***** *Receptacles convex, more or leſs globoſe, clothed with a ſeed-bearing layer, or diſk, ſeſſile either on the branches, papillary proceſſes, or peculiar ſtalks, of the frond, terminal and permanent.*

22. *Stereocaulon.* Knobs ſomewhat turbinate; at firſt furniſhed with a proper border; then globoſe, without ſtalks, ſimple or cluſtered, coloured, permanent; diſk at firſt flat and ſmall, but gradually occupying the whole; border of the ſame uninterrupted ſubſtance and colour, entire, at length obliterated. (Frond ſolid, almoſt woody, cauleſcent, erect, branched, moſtly clothed with ſcales, rough and fibrous.)

This genus is more reſtricted than the *Stereocaulon* of Hoffmann, yet not much more certain or definite. Its proper type is *Lichen paſchalis*, Engl. Bot. t. 282. Many others are doubtful. We can ſcarcely diſtinguiſh *S. tabulare*, Ach. Meth. 316. t. 7. f. 3, from *Lichen oculatus* of Dickſon, Engl. Bot. t. 1833, *Iſidium? oculatum* of Acharius.

23. *Bæomyces.* Knobs capitate, nearly globoſe, with reflexed, ſcarcely bordered, edges, terminating their own proper fruit-ſtalks, ſimple or cluſtered, coloured, permanent; diſk properly none, the whole globoſe ſurface being covered with the thin, ſolid, ſeed-bearing coat; border none. (Frond either ſomewhat cruſtaceous, ſoftiſh, granulated, indeterminate, rarely figured; or conſiſting of a cartilaginous, leafy and lobed cruſt: fruit-ſtalks elongated out of the very ſubſtance of the frond, ſimple or branched, tubular or nearly ſolid, either dilated or tapering upwards, ſometimes barren.

A great genus, very difficult for the determination of its ſpecies, of which about 50 are deſcribed. Acharius divides it into ſix ſections; in the firſt are *Lichen byſſoides*, Engl. Bot. t. 373, and the beautiful *L. Bæomyces*, t. 374: in the ſecond *L. Papillaria*, t. 907: in the third *L. rubiformis*, t. 2112, and *cæſpititius*, t. 1796: and in the fourth *L. delicatus*, t. 2052, and *microphyllus*, t. 1782. Theſe four ſections compriſe in all but 14 or 15 ſpecies.—The fifth is by far more conſiderable, conſiſting of the true cup-bearing Lichens, *Scyphiferi* or *Pyxidati* of authors, which terms expreſs the cup-like dilatation of their fruit-ſtalks upwards. We have already ſpoken of this tribe; ſee Lichen, ſect. 7. Acharius defines 24 ſpecies, with numerous varieties. They ſeem to have engaged much of his attention. Beautiful ſpecimens of them are his *Bæomyces bacillaris*, (*Lichen filiformis*, Engl. Bot. t. 2028; *L. cocciferus*, t. 2051; *bellidiflorus*, t. 1894; and *alcicornis*, t. 1392.—The ſixth ſection, conſiſting of 11 ſpecies, embraces the ſhrubby and awl-ſhaped kinds of Hoffmann's *Cladonia.* Such are *L. uncialis*, Linn. n. 107. Engl. Bot. t. 174; *rangiferinus*, n. 106. t. 173; and *vermicularis*, n. 108, t. 2029.

By the above detail, this arrangement of the Lichens by their fructification will be ſufficiently intelligible to any who will bend their attention to the ſubject; and the more it is ſtudied, the more honour will it be found to confer on its author. Whatever occaſional laxity, or want of preciſion, may be obſervable in his uſe and adaptation of terms, will be found inevitable in ſo intricate a ſtudy, in which he was himſelf learning, as well as teaching, at every ſtep. We have unfortunately not yet been able to procure a ſight of his more recent publication, entitled *Lichenographia Univerſalis;* but from a manuſcript ſcheme of the whole, and ſome information given by an intelligent friend, we learn that the great object of this work is the eſtabliſhment of a new diſtribution of *Lichenes*, in which the genera are vaſtly multiplied. Moſt of the new ones ſeem formed out of the ſections, or ſubdiviſions, of thoſe of his *Methodus;* ſo that he has here given into the plan of taking *habit* into the generic character, to a great extent. How far this may be eligible, we dare not, without ſeeing his reaſons, decide. The few plates of the book in queſtion are, as we underſtand, entirely ſubſervient to this object, and the ſynonyms, as well as every thing relating to ſpecific illuſtration, are but compendiouſly touched. Such ſubjects will receive a full and ſufficiently diffuſe expoſition, in a new work, the firſt ſheets of which we have lately been allowed to peruſe, the *Lichenographia Britannica* of Mr. Dawſon Turner, and Mr. William Borrer. This, when completed, will exhibit a finiſhed hiſtory of the Britiſh ſpecies, the knowledge of which is nearly equivalent to an acquaintance with the characters of the whole order. An almoſt complete ſeries of their figures is already before the public in the *Engliſh Botany*, to which we have ſo often referred. No other work, in any country, contains ſo many. The diſcrimination of the ſpecies, in this and the other tribes of Britiſh plants, has all along been a primary object of that publication: the new genera of *Lichenes* having been very cautiouſly adopted; indeed ſcarcely at all till lately, they having been conſidered by the author as in too fluctuating a ſtate, an idea which the above account will abundantly juſtify. The ſame reaſon, in addition to ſome inevitable impediments, has hitherto kept back the fourth volume of the *Flora Britannica*, where the Lichens will make a principal figure.

A very intereſting work, on the dyeing properties of Swediſh Lichens, is publiſhed at Stockholm, in 8vo. numbers, from the pen of Dr. Weſtring. Seven numbers have reached us, in which 21 ſpecies of this natural order are illuſtrated by admirable coloured plates, with diſſections, drawn by the hand of Profeſſor Acharius himſelf, and accompanied by ſpecimens of all the colours yielded by each ſpecies, the manner of procuring which is the chief ſubject of the Swediſh letter-preſs. We regret that it is not given to the public in a language more generally underſtood. The variety of beautiful colours afforded by *Pulveraria* (or *Lepraria*) *chlorina*, t. 1, are very ſtriking, and amount to 14, in which blue, green, and yellow are conſpicuous. *Iſidium Weſtringii*, t. 4, yields beautiful ſhades of red, which colour, with different browns, is derived from moſt of the tartareous-cruſted tribe. The leafy membranous ones ſeem to excel in browns, as *L. ſaxatilis*, t. 2; *omphalodes*, t. 7; and *encauſtus*, t. 19, Sm. Tr. of Linn. Soc. v. 1. 83. t. 4. f. 6. The cup-bearing kind appears alſo by the common *L. pyxidatus*, t. 17, to promiſe much in dyeing. When the high price of Orchall, *Lichen Roccella*, is conſidered, the inveſtigation of different ſpecies under the guidance of improved chemiſtry, can hardly be thought an idle ſpeculation, even by thoſe who have no other motive for the ſtudy of nature.

We cannot conclude this article, without adverting to a ſubject, the conſideration of which we have been diſpoſed to put off as long as we could, becauſe it is painful to differ decidedly from thoſe who have made any ſubject their frequent and patient ſtudy, and to whom, moreover, natural ſcience is ſo much indebted in other reſpects. We allude to the ſuppoſed transformation, for we can call it nothing leſs, of one ſpecies of this family into another. We can readily explain why *Lichen niger*, Engl. Bot. t. 1161, may ſeem to be turned into *plumbeus*, t. 353, from the ſeeds of the latter falling into the decayed cruſt of the former, and finding there a moſt excellent ſituation for their germination; as an acorn might vegetate in a bed of rotten moſs. But the transformation of a tuft of moſs into a foreſt of oaks would ſcarcely be a leſs miracle than that ſuggeſted above, or than the change of *Lichen tricolor*, or *corneus*, into a *Sphæria*. It is but juſtice, indeed, to the excellent botaniſt who has aſſerted theſe changes, to declare, that we have no leſs extraordinary reports of the ſame kind from another quarter, reſpecting the progreſs from one ſpecies to another; in all which caſes, doubtleſs, the intricacies of nature have deceived a moſt acute obſerver. We ſhould ſcarcely venture to ſpeak on this ſubject, however clear to our reaſon, from the botany of the cloſet only. A ſlight degree of practical obſervation will ſerve to convince any one, that the diſſemination of many far more obvious plants than theſe, is hardly to be explained, and that the ſhifting ſcenes of nature, in the animal as well as vegetable theatre, are almoſt a metamorphoſis. But we aſſert, with the confidence of experience, that the ſpecies of Lichens themſelves, although undoubtedly liable to varieties like other plants, of which we have traced ſome curious inſtances amongſt the alpine *Gyrophoræ* in particular, are as conſtant as thoſe of any other plants, and even better defined than many of the moſt ſplendid. They differ indeed much in duration, ſomewhat in ſeaſon, and above all perhaps in luxuriance, according to favourable or unfavourable circumſtances; for they are amongſt the moſt hardy children of Flora, deſtined to thrive where others would periſh, and to prepare the way for ſuch as are leſs able to provide for themſelves. To underſtand them well requires laborious reſearch, and perpetual obſervation; but the curioſity and beauty of their ſtructure will repay our toil, whilſt, if we miſtake not, the certainty of their characters and diſtinctions will afford ſatisfaction, as well as inſtruction to the ſcientific mind. S.

LICHENOIDES, Dill. Muſc. 124. See LICHEN.

LICHFIELD, or LITCHFIELD, in *Geography*, an ancient city ſituated in the hundred of Offlow, and county of Stafford, England. According to the parliamentary returns of 1800, it then contained 873 houſes, and 4712 inhabitants, of whom 1666 were found to be engaged in various trades and manufactures. The more ancient name of this city was Lichenfield, which, according to ſome antiquaries, ſignifies the "field of dead bodies," from a maſſacre of the Chriſtians, ſaid to have taken place here during their conteſts with the Pagans in the reign of the emperor Diocleſian. Mr. Shaw, however, in his "Hiſtory of Staffordſhire," expreſſes his decided opinion againſt the truth of this tradition, and with greater probability conſiders it as deriving its name from its marſhy or watery ſituation; the word *Leccian*, from which *lich* comes, ſignifying, in Saxon, land covered with water. Lichfield is ſuppoſed to have ariſen on the ruins of a Roman ſtation called *Etocetum*, which lies about a mile from the preſent city. Whether this idea be correct it is not eaſy to determine; but it ſeems to be clear that Lichfield was totally unknown, or, more properly ſpeaking, had no exiſtence either in the time of the Britons, or Romans. The origin of it, according to the beſt authorities, is attributed to the Saxons; and Mr. Shaw ſays, it was the firſt eſtabliſhed ſeat of that people in England. In the year 669, when St. Chad was biſhop of Lichfield, it was little more than a trifling village. Even after the Norman conqueſt, it was conſidered by the ſynod, then held at London, as too mean a place for the reſidence of a biſhop, for till this time the biſhops lived in an obſcure manner; and ſeem to have done little towards adorning, or extending the town. However, trifling as it was, it received great honours and privileges from ſeveral of the Saxon kings. Borrocaphill, in the neighbourhood of this city, was in all probability one of the camps, or chief reſidences, of ſome Saxon princes: for, though no traces of building remain, the ſituation is too fine and commanding to have eſcaped the notice of that warlike people. In the reign of Henry I. Lichfield was encompaſſed with a ditch, and the caſtle was fortified by biſhop Clinton. No part of the fortifications of the latter are now viſible; but the field in which it ſtood is ſtill denominated Caſtlefield, and the ditch around the city may be eaſily traced by an attentive obſerver. The right of coinage was granted to the biſhops of this dioceſe by king Stephen; but they did not enjoy this privilege for any conſiderable period. Biſhop Langton, who flouriſhed in the time of Edward I. was a great benefactor to this city, having built, among other things, an excellent bridge over the pool which ſeparates the town from the cloſe. In the twenty-third year of the reign of the laſt-mentioned prince, (1305.) Lichfield firſt ſent members to parliament, which it ever after continued to do. Edward VI. conſtituted it a city by charter in the year 1549. This charter gave the corporation power to appoint bailiffs and other chief officers, who ſhould be entitled to hold all pleas within the precincts of the city. Queen Mary, with the authority of parliament, confirmed theſe privileges in the year 1553, and added ſeveral others of importance. The city, which before that time formed a member or parcel of Staffordſhire, was then declared to be a county of itſelf for ever, from and after the enſuing feaſt of St. Thomas. All actions of whatever denomination ariſing within the city, were ordained to be held by the bailiffs and citizens, if they could determine them, and if not by the juſtices next coming into the city, and not on any account by any authority out of the city. Theſe great privileges were conferred in conſequence of the faithful ſervices of the citizens in the time of rebellion. Both theſe charters were ratified by queen Elizabeth, and afterwards confirmed by her ſucceſſor James I. who granted ſtill further immunities to this city. Charles II. confirmed all the privileges of this city, by a charter dated the 5th of November 1664. The government at preſent is veſted in two bailiffs, elected from the common council, one of whom is named by the biſhop, and the other by the council themſelves, a recorder, a ſheriff, a ſteward, and other inferior officers. The burgeſſes are twenty-four in number. Lichfield ſends two members to parliament, the right of election being in the bailiffs, magiſtrates, freeholders of 40*s.* a-year, the holders of burgage tenements, and ſuch freemen as are enrolled and pay ſcot and lot. The number of voters is eſtimated at 620.

This city has been the ſeat of a biſhop's ſee from a very early period. The famous St. Ceadda was conſecrated in the year 669. The great Offa, king of Mercia, of which Staffordſhire formed a part, inſiſted upon his kingdom being governed by an archiepiſcopal power, and that the biſhop of Lichfield ſhould be appointed to that dignity. Accordingly Adulphus, the ſucceſſor of Sigebert, was created archbiſhop of Lichfield by pope Adrian, and the pall ſent to him from Rome, about the year 786. Lichfield, however, did not long enjoy the pre-eminence it had thus acquired, for upon the death of Offa it was again reduced to a biſhopric, at the earneſt requeſt of the archbiſhop of Canterbury, who preſented pope Leo, the then poſſeſſor of the papal chair, with a large ſum of money, in order to give weight to his entreaties. For a conſiderable period the biſhoprics of Coventry and Lichfield were united, but at the reformation they were again disjoined. In the tower, built by biſhop Clinton, king Richard II. is ſaid to have kept his ſumptuous Chriſtmas feſtival, in the year 1397, when he conſumed two hundred tuns of wine and two thouſand oxen. This fortreſs was likewiſe the place of his confinement when on his way to the Tower of London as a priſoner, about two years afterwards. Here he attempted to effect his eſcape, by ſlipping from the window of the high tower into the garden, but being diſcovered was carried back to his confinement. Lichfield has ever been celebrated for the attachment of its citizens to the cauſe of royalty. When the civil war commenced between king Charles and the parliament, his majeſty having ſent an order to the inhabitants of his loyal city to bring in their arms, his order was not only willingly complied with, but many of the inhabitants voluntarily ſubſcribed conſiderable ſums of money for his uſe, and enrolled themſelves as ſoldiers under the command of captain Richard Dyott, for the protection of their own city againſt the parliamentary forces. This officer being joined by many noblemen and gentlemen of the country under the earl of Cheſterfield, the cathedral and cloſe were fixed upon as a proper place of defence from the height of its ſituation, and the ſtrength of the fortifications around it. In a ſhort time after the garriſon was attacked by the republican troops. During this ſiege they maintained their poſt with great reſolution, but the town as well as the cathedral ſuffered very material damage. In one aſſault, lord Brock, a moſt furious fanatic, who commanded the parliamentary army, loſt his life in a manner ſomewhat ſingular. Having drawn up his army about half a mile from Lichfield, and prayed moſt devoutly for the deſtruction of the cathedral, he ordered an immediate attack, and placed himſelf in a ſmall houſe near the ſouth gate, with the view of directing the operations of the gunners, whom he had ſtationed againſt this gate, in order, if poſſible, to open a breach. Upon ſome ſudden accident which occaſioned the ſoldiers to give a ſhout, lord Brook came to the door, and being perceived by a gentleman of the name of Dyott, who ſtood on the top of the tower, he levelled his piece at him, when the ball penetrated directly into the ſocket of the eye and lodged in the brain, cauſing inſtant death. As this happened on the feſtival of St. Chad, the patron of the church, the ball was ſuppoſed to have been guided by the influence of that ſaint. The loſs of their commander, however, did not diſmay the beſieging army, who continued to carry on the ſiege with great vigour, and at laſt ſucceeded in compelling the garriſon to ſubmit. The troops of the parliament left to ſecure this fortreſs were in their turn attacked by prince Rupert, about the year 1643. Colonel Rowſwell then commanded the garriſon, who evinced the utmoſt bravery in the defence of his poſt. The commanding ſituations choſen by prince Rupert, however, for erecting his batteries, and the exploſion of a mine, ſoon effected an extenſive breach, and the garriſon was compelled to ſurrender. The prince conferred the government on colonel Hervey Bagot, who maintained it for the king till the utter deſtruction of his majeſty's affairs, when he very properly ſurrendered upon honourable terms.

Lichfield ſtands in a very pleaſant and healthful valley, almoſt in the centre of England, at the diſtance of 120 miles from the metropolis. It is ſurrounded by hills of a moderate ſize, eaſy of aſcent, and of very agreeable appearance. It is chiefly inhabited by gentry, being of little importance in a mercantile point of view. The buildings of this city have generally aſſumed the air and taſte of modern times, and the ſpirit of improvement, ſo conſpicuous in the preſent age, is plainly manifeſted in many alterations which have taken place within theſe few years. This city was formerly divided into two portions, by three lakes or pools of water, one of which is now dried up. It contains three pariſhes, but part of the lands of St. Chad's and St. Michael's lie without the boundaries of the city. Lichfield is adorned with a number of buildings well worthy of notice, both on account of their antiquity and the ſplendid ſtyle of their architecture. Of theſe the moſt conſpicuous in every reſpect is the cathedral, which ſtands in the cloſe, and is ſaid to have been fortified by biſhop Clinton; though Dr. Shaw thinks he only repaired the fortifications which had exiſted there from the time of the Saxons. Some are of opinion, that the cathedral was firſt founded by king Oſwy, in the year 655; but others attribute it to Peada, his ſon-in-law. Who was the firſt biſhop is ſomewhat uncertain, but St. Chad is generally allowed that honour. The buildings of this cathedral, which was then called the Mercian church, were probably at firſt only conſtructed of wood. The whole of them were pulled down, in the year 1148, by biſhop Clinton, and another of enlarged dimenſions, and more elegant deſign, commenced in the place of the Saxon ſtructure. To this prelate the cathedral is indebted for that noble ſtone vault, which is at this day the admiration of architects, and is undoubtedly one of the fineſt works of its kind extant in England. The next benefactor to this cathedral was Walter de Langton, who laid the foundation of the choir. He expended the ſum of two thouſand pounds on a ſhrine for the reliques of St. Chad, and obtained many privileges for the vicars and canons, one of which was the right of hanging upon the next gallows, without trial, divers perſons who withheld their lands from the church. This beautiful ſhrine continued in its full glory till the diſſolution, when the cathedral was deſpoiled of this and many other valuable relics to ſatiate the avarice of the tyrannical Henry.

During the ſieges which it ſuſtained, as already mentioned, in the time of the civil wars, this noble building ſuffered much, being the firſt cathedral that fell into the hands of the parliament. The roof was ſtripped of its lead; and many of the curious ſtatues, monuments, and other carved works, were demoliſhed with axes and hammers. The coſtly and beautiful painted windows were battered to pieces. In ſhort, little of this ſplendid ſtructure eſcaped ruin, except the noble vaulted roof already mentioned. What did remain was ultimately deſtroyed in 1651, when colonel Danvers, by authority of the Rump Parliament, employed workmen in order to effect this purpoſe. At this time, the remarkable bell, called "Jeſus bell," was knocked to pieces by a pewterer named Nicklin. During this perſecution of the eſtabliſhed church, Dr. John Hacket rendered himſelf remarkable by his courage and reſolution. When a ſerjeant with a trooper were ſent to ſtop the performance of the daily ſervice, and, putting a piſtol to his head, threatened to ſhoot him inſtantly if he did not deſiſt, this noble prelate calmly, but reſolutely, replied, "Soldier, I am doing my duty; do you your's:" a ſentence which may juſtly be reckoned among the remarkable inſtances of the ſublime, and which ſo impreſſed the minds of the ſoldiers, that they left him to the free exerciſe of the duty he thus evinced himſelf ſo worthy to perform. No ſooner was he nominated to the biſhopric of Lichfield, than he vigorouſly ſet himſelf to reſtore the ancient ſplendour of the cathedral. By his large contributions, the benefactions of the dean and chapter, and the money ariſing from his aſſiduity in ſoliciting aid from the gentlemen of his dioceſe, he ſucceeded in reſtoring this building to the admiration of the country. The whole underwent a thorough repair in the biſhopric of Dr. James Cornwallis, when it received its laſt finiſh by the addition of a painted window at the eaſt end of the choir, the execution of which reflects the higheſt honour on the artiſt Mr. Eginton. This cathedral is 411 feet in length, and 153 in breadth. From the centre riſes a ſpire 256 feet high, of moſt elegant proportions. At the weſt front are two towers, terminated by ſpires, 66 feet in height. The portico can hardly be equalled by any thing of the kind in England. The chancel is paved with alabaſter and channel ſtone, in imitation of black and white marble. The north door is particularly rich in ſculpture. On the weſtern front are a number of images, beautifully executed and arranged; the ſubjects of which are taken from the ſacred writings. The ſtatue of king Charles II. ſtands between the two weſtern ſpires, where a figure of Adam, or of Chriſt, was alſo formerly placed, beneath which the other ſtatues are ranged. Theſe figures were originally all richly-gilt and painted; but the embelliſhments have ſuffered much injury from the action of the elements. With regard to the interior ornaments of this church, they are by far too numerous to admit of particular notice in a work of this kind. Every part of it is filled with ſtatues and tombs, both ancient and modern. The nave, 60 feet in height, is ſupported by pillars formed from a number of ſlender columns, with neat foliated capitals. Along the walls of the aiſles are rows of arcades, with ſeats underneath. The upper windows in the nave are of uncommon appearance, being triangular, and including three circles in each; and over the weſtern door is a very beautiful one, raiſed by the duke of York in the reign of Charles II., and afterwards beautifully painted by a gift of the benevolent dean Akenbrooke. Behind the choir was the chapel of St. Mary, which contained a ſtone ſcreen of the moſt elegant and ſplendid workmanſhip that can be imagined, embattled at the top, and adorned with ſeveral rows of niches moſt exquiſitely finiſhed. Each of theſe formerly contained a ſmall ſtatue. The ſtone ſcreen was taken down during the late alteration, and the materials employed to fix the organ upon, and form pillars for the entrance into the choir. This chapel now forms part of the body of the choir. It is neatly pewed, and contains, beſides, forty-eight ſtalls, which are richly carved, and appropriated for the uſe of the members of the church. The altar is of free ſtone very neatly ſculptured. The government of the cathedral is veſted in a dean and four reſidentiary canons. The dioceſe of Lichfield, joined to Coventry, contains all the county of Stafford, (with the exception of Brome and Clent,) all Derbyſhire, and nearly one-half of Shropſhire. The archdeaconries are thoſe of Coventry, Stafford, Derby, and Salop. The biſhop's palace is ſituated at the north-eaſt ſide of the cloſe. The original building is ſaid to have been founded by biſhop Clinton, but it was probably of earlier date. This palace was quite deſtroyed in the civil wars, when biſhop Hacket, having expended 1000*l.* on the prebendal houſe, fixed upon it as his reſidence. Whether the preſent palace is the ſame, or another wholly erected by his ſucceſſor biſhop Wood, is uncertain. It is now inhabited by different families; the biſhop's reſidence having been for many years at Eccleſhall caſtle.

The next building worthy of notice is the church of St. Chad, now called Stowe church, and is generally conſidered as the oldeſt foundation in or near the city. By ſome writers it is even ſuppoſed to have been erected by the Romans, towards the end of the ſecond century. St. Ceadda or Chadda, the ſaint to whom the church is dedicated, had his cell here in the year 653. The interior of this fabric has been lately repaired and beautified. It contains a number of neat monuments. The church of St. Mary's ſtands in the market-place, near the Guild-hall. Leland ſays, "St. Maries is a right beautiful piece of work, in the very market-place." The body of the preſent building is very neat, and is adorned with a handſome altar-piece, and a few ancient monuments to the memory of the family of the Dyotts. St. Michael's church is ſtationed at the ſouth-eaſt extremity of the city, on the ſummit of Greenhill, and is remarkable for the extent of its burial-ground, which is ſcarcely to be paralleled in England. It contains within its limits not leſs than ſix or ſeven acres of excellent paſture land. This hill is remarkable for a court held here annually on Whitmonday, in a temporary ſtand of wood erected for the purpoſe. This court was anciently called the *Court of Array*, or view of men and arms. The high conſtables having aſſembled all the inhabitants, they perambulate the whole city; and the whole concludes with a proceſſion through the principal ſtreets to the market-place, where the town-clerk, in the name of the bailiffs and citizens, delivers an oration or charge to the high conſtables, thanking them for their attendance, and urging them to the due execution of their office. The origin of this remarkable cuſtom is uncertain. On the top of the ſame hill, a ſmall edifice has been erected by ſubſcription, with ſeats; from this ſpot there is a very beautiful and extenſive view of the circumjacent country, and of the many intereſting objects it affords. South of Greenhill is Folly-hall, which alſo commands a very fine proſpect. Not far from hence is the hoſpital and chapel of St. John, which was originally a monaſtery. When it was firſt founded is unknown. The front of the preſent building is remarkable for the number and antique form of its chimnies. According to an inſcription over the door it was erected by biſhop Smith, who was alſo the founder of Brazen-noſe College, Oxford. The free grammar ſchool, built at the ſame time with the hoſpital, ſtands nearly oppoſite to it.

This city can boaſt of having been the place at which ſome of the brighteſt ornaments of the two laſt centuries were educated. Among others were the unrivalled Garrick and his friend Dr. Samuel Johnſon, whom Mrs. Barbauld deſignates as the Hercules of literature. The latter was born in a ſtuccoed houſe ſituated at the corner of Market-ſtreet, where his father kept a bookſeller's ſhop. The Guildhall, the theatre, and the free Engliſh ſchool, are ſituated in Broad-ſtreet. The latter is an ancient building, erected and endowed by Thomas Minors about the year 1670. At the back of the Guildhall is a gaol for the confinement of debtors and felons apprehended within the boundaries of the city. To the weſt of Bird-ſtreet is a very pleaſant ſeat called the Friary, having been formerly a monaſtery of Franciſcan or Grey friars, founded about the year 1229. On the eaſt ſide there ſtill remains an antique monument in honour of a merchant named Richard. It is inſcribed with a very ſingular epitaph, which the limits of this article, however, will not admit of being inſerted. The reſidence of the late celebrated Dr. Darwin is ſituated in a ſtreet called Beacon-ſtreet, which was nearly burnt to the ground during the civil wars. Oppoſite to the ſhrubbery which ſurrounds Dr. Darwin's houſe is an hoſpital, built by Dr. Milley in the year 1504, for the ſupport of fifteen poor women. Contiguous to this ſpot there formerly ſtood a very ſtately edifice, once the reſidentiary houſe of the archdeacon of Cheſter. Lichfield contains, beſides theſe, many objects which deſerve the attention of the inquiſitive and curious. The muſeum and the botanic garden of Dr. Darwin are particularly intereſting to all who have the ſlighteſt taſte for the ſubjects of natural hiſtory. Lichfield was long the reſidence of Miſs Seward.

The markets are held here on Tueſday and Friday; the fairs on the three firſt Thurſdays after Twelfth day, Aſh Wedneſday, May 1ſt, and the Friday before St. Simon and St. Jude. By means of canals this city communicates with a variety of rivers, ſome of which diſcharge themſelves into the German ocean, and others into the Iriſh ſea and St. George's channel. Harwood's Hiſtory and Antiquities of Lichfield, 4to. 1806. Jackſon's Hiſtory of the City and Cathedral of Lichfield, 8vo. 1805. Shaw's Hiſtory, &c. of Staffordſhire, vol. i. folio.

LICHTEMBERG, a town of France, in the department of the Lower Rhine; 22 miles N.N.W. of Straſburg.

LICHTENAU, a town of Auſtria; 12 miles W. of Crems.—Alſo, a town of Auſtria; 6 miles S.E. of Aigen.—Alſo, a town of Weſtphalia, in the biſhopric of Paderborn; 9 miles S.E. of Paderborn. N. lat. 51° 32'. E. long. 8° 58'.—Alſo, a town of Heſſe-Caſſel; 13 miles S.E. of Caſſel. N. lat. 51° 12'. E. long. 9° 24'.—Alſo, a town of Germany, in the principality of Hanau-Lichtenberg; 12 miles N.E. of Straſburg.—Alſo, a town of Germany, in the territory of Nuremberg, with a fortreſs on the Retzat, inſulated in the margraviate of Anſpach; 22 miles S.W. of Nuremberg. N. lat. 49° 17'. E. long. 10° 12'.—Alſo, a town of Pruſſia, in the province of Ermeland; 12 miles N.W. of Heilſberg.—Alſo, an iſland near the W. coaſt of Eaſt Greenland. N. lat. 60° 30'. W. long. 45° 15'.—Alſo, a Moravian ſettlement in America, on the E. ſide of Muſkingum river, 3 miles below Goſchachguenk; afterwards removed to Salem, 5 miles below Guadenhuetten.

LICHTENBERG, a town of Pruſſian Pomerelia; 50 miles S.W. of Dantzic.—Alſo, a town of Germany, in the county of Henneberg; 8 miles S.E. of Meinungen.—Alſo, a town of France, in the department of Mont Tonnerre; 9 miles W.S.W. of Lautereck.—Alſo, a town of Sileſia, in the principality of Neiſſe; 3 miles N.N.W. of Grotkau.—Alſo, a town of Germany, in the principality of Culmbach, on the Selnitz; having in its vicinity quarries of marble, and mines of copper and iron; 22 miles N. of Bayreuth. N. lat. 50° 22'. E. long. 11° 48'.—Alſo, a town of Saxony, in the circle of Erzgeburg; 5 miles S.S.E. of Freyberg.

LICHTENECK, a town of Carniola; 10 miles E.S.E. of Stein.

LICHTENFELS, a town of Auſtria, on the river Kamp; 7 miles E. of Zwetl.—Alſo, a town of Bavaria, ſituated on the Maine; 20 miles N.N.E. of Bamberg. N. lat. 50° 10'. E. long. 11° 8'.

LICHTENFELT, a town of Pruſſia, in Pomerelia; 12 miles E.S.E. of Marienburg.

LICHTENHAGEN, a town of Pruſſia, in the circle of Natangen; 8 miles S.S.W. of Konigſberg.

LICHTENSTEIG, a town of Switzerland, and capital of the county of Tockenburg, ſeated on the Thur, and the reſidence of a bailiff. It has places of worſhip for Roman Catholics and Proteſtants; 27 miles E. of Zurich. N. lat. 41° 17'. E. long. 9° 6'.

LICHTENSTEIN, a principality of Germany, on the E. ſide of the lake of Conſtance, ſituated on the Rhine, betwixt the lordſhips of Pludenz and Feldkirch.—Alſo, a town of Saxony, and chief place of a lordſhip, belonging to the counts of Schonburg; 5 miles N.E. of Zwickau. N. lat. 50° 44'. E. long. 12° 31'.

LICHTENTANEN, a town of Germany, in the principality of Culmbach; 7 miles N.W. of Bayreuth.

LICHTENWALD, a town of the duchy of Stiria; 12 miles S.E. of Cilley.

LICHTENWALT, a town of Pruſſia, in Ermeland; 23 miles N.W. of Heilſberg.

LICHVIN, a town of Ruſſia, in the government of Kaluga, on the Oka; 28 miles S. of Kaluga. N. lat. 54°. E. long. 35° 44'.

LICHWE, a town of Bohemia, in the circle of Koninggratz; 6 miles W. of Geyerſberg.

LICINIO, Giovanni Antonio, in *Biography*. See Pordenone.

LICINIUM, a word uſed by many chirurgical writers to expreſs a tent.

LICINIUS, in *Biography*, a Roman emperor, a native of Dacia, of an obſcure origin, and accuſtomed from his infancy to the toils and hardſhips of rural life, became a Roman ſoldier, and roſe through all the gradations of the ſervice. He was raiſed to the rank of Auguſtus in the year 307. When the civil war broke out between Conſtantine and Maxentius, the former ſecured the friendſhip of Licinius by promiſing him in marriage his ſiſter Conſtantia, which alliance took place in 313, when the two emperors had an interview at Milan, and joined in an edict in favour of the Chriſtians. In the ſame year Maximin invaded the territories of Licinius, and took Byzantium and Heraclea: his ſucceſs was very ſhort lived, for Licinius advanced to meet him, and by his military ſkill obtained a complete victory. Maximin died ſoon after, and Licinius ſucceeded to his authority over the provinces of the Eaſt. The conqueror, who was harſh, ignorant, and brutal, knew not how to uſe his ſucceſs with generoſity or even with humanity: he put to death a great number of perſons, and among others Valeria, the widow of Galerius, who had been a great benefactor to Licinius. This lady had taken refuge at his court, but terrified with his ſavage conduct, ſhe took flight, and with her aged mother wandered long in diſguiſe through the provinces; but being at length diſcovered, they were both beheaded, and their bodies thrown into the ſea. After the diſplay of theſe barbarities the two emperors did not live long in peace. A civil war broke out between them, in which the firſt battle was fought in 315: Licinius was vanquiſhed, and after another attempt or two to maintain his ground againſt his rival, he was obliged to ſue for peace, which he obtained on the condition of putting to death Valens, whom he had lately created Cæſar, and of reſigning all his European provinces. In 317 he created his own ſon Cæſar, and peace was maintained during the eight following years. About this period, Licinius, growing ſuſpicious of his Chriſtian ſubjects, who ſeemed to be attached to his rival, began to baniſh them from about his perſon and palace, and to prohibit biſhops from viſiting each other, and from holding councils and aſſemblies. By degrees the reſtrictions that were laid upon them were exchanged for direct and cruel perſecution, which produced another civil war in 323. The rivals met near Adrianople, and after ſome time ſpent in ſkirmiſhes, a general engagement was brought on, in which the ſuperior ſkill of Conſtantine, and valour of his European ſoldiers, gained a very deciſive victory over the much more numerous but leſs warlike hoſt of Licinius. The vanquiſhed emperor ſhut himſelf up within the walls of Byzantium, while his fleet was deſtroyed in the Helleſpont by Criſpus, the ſon of Conſtantine. Licinius eſcaped to Chalcedon, and collecting a new army made one more effort to oppoſe his foe, but being again defeated, he ſeems to have abandoned all ideas of farther reſiſtance. He retired to Nicomedia, rather with a view of gaining ſome time for negociation than with the hope of effectual oppoſition. His wife Conſtantia, the ſiſter of Conſtantine, interceded with her brother in favour of her huſband, and obtained from his policy, rather than from his compaſſion, a ſolemn promiſe, confirmed by an oath, that after the reſignation of the purple, Licinius ſhould be permitted to paſs the remainder of his days in peace and affluence. Licinius ſolicited and accepted the pardon of his offences, laid himſelf and the inſignia of his office at the feet of the conqueror; he was raiſed from the earth with inſulting pity, was admitted the ſame day to the imperial banquet, and ſoon afterwards was ſent to Theſſalonica, which had been choſen as the place of his confinement. His impriſonment was ſoon terminated by death, but whether this was occaſioned by a tumult of the ſoldiers, or by a decree of the ſenate, is uncertain. He was accuſed of forming a conſpiracy, and of holding a treaſonable correſpondence with the barbarians; but as he was never convicted, either by his own conduct or by legal evidence, his innocence, in this reſpect, has been preſumed by many writers. The memory of Licinius was branded with infamy, his ſtatues were thrown down, and by a raſh edict, all his laws, and the judicial proceedings of his reign, were at once aboliſhed. By this victory of Conſtantine, the Roman world was again united under the authority of one emperor. See CONSTANTINE. Gibbon.

LICINIUS CAIUS, a Roman tribune, of a plebeian family, roſe to that rank by his own aſpiring temper: he was the firſt plebeian who was raiſed to the dignity of maſter of horſe to the dictator. He was ſurnamed *Stolo*, or *uſeleſs ſprout*, on account of the law which he cauſed to be enacted during his tribuneſhip. By this law no perſon was permitted to hold more than 500 acres of land, it being alleged, that when more was held by one proprietor, he would not have leiſure to pull up the uſeleſs ſhoots (Stolones) which grew from the roots of trees. He afterwards carried a law which permitted the plebeians to ſhare the conſular dignity with the patricians, and was himſelf one of the firſt plebeian conſuls, in the year 364 B.C.

LICINIUS, TEGULA, a comic Latin poet, flouriſhed about 200 years before the Chriſtian era. His fragments have been publiſhed by H. Stephens, and in the Corpus Poetarum, Maittaire. There was an orator and poet of this name, who lived at the ſame time with Cicero, and who has been compared with Catullus. His orations are highly commended by Quintilian: he is ſuppoſed to have written annals quoted by Dionyſius Halicarnaſſus. He died in the 30th year of his age.

LICIO, in *Geography*, one of the ſmaller Lipari iſlands. N. lat. 38° 54'. E. long. 15° 20'.

LICK, a town of Pruſſia, with a caſtle; 80 miles S.E. of Konigſberg. N. lat. 53° 39'. E. long. 22° 38'.

LICK, a name given to the ſalt-ſprings in the weſtern parts of the United States.

LICKING, a navigable river of America, in Kentucky, which riſes on the weſtern confines of Virginia, interlocks with the head-waters of Kentucky river, runs in a north-weſt direction upwards of 180 miles, and by a mouth 150 yards wide through the ſouth bank of Ohio river, oppoſite to Fort Waſhington. On this river are iron-works and numerous ſalt-ſprings. Its chief branch is navigable nearly 70 miles. From Limeſtone to this river the country is very rich, and covered with corn, rye-graſs, and natural clover. Morſe.

LICKING *Creek*, a river of Maryland, which runs into the Potowmack, N. lat. 39° 38'. W. long. 78° 5'.

LICKING *Hole Creek*, a river of Virginia, which runs into James river, N. lat. 37° 42'. W. long. 78° 5'.

LICKNENA, a town of Spain, in Arragon; 18 miles S.S.W. of Hueſca.

LICKY, the name of a ſmall river in the county of Waterford, Ireland, which falls into the river Blackwater, a little above Youghal.

LICNON, Λικνον, in the Dionyſian ſolemnities, the myſtical van of Bacchus; a thing ſo eſſential to all the ſolemnities of this god, that they could not be duly celebrated without it. See DIONYSIA.

LICNOPHORI, Λικνοφοροι, in the Dionyſian ſolemnity, thoſe who carried the licnon.

LICODIA, in *Geography*, a town of Sicily, in the valley of Noto; 18 miles S.W. of Lentini.

LICONDA, a town of Africa, in the country of Tripoli, ſituated on the ſea-coaſt. N. lat. 30° 36'. E. long. 18° 10'.

LICOSTAMO, a town of European Turkey, in Theſſaly, the ſee of a biſhop, ſuffragan of Lariſſa; 16 miles E.S.E of Lariſſa.

LICQUES, a town of France, in the department of the ſtraits of Calais; 10 miles S. of Calais.

LICTORS, among the Romans, were officers eſtabliſhed by Romulus, who always attended the chief magiſtrates when they appeared in public.

The duty of their office conſiſted in the three following particulars: 1. *Submotio*, or clearing the way for the magiſtrate they attended: this they did by word of mouth; or, if there was occaſion, by uſing the rods they always carried along with them. 2. *Animadverſio*, or cauſing the people to pay the uſual reſpect to the magiſtrate, as to alight, if on horſeback, or in a chariot; to riſe up, uncover, make way, and the like. 3. *Præitio*, or walking before the magiſtrates: this they did not confuſedly, or all together, nor by two or three abreaſt, but ſingly following one another in a ſtraight line. They alſo preceded the triumphal car in public triumphs: and it was alſo part of their office to arreſt criminals, and to be public executioners in beheading, &c. The enſigns were the *faſces* and *ſecuris*.

As to the number of lictors allowed to each magiſtrate, a dictator had twenty-four, a maſter of the horſe ſix, a conſul twelve, a prætor ſix; and each Veſtal virgin, when ſhe appeared abroad, had one.

LICUALA, in *Botany*, is the vernacular appellation of this palm among the natives of the Molucca iſlands. The name was adopted by Rumphius, and has been retained by all ſucceeding botaniſts. Linnæus and Willdenow properly refer it to the ſixth claſs, ranking it there amongſt others of the natural order of *Palmæ*, Schreber having claſſed it in his *Appendix Palmæ*. Schreb. 774. Linn. Syſt. Veg. ed. 14. 313. Willd. Sp. Pl. v. 2. 201. Mart. Mill. Dict. v. 3. Thunb. Nov. Gen. 70. Juſſ. 39. Gærtn. t. 139.—Claſs and order, *Hexandria Monogynia*. Nat. Ord. *Palmæ*, Juſſ.

Gen. Ch. *Cal.* Perianth inferior, three-cleft, permanent, outwardly hairy. *Cor.* of one petal, cloven almoſt to the baſe into three equal, ovate, acute, concave ſegments; Nectary annular, truncated, twice as ſhort as the corolla. *Stam.* Filaments ſix, inſerted into the nectary, erect, very ſhort; anthers oblong, in pairs. *Piſt.* Germen ſuperior, convex, three-cleft, furrowed, ſmooth; ſtyle ſimple; ſtigmas two. *Peric.* Drupa globoſe, the ſize of a large pea. *Seed* a hard nut.

Eſſ. Ch. Calyx three-cleft. Corolla three-cleft. Nectary annular, truncated. Drupa ſingle-ſeeded.

1. L. *ſpinoſa*, Linn. and Willd., is the only ſpecies known; a native of the Moluccas, and figured by Rumphius in his *Herb. Amboin.* v. 1. 44. t. 9, under the name of *L. arbor*. The *trunk* of this palm is from three to four feet in height, and about the thickneſs of a man's arm, jointed, dividing in the upper part into five or ſix *footſtalks*, ſcarcely ſo thick as a finger, triangular, their lower part ſerrated at the angles with thick rows of teeth or ſpines. Each of the ſtalks bears a *leaf* which is fan-ſhaped, and divided down to the baſe into about fourteen lateral, ribbed rays. *Flower-ſtalk* riſing from the trunk, in the midſt of the leaves, of the ſame length with them, and involved from the bottom in ſheaths, dividing at the top into about five ſmaller ones, which bear green heads, in three rows, expanding into flowers. *Fruit* green for a long time, then brown or blackiſh. *Nut* oblong, very hard, longitudinally ſtriated.

The natives of Macaſſar make uſe of the ſmaller leaves for tobacco pipes, after they are dried, rolled, and properly prepared. The larger leaves are uſed for packages, but the wood is not ſufficiently durable to be conſidered uſeful.

LICZ, in *Geography*, a town of Auſtrian Poland, in Galicia; 30 miles W. of Przemyl.

LID, or Lyd, a river of England, which runs into the Tamar, 4 miles N.N.W. of Taviſtock.

LIDA, a river of Sweden, which runs into the Wenner lake, at Lidkioping.

Lida, a town and caſtle of Lithuania, in the palatinate of Wilna, in which is held a provincial diet; 48 miles S. of Wilna. N. lat. 53° 52′. E. long. 25° 35′.

LIDBECKIA, in *Botany*, named by Bergius, in honour of Profeſſor Eric Guſtaf Lidbeck, of Lund, Knight of the order of Waſa, author of ſeveral botanical and economical treatiſes in the Stockholm Tranſactions. Berg. Cap. 306. Willd. Sp. Pl. v. 3. 2163. Juſſ. 183. (Lanciſia; Lamarck. Illuſtr. t. 701. Gærtn. v. 2. 422.)—Claſs and order, *Syngeneſia Polygamia-ſuperflua*. Nat. Ord. *Compoſitæ Diſcoideæ*, Linn. *Corymbiferæ*, Juſſ. See Lancisia, and Cotula, ſection 2.

LIDDEL, Duncan, in *Biography*, a phyſician of the ſixteenth century, was a native of Aberdeen; but he was elected profeſſor of aſtronomy in the univerſity of Helmſtadt in 1587. He afterwards taught geometry, and ultimately medicine, of which he was appointed profeſſor in 1596. He was likewiſe made firſt phyſician to the duke of Brunſwick. But he quitted theſe advantages, and returned to his native country in 1607. He left the following works: "De Facultate vegetante ejuſque Functionibus," Helmſtadt, 1592; "Univerſæ Medicinæ Compendium," ibid. 1605, 1620; "Ars medica ſuccinctè et perſpicuè explicata," Hamburgh, 1607, ſeveral times reprinted; "De Febribus Libri tres," ibid. 16 0; "Operum Iatro-Galenicorum, ex intimis Artis medicæ adytis et penetralibus erutorum," a poſthumous work, Leyden, 1624. Eloy Dict. Hiſt.

Liddel, in *Geography*, a river of Scotland, which riſes in Roxburghſhire, and joins the Eſk, three miles ſouth of Longholm, in the county of Dumfries; giving to the valley in which it flows the name of Liddeſdale, or Lithdale.

LIDEN, a town of Sweden, in Angermanland; 60 miles N.N.W. of Hernoſand.

LIDENS, a town of Sweden, in the province of Medelpadia; 24 miles N.N.W. of Sundſwal.

LIDFORD, a village of England, in the county of Devon, near the foreſt of Dartmoor, ſituated in a pariſh ſaid to be the largeſt in England, including almoſt the whole of Dartmoor. It was formerly a fortified town, ſurrounded with walls and a moat, and having three gates, of which no trace now remains. It is ſuppoſed to have been deſtroyed by the Danes in the year 997. In this village is an ancient caſtle, in which courts are held for the duchy of Cornwall; and offenders againſt the ſtannary laws were here confined in a dreary and diſmal dungeon, which gave riſe to a proverb, "Lydford laws puniſh a criminal firſt, and try him afterwards." This village contains only about 15 houſes, and its ſituation is bleak and dreary; 28 miles W. of Exeter. Cruttwell.

LIDHULT, a town of Sweden, in the province of Smaland; 60 miles S. of Jonkoping. N. lat. 56° 50′. E. long. 15° 14′.

LIDKIOPING, a ſmall, neat, trading town of Sweden, ſituated in the midſt of a plain near lake Wetter or Wenner, at the influx of the Lide, and containing the epiſcopal palace, the cathedral, and the palace in which reſides the governor of Eaſt Gothland; 42 miles E.N.E. of Uddevalla. N. lat. 58° 33′. E. long. 12° 54′.

LIDL, in *Biography*, a native of Germany, who arrived in England about the year 1785, and was a remarkable fine performer on the viol da gamba. His taſte and expreſſion on this ungrateful inſtrument were exquiſite; though he had embarraſſed himſelf with the additional difficulties of baſe ſtrings at the back of the neck of his inſtrument, with which he accompanied himſelf, thrumming them in pizzicato with his left thumb; an admirable expedient in a deſert, or even in a houſe, where there is but one muſician; but to be at the trouble of accompanying yourſelf in a great concert, ſurrounded by idle performers who could take the trouble off your hands, and leave you more at liberty to execute, expreſs, and embelliſh the principal melody, ſeemed at beſt a work of ſupererogation. The tone of the inſtrument will do nothing for itſelf, and it ſeems with muſic as with agriculture, the more barren and ungrateful the ſoil, the more art is neceſſary in its cultivation. And the tones of the viol da gamba are radically ſo crude and naſal, that nothing but the greateſt ſkill and refinement can make them bearable. A human voice of the ſame quality would be intolerable.

This excellent muſician died of a conſumption in London, at about 30 years of age, in 1788; as was the caſe, about the ſame time, with two other admirable German profeſſors, and worthy men, Pfifer and Eichner. See their articles, and that of Lamotte, who had likewiſe been in England, and died young of a conſumption.

LIDMEE, or *Indian Antelope*, *Antilope Cervicapra*, in *Zoology*, a ſpecies of antelope, having long, round, prominently annulated, tapering, and ſpirally twiſted horns, which are ſmooth and ſharp at the points. The body is of a brown colour above, and white on the under parts. This is the common and brown antelope of Pennant; the gazella africana S. antilope of Charleton, Ray, and Grew; the capra cervicapra of the Syſt. Nat.; the capra bezoartica of Aldrov., Olear.; the tragus ſtrepſiceros of Klein; the hircus gazella of Briſſon; the Lidmee Arabium of Shaw's Travels.

It inhabits Barbary and India; it is ſomewhat ſmaller than a fallow-deer, brown clouded with reddiſh and duſky; the belly, breaſt, and inſide of the thighs are white; the circumference of the orbits is white; the horns are erect, about ſixteen inches long, of a black colour, and almoſt entirely covered with prominent rings, the points only being ſmall, and are about twelve inches diſtant. The female has no horns, and after going nine months with young, brings generally twins. Pennant diſtinguiſhes between the Lidmee of Barbary and that found in India; though the only difference ſeems to conſiſt in the greater ſize of the former, the latter being rather ſmaller than a roe. He likewiſe mentions horns frequently ſent from India, which have been uſed as daggers, that ſeem to belong to this ſpecies, but with all their rings poliſhed off.

LIDO *di Malamocco*, in *Geography*, a ſmall iſland in the Adriatic, defended by a fort; 12 miles from Venice.

Lido *di Padeſtrina*, a long iſland in the Adriatic, with a fort to defend the city of Venice.

Lido *di Sottomarino*, a town in the iſland of Chioggia, forming as it were the ſuburbs of that city.

LIDS, a ſmall iſland in the Baltic, near the ſouth coaſt of Laaland. N. lat. 54° 41′. E. long. 11° 20′.

LIE, a town of Arabia, in Yemen; 20 miles S. of Abu-Ariſch.

Lie, or *Lye under the Sea*. See Lying, &c.

LIEBAU, in *Geography*, a town of Sileſia, in the principality of Schweidnitz, on the river Schwartbach; 22 miles S. of Schweidnitz.

Liebau, *Liebe*, or *Libona*, a town of Moravia, in the circle of Prerau; 13 miles N. of Prerau. N. lat. 49° 38′. E. long. 17° 28′.

LIEBENAU, a town of Sileſia, in the principality of Glogau; 8 miles W.N.W. of Glogau. N. lat. 52° 25′. E. long. 15° 56′.—Alſo, a town of the principality of Heſſe, on the Dimel; 20 miles N.W. of Caſſel. N. lat. 51° 30′. E. long. 9° 22′.

LIEBENGRUND, a town of Saxony, in the circle of Neuſtadt; 14 miles S. of Neuſtadt. N. lat. 50° 30′. E. long. 11° 41′.

LIEBENTHAL, a town of the duchy of Stiria; 12 miles S.E. of Gratz.—Alſo, a town of Bohemia, in the circle of Chrudim; 13 miles E. of Hohenmaut.—Alſo, a town of Sileſia, in the principality of Jauer; 30 miles W. of Jauer. N. lat. 50° 57′. E. long. 15° 37′.—Alſo, a town of Saxony, in the margravate of Meiſſen; 7 miles S.W. of Stolpen.

LIEBENWALD, a town of Brandenburg, in the Middle Mark, on the Havel; 24 miles N. of Berlin. N. lat. 52° 53′. E. long. 13° 30′.

LIEBENWARDA, a town of Saxony; 22 miles N. of Meiſſen. N. lat. 51° 28′. E. long. 13° 26′.

LIEBENZELL, or Zell, a town of Wirtemberg, on the Nagold; having two warm baths in its vicinity; 36 miles E.N.E. of Straſburg. N. lat. 48° 51′. E. long. 8° 43′.

LIEBEROSE, a town of Luſatia; 17 miles W. of Guben. N. lat. 52°. E. long. 14° 16′.

LIEBETEN, a town of Hungary; 65 miles N.N.E. of Gran.

LIEBMUHL, a town of Pruſſia, in the province of Oberland, with a caſtle; 66 miles S.S.W. of Konigſberg. N. lat. 53° 42′. E. long. 19° 45′.

LIEBO See, a lake of Brandenburg, in the Ucker Mark; ſituated to the S. of Dolgen See.

LIEBSTADT, a town of Saxony, in Meiſſen; 14 miles S.S.W. of Dreſden.—Alſo, a town of Pruſſia, in Oberland, with a caſtle; 48 miles S.S.W. of Konigſberg. N. lat. 53° 57′. E. long. 20° 2′.

LIECHEN, a town of Brandenburg, in the Ucker Mark; 40 miles N. of Berlin. N. lat. 53° 12′. E. long. 13° 24′.

LIECHSTAL, or Liestal, a tolerably fruitful diſtrict of Switzerland, containing a ſmall, regularly built, populous town of the ſame name, conſiſting of three parallel ſtreets, in the canton of Baſle; 2½ leagues S.E. of the capital, on the river Ergetz, which forms a caſcade below it. In this diſtrict are the remains of a large Roman aqueduct.

LIE'ES, *Fr.*, a *muſical* term, equivalent to tied, bound, ſuſtained. It likewiſe implies ſlurred, in muſic, for bowed inſtruments, when two or more notes are played with one ſtroke of the bow, or with one touch of the tongue on the flute or hautbois. What muſicians call a *ſlur* is a ſemicircle, ⌒ ⌣. The ſame character is uſed over or under two or any number of notes, in vocal muſic, that are ſung to one ſyllable.

LIEFDE Bay, in *Geography*, a bay on the north coaſt of Spitzbergen. N. lat. 79° 32′. E. long. 12° 30′.

LIEGE, a biſhopric and electorate of Germany, before the French revolution; bounded on the north by Brabant; on the eaſt by Limburg, Juliers, and Luxemburg; on the ſouth by Luxemburg and the French department of the Ardennes; and on the weſt by Brabant, Namur, and Hainaut; about 80 miles in length from north to ſouth, and of an irregular breadth. The ſoil is fertile, yielding corn and paſtures, and alſo wine that reſembles the middling wines of Burgundy and Champagne. In this diſtrict are alſo conſiderable foreſts, and mine-works of copper, lead, iron, and coal, ſtone quarries, and ſome of marble. Its chief mineral waters are thoſe of Spa and Chaude-fontaine. Its principal rivers are the Meuſe and Sambre. This biſhopric is now united to France, and forms the department of the *Ourte;* which ſee. Its chief exports are beer, arms, nails, ſerge, leather, and coal. It formerly contained 26 towns, divided into Walloon and Flemiſh.

Liege, a city of France, and capital of the department of the Ourte, and a biſhop's ſee. It is large, populous, and rich, divided into four parts, each conſiſting of 12,500 inhabitants, and four cantons; the 1ſt containing 16,964 inhabitants, on a territory of 12½ kiliometres, in four communes; the 2d canton, including 13,906 inhabitants, on a territory of 20 kiliometres, in two communes; the 3d comprehending

17,408 inhabitants, on a territory of 15 kiliometres, in two communes; and the 4th containing 17,237 inhabitants, on a territory of 25 kiliometres, in one commune. This city is ſituated on the Meuſe, in a pleaſant valley between hills, watered by the rivers Looſe, Ourte, and Ambleve, which diſcharge themſelves into the Meuſe, as it enters this city. It is proverbially called the hell of women, the purgatory of men, and the paradiſe of prieſts. Liege has ten grand fauxbourgs, and two ſmaller, 16 gates, 17 bridges, and 154 ſtreets, and alſo two quays planted with rows of trees. Before the revolution, it had within the city and fauxbourgs, beſides the cathedral, ſeven collegiate and 30 pariſh churches, and 46 religious houſes. The cathedral of St. Lambert is a large building, erected by St. Hubert in the year 712, on the ſpot where his predeceſſor St. Lambert, biſhop of Maeſtricht, had ſuffered martyrdom. On the 22d of November 1792, Dumourier, at the head of the French troops, took poſſeſſion of Liege; but in the following March they were driven out of Liege and Brabant. In 1794 the French troops again entered Liege, and it was annexed to the dominions of France. N. lat. 50° 40′. E. long. 5° 37′. Accounts are kept in this city in florins or guldens current; each florin being divided into 20 ſous or ſtivers, and each ſtiver into 16 pfenings. The ſtiver is ſometimes divided into four oertjes or liards. The patacon of account is four florins, eight eſcalins or ſchillings, or 80 ſtivers. The gold coins of Liege are the ducat of $8\frac{1}{2}$ current florins or 17 eſcalins, the florin d'or or gold gulden of 5 current florins or 10 eſcalins. The ſilver coins are the patacon of $4\frac{1}{8}$ current florins or $8\frac{1}{4}$ eſcalins, the eſcalin of 10 ſtivers, and the blamaſe of five ſtivers. The ſtiver is a copper coin. Since the year 1792 there has been no coinage at Liege; the city and its territory having been ſoon after united to France, and the new French monies and coins introduced here. The commercial weight of Liege is four *per cent.* leſs than that of Amſterdam; 21lbs. of Liege being = 22lbs. avoirdupois nearly. A laſt of corn contains 96 ſetiers, the ſetier being 1827 Engliſh cubic inches, ſo that 20 ſetiers are = 17 Engliſh buſhels. The foot is $11\frac{1}{3}$ Engliſh inches, the ell is $21\frac{5}{7}$ Engliſh inches; ſo that 18 feet of Liege = 17 Engliſh feet, and 63 ells of Liege = 38 Engliſh yards. Since its union with France, Liege has adopted the new French denominations of money in the buſineſs of exchanges. Kelly's Univ. Cambiſt. vol. i.

Citizen Gretry, the eminent compoſer of French comic operas, a native of that city, in his Memoirs, vol. i. p. 125, gives an account of the college eſtabliſhed at Rome for the reception of ſtudents in all the arts from the city of Liege. There was a time, before Rome was bereaved of its models of perfection, that we ſhould have devoutly wiſhed for an Engliſh college of arts, ſimilar to that of France and Liege, where our young artiſts of promiſing talents, pining to viſit Italy, but unable to bear the expence, might have an aſylum in which they could be received and ſupported during a certain number of years, while they were purſuing their ſtudies. Such an eſtabliſhment would reflect honour on an opulent and learned nation, always diſpoſed to patronize, and collect ſpecimens in all the fine arts, particularly in painting, muſic, ſculpture, and architecture.

Liege, *Ligius*, properly ſignifies a *vaſſal*, who holds a kind of fee that binds him in a cloſer obligation to his lord than other people.

The term ſeems to be derived from the French *lier, to bind*; on account of a ceremony uſed in rendering faith or homage; which was by locking the vaſſal's thumb, or his hand, in that of the lord, to ſhew that he was faſt bound by his oath of fidelity. Cujas, Vigenere, and Bignon, chooſe rather to derive the word from the ſame ſource with *leudis*, or *leodi*, *loyal*, *faithful*. But Du-Cange falls in with the opinion of thoſe who derive it from *liti*, a kind of vaſſals, ſo firmly attached to their lord, on account of lands or fees held of him, that they were obliged to do him all manner of ſervice, as if they were his domeſtics. He adds, this was formerly called *litgium ſervitium*, and the perſon *litge*. In this ſenſe, the word is uſed, Leg. Edw. cap. 29. "Judæi ſub tutela regis ligea debent eſſe;" that is, wholly under his protection.

By *liege* homage, the vaſſal was obliged to ſerve his lord towards all, and againſt all, excepting his father. In which ſenſe, the word was uſed in oppoſition to *ſimple* homage; which laſt only obliged the vaſſal to pay the rights and accuſtomed dues to his lord; and not to bear arms againſt the emperor, prince, or other ſuperior lord: ſo that a *liege man* was a perſon wholly devoted to his lord, and entirely under his command.

"Omnibus, &c. Reginaldus, rex Inſularum, ſalutem. Sciatis quod deveni homo ligeus domini regis Angliæ Johannis, contra omnes mortales, quamdiu vixero; et inde ei fidelitatem et ſacramentum præſtiti, &c." MS. penes W. Dugdale.

But it muſt be obſerved, there were formerly two kinds of liege homage: the one, by which the vaſſal was obliged to ſerve his lord againſt all, without exception even of his ſovereign; the other, by which he was to ſerve him againſt all, except ſuch other lords as he had formerly owed liege homage to. See Homage.

In our old ſtatutes, lieges, and liege people, are terms peculiarly appropriated to the king's ſubjects; as being *liges*, *ligi*, or *ligati*, obliged to pay allegiance to him; 8 Hen VI. 14 Hen. VIII. &c. though private perſons had their lieges too.

"Reinaldus, Dei gratia, abbas Rameſiæ, præpoſito et hominibus de Branceſtre, et omnibus vicinis Francis et Anglis, ſalutem. Sciatis me dediſſe terram Ulfe, in depedene (hodie depedale) huic Boſelino, et uxori ejus Alſniæ—ea conditione quod effecti ſint homines." Lib. Rameſ. See Allegiance and Fealty.

Liege *vaſſalage*. See Vassalage.

LIEGNITZ, or Lignitz, in *Geography*, a town of Sileſia, one of the beſt as well as moſt ancient in the country, and capital of a principality of the ſame name; ſituated on the Katzbach. The palace, within the town, is ſurrounded with a moat and high wall. Here, in a very ſtately ſtone edifice, the ſtates of the provinces aſſemble. The Lutherans have two churches in this town; and the Roman Catholics are in poſſeſſion of the collegiate church, a magnificent college, and other religious foundations. The emperor Joſeph founded here a ſpacious academy for the inſtruction of young gentlemen of both religions in military exerciſes. The trade of Lignitz in cloth and madder is conſiderable; 32 miles W. of Breſlaw. N. lat. 51° 11′. E. long. 16 10′.

LIEN, *Fr.*, a word uſed in the law, of two ſignifications: *perſonal* lien, ſuch as bond, covenant, or contract: and *real* lien, a judgment, ſtatute, recognizance, which oblige and affect the land. Term de Ley.

Lien ſignifies an obligation, tie, or *claim* annexed to, or attaching upon any property; without ſatisfying which ſuch property cannot be demanded by its owner. Thus, the coſts of an attorney are a *lien* upon deeds and papers in his hands; a factor has a lien on goods in his hands for balance due from his principal, &c.

LIEN-CHAN-POU, in *Geography*, a town of Chineſe Tartary; 12 miles N.N.E. of Ning-yaen.

LIENIS Infarctus. See Spleen.

LIEN-TCHEOU, in *Geography*, a city of China, of the firſt rank, in the province of Quang-tong, ſeated on the river Lien-kiang, which forms a very convenient harbour for Chineſe barks. The territory of this city borders on the kingdom of Tong-king, from which it is ſeparated by inacceſſible mountains. It has under its juriſdiction one city of the ſecond claſs, and two of the third. N. lat. 21° 40′. E. long. 108° 39′.

LIENTERY, in *Medicine*, ſignifies that variety of diarrhœa, in which the alimentary matters paſs off by ſtool, in an undigeſted or almoſt unchanged ſtate. The term is derived from λειος, *ſmooth*, or *poliſhed*, and εντερον, *inteſtine*, the ancients having been of opinion, that this affection was owing to the too great ſmoothneſs and lubricity of the internal membrane of the inteſtines, which allowed the food to ſlip off in an undigeſted ſtate.

Some writers have treated of the lientery as a diſeaſe altogether diſtinct from diarrhœa; but Dr. Cullen properly conſidered it as only a variety of that complaint. The principal cauſe of the lienteric diarrhœa appears to conſiſt in a morbid ſtate of irritability of the ſtomach and bowels; whence the former organ is excited to an exceſſive motion of its muſcular coat, by the ſtimulus of whatever aliment is introduced into it, and conſequently expels it into the bowels in an undigeſted ſtate; and the latter, being likewiſe morbidly ſenſible to the ſame ſtimulus, hurries on the undigeſted matter ſpeedily through the whole canal. The motions are at the ſame time looſe or liquid, becauſe, on the one hand, the undigeſted matter is not taken up by the lacteals, and, on the other, the irritation of this matter, thus rapidly paſſing, excites the exhalent veſſels, and the excretories of the mucous glands to pour out a more abundant quantity of their fluids. This affection is generally accompanied with a great weakneſs of the digeſtive power, as well as a morbid irritability of the ſtomach.

From this view of the ſubject, two indications preſent themſelves with a view to the method of cure in *lientery*; namely, firſt, to leſſen the irritability of the whole alimentary canal; and ſecondly, to ſtrengthen the digeſtive power of the ſtomach. For it muſt be obſerved, that, although food, when converted into a proper bland chyle by the proceſs of digeſtion, paſſes through the bowels without producing any irritating effect: yet the ſame food, when it is tranſmitted into them from the ſtomach in a crude and unaltered condition, operates as an extraneous and foreign matter on the irritable villous lining of the bowels, and excites them to an extraordinary periſtaltic action.

The firſt indication, of allaying the irritability of the ſtomach and inteſtines, is to be fulfilled by the adminiſtration of opiates, or other narcotic medicines, and of aſtringents. Opium itſelf is the moſt effectual ſoother of morbid irritability that we poſſeſs; and in caſes, like that under conſideration, its operation is improved by the union of ſome aromatic ſubſtance; hence the form of the opiate confection, according to the formula of the London pharmacopeia, is a grateful and efficacious medicine for this purpoſe. But the irritability is ſtill more effectually allayed, when aſtringents and abſorbents are employed at the ſame time with the opiates; the beſt of theſe are the catechu, kino, and the teſtaceous powders, or chalk. The confectio catechu of the Edinburgh pharmacopeia, which combines the opiate, aſtringent, and aromatic in one ſubſtance, is a valuable medicine for the fulfilment of this indication. Theſe ſubſtances may be adminiſtered in a little diſtilled water of ſome aromatic vegetable, as of mint, cinnamon, pimento, &c.

Or, with a view to the ſecond indication, of ſtrengthening the digeſtive power of the ſtomach, the ſame medicines may be combined or alternated with the tonic bitter medicines; ſuch as the infuſion of caſcarilla, gentian, or orange-peel, or the decoction or infuſion of the cinchona. At the ſame time moderate exerciſe, eſpecially on horſeback, will aid in re-eſtabliſhing the functions of the ſtomach; and all cold and debilitating articles of diet, or ſubſtances of difficult ſolubility, ſhould be ſtudiouſly avoided. Of the former are ice, ſallads, water-creſſes, cucumbers, or other raw vegetables, vegetable acids, &c. We once witneſſed a ſevere inſtance of lientery, which was brought on by eating a little ice-cream, at a time when a conſiderable degree of indigeſtion already prevailed; it appeared at once to ſink the feeble digeſtive powers of the ſtomach, and the food was diſcharged almoſt unchanged. Of the latter, or food of difficult ſolubility, we may mention cheeſe, hard or ſalted meats, fatty ſubſtances, &c. which require all the energy of the healthy ſtomach to ſubdue them into chyle. When the alimentary canal is in the irritable condition above-mentioned, it is adviſable for the invalid to avoid active exerciſe immediately after his meals, which is liable to hurry on the food into the inteſtines before the digeſtion is completed, and thus to occaſion a lienteric attack. We have known perſons, ſubject to habitual indigeſtion, or at leaſt great feebleneſs of ſtomach, who at thoſe times certainly brought on a diarrhœa of the lienteric kind, unleſs they remained quiet for ſome time after every meal. See Diarrhœa.

LIEOU-KIEOU, in *Geography*, iſlands ſituated between Corea, Formoſa, and Japan, which are 36 in number. The principal and largeſt is called *Lieou kiou*, and the reſt have each a particular name. The large iſland extends from N. to S. almoſt 440 lys (200 lys making 60 geographical miles), and 120 or 130 from E. to W.; but on the S. ſide, the extent from E. to W. is not 100 lys. The S.E. part of the iſland, where the king reſides, is called "Cheouli," and it is in this part (according to Groſier, but in the S.W. part according to d'Anville and others), that "Kint-ching," the capital city, is ſituated. (See Kin-tchin.) Theſe iſles form a powerful and extenſive empire, the inhabitants of which are civilized, and ought not to be confounded with other ſavage nations diſperſed throughout the iſlands of Aſia. If we believe the iſlanders themſelves, the origin of their empire is loſt in the remoteſt antiquity. They reckon 25 ſucceſſive dynaſties, the duration of which forms a period of more than 18,000 years; but it is needleſs to expoſe the abſurdity of theſe pretenſions. It is certain, however, that the exiſtence of the country called Lieou-kieou was not known in China before the year 605 of the Chriſtian era. In the courſe of this year one of the emperors of the dynaſty of Souï deputed ſome meſſengers to enquire into their ſituation. Some information having been obtained concerning them, the emperor Yang-ti ſent ſkilful perſons, accompanied by interpreters, to ſummon the prince to do homage to the emperor of China, and to pay him tribute. The king of Lieou-kieou took offence, and returned an anſwer to the demand, that he acknowledged no prince to be his ſuperior. An armament was fitted out by the emperor, and a fleet, in which was embarked 10,000 men, was equipped for the expedition. This fleet arrived in ſafety at the port of Napa-kiang, and, in ſpite of the natives, the army landed on the iſland. The king fell in battle, upon which the Chineſe pillaged, ſacked, and burnt the royal city, made more than 5000 ſlaves, and returned to China. In 1291 Chi-tſon, emperor of the dynaſty of Yven, thought of reviving the pretenſions of his predeceſſors; and fitted out a fleet to ſubdue theſe iſlands; but this fleet proceeded no further than the iſles of Pong-hou, and the weſtern coaſt of Formoſa, from whence, under various pretenſions, they returned to Fo-kien. It was not till the year 1372, under the reign of Hong-vou, founder of the dynaſty of Ming, that theſe iſlands voluntarily ſubmitted to the Chineſe government. Tſay-tou, the prince, was ſolemnly declared a vaſſal of the empire; and when Hong-vou had received his firſt tribute, conſiſting of valuable horſes, aromatic wood, ſulphur, tin, &c. he ſent to this prince a golden ſeal, and confirmed the choice he had made of one of his ſons for a ſucceſſor. The emperor afterwards ſent 36 families, almoſt all from the province of Fo-kien, to Lieou-kieou. Theſe families were hoſpitably received, and had lands aſſigned them near the port of Napa-kiang, and certain revenues were appointed for their uſe. Theſe families firſt introduced into Lieou-kieou the learned language of the Chineſe, the uſe of their characters, and the ceremonies practiſed in China in honour of Confucius. On the other hand, the ſons of ſeveral of the grandees of the court of Tſay-tou were ſent to Nan-king to ſtudy Chineſe in the imperial college, where they were treated with diſtinction and maintained at the emperor's expence. As theſe iſles had neither iron nor porcelain, they were ſupplied by Hong-vou. Commerce, navigation, and the arts ſoon began to flouriſh. Theſe iſlanders learned to caſt bells for their temples, to manufacture paper and the fineſt ſtuffs, and to make porcelain, with which they had before been ſupplied from Japan. The ſubſequent revolution, which placed the Tartars on the imperial throne of China, produced no change in the conduct of the kings of Lieou-tcheou. The emperor Kang-hi (about A.D. 1720) paid a more marked attention to theſe iſles than any of his predeceſſors. He cauſed a ſuperb palace to be erected in honour of Confucius, and a college, where he maintained maſters to teach the ſciences and the Chineſe characters. He alſo inſtituted examinations for the different degrees of the literati. He ordained that the king of Lieou-kieou ſhould never ſend in tribute roſe-wood, cloves, or any other production which was not of the growth of the country; but that he ſhould find a fixed quantity of ſulphur, copper, tin, ſhells, and mother-of-pearl, which is very beautiful in theſe iſlands. He permitted, that, beſides the uſual tribute, he might preſent him with horſe furniture, piſtol-caſes, and other things of the ſame kind, which theſe iſlanders are ſaid to manufacture with great taſte and neatneſs.

It is more than 900 years, ſays Groſier, ſince the bonzes of China introduced at Lieou-kieou the worſhip of Fo, and the principal books belonging to their ſect. This worſhip is at preſent the eſtabliſhed religion both of the grandees and of the people. In the royal city there is ſtill to be ſeen a magnificent temple, erected in honour of another idol borrowed from the Chineſe, named *Tien-ſey*, which ſignifies "celeſtial queen, or lady." Theſe iſlanders do not ſwear or make promiſes before their idols. For this purpoſe they burn perfumes, preſent fruits, and ſtand reſpectfully before ſome ſtone, which they call to witneſs the ſolemnity of their engagements. Of theſe ſtones many are to be ſeen in the courts of their temples, in moſt public places, and upon the mountains; and they are appropriated to this uſe. They have alſo among them women conſecrated for the worſhip of ſpirits, who are ſuppoſed to have great influence over theſe beings. They viſit the ſick, diſtribute medicines, and write prayers for their recovery. They reſpect the dead as much as the Chineſe, but their funerals are leſs pompous. They burn the fleſh of the deceaſed, and preſerve only the bones. They place round them lamps, and burn perfumes, and different families are diſtinguiſhed by ſurnames, as in China; but a man and woman of the ſame ſurname are not allowed to marry. The king is not at liberty to marry except in the three grand families, among which the higheſt offices are diſtributed. A plurality of wives is allowed in theſe iſles. The women are very reſerved; they neither uſe paint, nor wear pendants in their ears; they collect their hair on the top of their heads, in the form of a curl, and fix it in that manner by long pins made of gold or ſilver. Beſides the vaſt domains which the king poſſeſſes, he receives the produce of all the ſulphur, copper, and tin-mines, and of the ſalt-pits, together with what ariſes from the taxes; and from theſe revenues he pays the ſalaries of the mandarins and officers of his court. Of the mandarins there are, as in China, nine orders, diſtinguiſhed by the colour of their caps, or by their girdles and cuſhions. In the royal city tribunals are eſtabliſhed for managing the revenue and affairs of the principal iſland, and of all the others dependent upon it. There are alſo particular tribunals for civil and criminal matters, for the affairs of religion, for manufactures, commerce, navigation, &c. The veſſels built in this country are highly valued by the people of China and Japan. In theſe the natives ſail not only from one iſland to another, but alſo to China, Tonquin, Cochinchina, Corea, &c. Beſides thoſe articles of commerce, which their manufactories of ſilk, cotton, paper, arms, copper utenſils, &c. furniſh them, they alſo export mother-of-pearl, tortoiſe and other ſhells, coral and whetſtones, which are held in high eſtimation both in China and Japan. Three languages are ſpoken in the iſles of Lieou-kieou, different from thoſe of China and Japan. The language of the large iſland is the ſame as that of the neighbouring iſles; but it differs from thoſe of the iſles which lie to the S.W. and N.E. Letters, accounts, and all the king's orders are written in Japaneſe characters, not in the language of the country; books of morality, hiſtory, medicine, aſtronomy, and aſtrology, are written in Chineſe characters. The diſtribution of time, and the diviſion of the year, are the ſame in Lieou-kieou as in China. The edifices, temples, and palace of their kings are built after the Japaneſe manner; but the houſes of the Chineſe, the hotel of the embaſſador, the imperial college, and the temple of the goddeſs "Tien-ſey," are built after the faſhion of China. The natives of Lieou-kieou are, in general, mild, affable, and temperate; they are active and laborious, enemies to ſlavery, and deteſt falſhood and diſhoneſty. Excepting the grandees, bonzes, and Chineſe eſtabliſhed in Lieou-kieou, few of the inhabitants of theſe iſlands can either write or read. The people are fond of games and diverſions. They celebrate with great pomp and ſplendour, thoſe feſtivals that are inſtituted in honour of their idols, and thoſe which are appointed for the termination and commencement of the year. Great harmony prevails among families and individuals, which they take care to preſerve by frequent repaſts, to which they invite one another. Suicide is unknown among theſe iſlanders; and they are free from thoſe crimes that are common in the iſles ſituated to the N.E. of them, which being nearer to Japan, have adopted the vices of its inhabitants, as well as their manners and cuſtoms. Groſier's China, vol. i. The capital is in N. lat. 26° 2′. E. long. 128° 40′.

LIEOU-TCHEOU, a town of Corea; 37 miles S.E. of King-ki-tao.—Alſo, a city of China, of the firſt rank, in the province of Quang-ſi, ſituated on the river Leng. N. lat. 24° 12′. E. long. 108° 47′.

LIEPE, a town of Pruſſia, in the palatinate of Culm; 14 miles E.S.E. of Culm.

LIEPPE, a town of Pruſſia, in Oberland; eight miles from Oſterrod.

LIERGANES, a town of Spain, in the province of Biſcay; 10 miles S.S.E. of Santander.

LIERNA, a town of the republic of Lucca; 7 miles N.N.W. of Lucca.

LIERNAIS, a town of France, in the department of the Côte-d'Or, and chief place of a canton, in the diſtrict of Beaune; 10 miles N.W. of Arnay-le-Duc. The place contains 705, and the canton 8602 inhabitants, on a territory of 260 kiliometres, in 15 communes.

LIERNE, a town of France, in the department of the Two Nethes, and chief place of a canton, in the diſtrict of Malines, ſeated on the Nethe; 10 miles S.E. of Antwerp. The place contains 9581, and the canton 13,159 inhabitants, on a territory of 105 kiliometres, in four communes.

LIETZAN, a town of the Middle Mark of Brandenburg; 15 miles S.W. of Cuſtrin. N. lat. 52° 28′. E. long. 14° 30′.

LIEURE, a town of France, in the department of the Straits of Calais; 11 miles S. of Calais.

LIEUREY, a town of France, in the department of the Eure; 7 miles S. of Pont-Audemer.

LIEUTAUD, JAMES, in *Biography*, a French mathematician, who flouriſhed in the former part of the eighteenth century, was the ſon of a gun-ſmith at Arles, and died at Paris in the year 1733. He particularly attached himſelf to the ſtudy of aſtronomy, and from the great proficiency which he made in this branch of knowledge, he obtained a ſeat in the French Academy of Sciences He publiſhed twenty-ſeven volumes of the "Connoiſſance des Temps," from the year 1703 to 1739.

LIEUTAUD, JOSEPH, a celebrated phyſician and anatomiſt, was born at Aix, in Provence, on the 21ſt of June, 1703. His family had been eſtabliſhed from time immemorial at Aix, and had produced a great number of diſtinguiſhed officers, eccleſiaſtics, lawyers, and uſeful citizens. He was at firſt intended by his parents for the church; but the reputation of his maternal uncle, Garidel, the profeſſor of medicine in his native place, gave him a bias to the ſtudy of medicine. Botany was the firſt object of his purſuits. He travelled into the countries which Tournefort had ſurveyed before him, and brought back many plants which had eſcaped the obſervation of that diſtinguiſhed botaniſt. This ſucceſs gained him great applauſe in the univerſities of Aix and Montpellier, and he ſoon obtained in the former the reverſion of the chairs of botany and anatomy, which his uncle had long filled. Being appointed phyſician to the hoſpital at Aix, the neceſſity of purſuing his anatomical ſtudies preſented itſelf to his mind, together with the greater facilities which this appointment afforded, and he thenceforth nearly abandoned the ſubject of botany. His audience ſoon became numerous, compriſing many perſons not engaged in the ſtudy of medicine, and among others the marquis d'Argens, the intimate friend of the king. M. Lieutaud publiſhed, in 1742, a ſyllabus of anatomy for the uſe of his pupils, entitled "Eſſais anatomiques, contenant l'Hiſtoire exacte de toutes les Parties qui compoſent le Corps humaine;" it was ſeveral times reprinted, with improvements, and in 1777 was edited by M. Portal, in two volumes. He communicated alſo ſeveral papers on morbid anatomy, to uſe a common phraſe, and on phyſiology, to the Academy of Sciences, of which he was elected a correſponding member. In 1749, however, he quitted his poſt at Aix, and went to Verſailles, at the inſtance of the celebrated Senac, who then held the higheſt appointment at court, and who obtained for Lieutaud the appointment of phyſician to the Royal Infirmary. This act of friendſhip is ſaid to have originated from the private communication of ſome errors, which Lieutaud had detected in a work of M Senac, and which he did not deem it proper to publiſh. At Verſailles he continued his anatomical inveſtigations with unabated zeal, and was ſoon after his arrival elected aſſiſtant-anatomiſt to the Royal Academy, to which he continued to preſent many valuable memoirs. He alſo printed a volume, entitled "Elementa Phyſiologiæ, &c." Paris, 1749, which had been compoſed for the uſe of his claſs at Aix. In 1755, he was nominated phyſician to the royal family, and, twenty years afterwards, he obtained the place of firſt phyſician to the king, Louis XVI. In 1759, he publiſhed a ſyſtem of the practice of medicine, under the title of "Precis de la Medicine pratique," which underwent ſeveral editions, with great augmentations, the beſt of which is that of Paris, 1770, in two volumes, 4to. In 1766, he publiſhed a "Precis de la Matière medicale," in 8vo. afterwards reprinted in two volumes. But his moſt important work, which ſtill ranks high in the eſtimation of phyſicians, is that which treats of the ſeats and cauſes of diſeaſes, aſcertained by his innumerable diſſections. It was entitled "Hiſtoria Anatomico-medica, ſiſtens numeroſiſſima cadaverum humanorum extiſpicia," Paris, 1767, in two volumes, 4to. M. Lieutaud died on the 6th of September, 1780, after an illneſs of five days. Eloy Dict. Hiſt. Hiſt. de l'Acad. Roy. des Sciences, for 1780, p. 48.

LIEUTENANT, LOCUMTENENS, a deputy, or officer, who holds the place of a ſuperior, and diſcharges in his abſence the duties of the office which he ought to exerciſe in perſon. The term is originally derived from *legatus* (which ſee), and more immediately from the French *lieutenant*, ſupplying or holding the place of another.

Of theſe, ſome are civil; as lords lieutenants of kingdoms; who are the king's viceroys, and govern in his ſtead, ſuch as the lord lieutenant of Ireland; and lords lieutenants of counties. See LORDS *Lieutenants*.

But the term is moſt frequent among military men, among whom there is a variety of lieutenants.

LIEUTENANT is the ſecond commiſſioned officer in every company of both foot and horſe, and next to the captain, who takes the command upon the death or abſence of the captain. Fuzileer corps, grenadiers, and light infantry, have ſecond lieutenants and no enſigns. See CAPTAIN.

LIEUTENANT *of Artillery*, is an officer of the artillery in each company, of which there are one firſt and three ſecond lieutenants. The firſt lieutenant has the ſame detail of duty with the captain, becauſe, in his abſence, he commands the company. The ſecond lieutenant is the ſame as the enſign in an infantry regiment, being the youngeſt commiſſioned officer in the company, and it is his duty to aſſiſt the firſt lieutenant.

LIEUTENANT-*General of Artillery*. See *Lieutenant*-GENERAL *of Artillery*.

LIEUTENANT-*Captain*. See CAPTAIN.

LIEUTENANT *of Engineers*. See ENGINEER.

LIEUTENANT-*General*. See GENERAL, *Lieutenant*.

In France they have alſo lieutenant-generals of their naval forces, who command immediately under the admirals.

In Holland they have a lieutenant-admiral, which is the ſame with what we call a vice-admiral.

LIEUTENANT-*General of the Ordnance*, is he who has the charge of the artillery, batteries, &c. under the maſter-general, or in his abſence. This officer was firſt eſtabliſhed in 1597. See ORDNANCE.

LIEUTENANT-*Colonel of Foot*. See *Lieutenant*-COLONEL.

The dragoons have alſo a lieutenant-colonel; but the horſe have not, properly, any; the firſt captain of the regiment ſupplies the office.

Lieutenant-*Colonel of Horſe*, is only the firſt captain of the regiment, who commands in the abſence of the colonel, taking place of all other captains.

Lieutenant *of a Ship of War*, is the officer next in rank and power to the captain, in whoſe abſence he is charged with the command of the ſhip, and alſo the execution of any orders which he may have received from the commanders relating to the king's ſervice. The lieutenant, who commands the watch at ſea, keeps a liſt of all the officers and men belonging to it, in order to muſter it, and report to the captain the names of thoſe who are abſent from their duty. During the night-watch he occaſionally viſits the lower deck, or ſends thither a proper officer to ſee that order is obſerved. He is always to be upon deck in his watch, to give orders for trimming the ſails and ſuperintending the navigation, and for preſerving order; but he is never to change the ſhip's courſe without the captain's direction, unleſs it be to avoid an immediate danger. In time of battle he is to ſee that all the men are preſent at their quarters, to order and exhort them to perform their duty, and to inform the captain of any miſbehaviour. The youngeſt lieutenant of the ſhip, who is alſo called lieutenant at arms, is, beſides his common duty, to train the ſeamen to the uſe of ſmall arms, and in time of battle to attend and direct them for this purpoſe.

Lieutenant *de Roy*, the deputy governor of all ſtrong towns in France before the revolution, who is a check upon the governor, and commands in his abſence.

Lieutenant *Reformed*, is he whoſe company or troop is broke or diſbanded, but continued in whole or half-pay, and ſtill preſerves his right of ſeniority and rank in the army.

LIFE, in *Phyſiology*, is the peculiar condition or mode of exiſtence of living beings. Surrounding matter we obſerve to be divided into two great claſſes, living and dead: the latter is ſubject to phyſical laws, which the former alſo obeys in a great degree: it exhibits alſo phyſical properties, which we find equally in the latter. But living bodies are endowed moreover with a ſet of properties altogether different from theſe, and contraſting with them in a very remarkable way; theſe are the vital properties, powers, faculties, or forces. They animate living matter ſo long as it continues alive, and are the ſource of the various phenomena which conſtitute the functions of the living animal body, and which diſtinguiſh its hiſtory from that of dead matter. The ſtudy of life, then, which is the object of the ſcience of phyſiology, as organization is of anatomy, includes an inquiry into the properties that characterize living matter, and an inveſtigation of the functions which the various organs, by virtue of theſe properties, are enabled to execute.

As the animals, which belong to the different claſſes of natural hiſtory, differ greatly in the number of functions, which they can execute, as we have every gradation from that of the greateſt ſimplicity, to as great a complication in ſtructure and functions; life includes very different notions in the different inſtances. Our view would be very imperfect if we obſerved it only in one example; we ſhall, therefore, extend our ſurvey in a very general manner, through all the orders of animals. For this purpoſe we ſhall avail ourſelves of the very excellent introductory lecture to the Leçons d'Anatomie comparée of Cuvier, which exhibits a luminous and philoſophical view of life in general, and of its principal modifications in the different claſſes of animals. We ſhall ſubjoin a general account of Bichat's diviſion of the animal functions, and of the vital properties by which they are executed, from his Recherches ſur la Vie et la Mort.

The idea of *life* is one of thoſe general and obſcure ideas produced in us by obſerving a certain ſeries of phenomena poſſeſſing mutual relations, and ſucceeding each other in a conſtant order. We know not indeed the nature of the link that unites theſe phenomena, but we are ſenſible that a connection muſt exiſt; and this conviction is ſufficient to induce us to give it a name, which the vulgar are apt to regard as the ſign of a particular principle, though in fact that name can only indicate the totality of the phenomena which have occaſioned its formation.

Thus, as the human body, and the bodies of ſeveral other animals reſembling it, appear to reſiſt, during a certain time, the laws which govern inanimate bodies, and even to act on all around them in a manner entirely contrary to thoſe laws, we employ the terms *life* and *vital force* to deſignate what are at leaſt apparent exceptions to general laws. It is therefore by determining exactly in what the exceptions conſiſt, that we ſhall fix the meaning of thoſe terms. For this purpoſe, let us conſider living bodies in their active and paſſive relations with the reſt of nature.

For example, let us contemplate a female in the prime of youth and health. That elegant voluptuous form, that graceful flexibility of motion, that gentle warmth, thoſe cheeks crimſoned with the roſes of delight, thoſe brilliant eyes, darting rays of love, or ſparkling with the fire of genius, that countenance, enlivened by ſallies of wit, or animated by the glow of paſſion, ſeem all united to form a moſt faſcinating being. A moment is ſufficient to deſtroy this illuſion. Motion and ſenſe often ceaſe without any apparent cauſe. The body loſes its heat; the muſcles become flat, and the angular prominences of the bones appear; the luſtre of the eye is gone; the cheeks and lips are livid. Theſe, however, are but preludes of changes ſtill more horrible. The fleſh becomes ſucceſſively blue, green, and black: it attracts humidity, and while one portion evaporates in infectious emanations, another diſſolves into a putrid ſanies, which is alſo ſpeedily diſſipated. In a word, after a few ſhort days there remains only a ſmall number of earthy and ſaline principles. The other elements are diſperſed in air, and in water, to enter again into new combinations.

It is evident that this ſeparation is the natural effect of the action of the air, humidity, and heat,—in a word, of external matter upon the dead body; and that it has its cauſe in the elective attraction of thoſe different agents for the elements of which the body is compoſed. That body, however, was equally ſurrounded by thoſe agents while living, their affinities with its molecules were the ſame, and the latter would have yielded in the ſame manner during life, had not their coheſion been preſerved by a power ſuperior to that of thoſe affinities, and which never ceaſed to act until the moment of death.

Of all the phenomena, the particular ideas of which enter into the general idea of life, this is what at firſt ſight appears to conſtitute its eſſence, ſince we can form no conception of life without it, and ſince it evidently exiſts without interruption until the inſtant of diſſolution.

But a further ſtudy of any living body convinces us, that the power which preſerves the union of the moleculæ, notwithſtanding the external forces which tend to ſeparate them, does not confine its activity to this tranquil operation, and that the ſphere of its action extends beyond the bounds of the living body itſelf. At leaſt it does not appear that this power differs from that which attracts new moleculæ to depoſit them between thoſe that already exiſt: and this action of the living body, in attracting the ſurrounding moleculæ, is not leſs conſtant than that which it exerciſes in retaining its own; for, beſides that the abſorption of the alimentary matter, its converſion into nutritive fluid, and its ſubſequent tranſmiſſion to all the parts of the body, experience no interruption, and continue from one repaſt to another; another abſorption conſtantly takes place at the external ſurface, and a third by the effect of reſpiration. The two latter are thoſe only which exiſt in all living bodies which do not digeſt, that is to ſay, in all plants.

Living bodies, however, do not increaſe indefinitely. Nature has aſſigned to each limits which it cannot exceed. It follows, therefore, that they muſt loſe, in one way, a great part of what they gain in another; and indeed an attentive obſervation has convinced us, that tranſpiration, and a number of other cauſes, tend continually to diminiſh their ſubſtance.

This conſideration muſt modify the notion which we at firſt formed from the principal phenomenon of life. Inſtead of a conſtant union in the moleculæ, we cannot avoid obſerving, that there is a continual circulation from the exterior to the interior, and from the interior to the exterior of bodies; a circulation which, though uniformly preſerved, is notwithſtanding fixed within certain limits. Thus living bodies may be conſidered as a kind of receptacles, into which inert ſubſtances are ſucceſſively thrown, in order to combine among themſelves in various manners, maintain a certain place, and perform an action determined by the nature of the combinations they have formed; and from which they eſcape in order to become again ſubject to the laws of inanimate nature.

It muſt be obſerved, however, that there is a difference, depending on age and health, in the proportion of the parts which enter into this kind of circulation, and thoſe which abandon it; and that the velocity of the motion uſually varies according to the different conditions of each living body.

It appears, at the ſame time, that life is terminated by cauſes ſimilar to thoſe which interrupt all other known motions, and that the hardening of the fibres, and the obſtruction of the veſſels, render death the neceſſary conſequence of life, as repoſe is of motion, even though the criſis were not accelerated by innumerable cauſes which are foreign to the living body.

This general and common motion of all the parts forms ſo peculiarly the eſſence of life, that the parts which are ſeparated from a living body ſoon die, becauſe they poſſeſs no motion of their own, and only participate in the general motion produced by their union. Thus, according to the expreſſion of Kant, the reaſon of the mode of exiſtence of each part of inanimate bodies belongs to itſelf, but in living bodies it reſides in the whole.

The nature of life, as above deſcribed, being once well aſcertained by the obſervation of the moſt conſtant of its effects, a wiſh would naturally ariſe to inveſtigate its origin, and to inquire how it is communicated to the bodies it animates. Living bodies have, therefore, been traced to their infancy; and it has been endeavoured to carry this examination as near as poſſible to the moment of their formation. But they have never been obſerved otherwiſe than completely formed, and already enjoying that vital force, and producing that circulatory motion, the firſt cauſe of which we are deſirous of knowing. In fact, however feeble and minute the parts of an embryo, or of the ſeed of a plant, may be at the moment we are firſt capable of perceiving them, they then enjoy a real life, and poſſeſs the germ of all the phenomena which that life may afterwards develope. Theſe obſervations, extended to all the claſſes of living bodies, lead to this general fact, that there are none of *thoſe bodies* which have not heretofore formed parts of bodies ſimilar to themſelves, from which they have been detached. All have participated in the exiſtence of other living bodies, before they exerciſed the functions of life by themſelves; and it was even by means of the vital force of the bodies to which they formerly belonged, that they were enabled to develope themſelves ſo completely as to become capable of enjoying ſeparate vitality; for though the particular action of copulation is neceſſary for the production of a number of ſpecies, many are produced without it; copulation, therefore, is only a circumſtance belonging to certain caſes, and does not change the eſſential nature of generation. It appears then that the motion proper to living bodies has really its origin in that of their parents. It is from them they have received the vital impulſe; and hence it is evident, that, in the actual ſtate of things, life proceeds only from life, and that there exiſts no other except that which has been tranſmitted from one living body to another by an uninterrupted ſucceſſion.

Unable to aſcend to the origin of living bodies, there remains then within our reach no ſource of information reſpecting the real nature of the powers which animate them, except the examination of the compoſition of thoſe bodies, that is to ſay, of their texture, and the union of their elements: for, though it may be truly ſaid, that this texture, and this union are in ſome manner the reſult of the action of the vital impulſe which has given them being, and which maintains them; it is alſo evident, that in them only this impulſe can have its ſource and foundation: and if the firſt union of the chemical and mechanical elements of any living body has been effected by the vital force of the body from which it deſcended, we ought to find in it a ſimilar power, and alſo the cauſes of that power, ſince it has to exerciſe a like action in favour of the bodies which are to deſcend from it.

But this compoſition of living bodies is too imperfectly known to enable us to deduce clearly from it the effects they exhibit. We obſerve, in general, that they are compoſed of fibres or laminæ, forming altogether a ſeries of reticulated ſubſtances more or leſs compact, which form the baſes of all their ſolids, as well of thoſe that are maſſy, as of thoſe that preſent the appearance of laminæ and filaments. We are acquainted with the form, the conſiſtence, and the poſition of the larger of thoſe ſolids; the ramifications of the moſt conſiderable of their veſſels, and the courſe of the fluids they contain: but their more minute branches, and their more ſecret texture, cannot be traced by our inſtruments. We likewiſe know the chemical characters of the moſt apparent of the different fluids and concrete ſubſtances: we can even decompoſe them to a certain point. This inveſtigation, however, is not only imperfect, ſince we cannot recompoſe them, but the phenomena indicate, that there muſt exiſt ſeveral other fluids which we have not yet been able to diſcover.

The efforts hitherto made by naturaliſts to prove a connection between the phenomena of living bodies and the general laws of nature, have doubtleſs been unſucceſsful. It would, however, be wrong, on that account, to conclude that thoſe phenomena are abſolutely of a different kind; but, on the other hand, there would be much temerity in reſuming this taſk, while our knowledge of the bodies in which the phenomena appear is ſo limited. We ſhould be able to give only an empirical expoſition, inſtead of a rational ſyſtem. All our labours on organic economy muſt therefore be confined to its hiſtory.

If, however, our knowledge of the compoſition of living bodies be not ſufficient for the explanation of the phenomena they exhibit, we may at leaſt employ it in recognizing thoſe bodies when out of a ſtate of action, and in diſtinguiſhing their remains long after death; for we find in no inert body that fibrous or cellular texture, nor that multiplicity of volatile elements which form the characters of organization and organized bodies, whether in thoſe that are alive, or in thoſe that have lived.

We know that inert ſolids are compoſed only of polyedrous moleculæ, which attract each other by their ſides, and never move except to ſeparate—that they are reſolvable into a very ſmall number of elementary ſubſtances—that they are formed of the combination of thoſe ſubſtances, and the accumulation of thoſe molecules—that they grow only by the juxtapoſition of new molecules, the ſtrata of which envelope the preceding maſs—and that they are deſtroyed only by ſome mechanical agent ſeparating their parts, or ſome chemical agent altering their combinations; but organized bodies, which are tiſſues of fibres and laminæ, and have their interſtices filled with fluids, reſolve almoſt entirely into volatile ſubſtances, are produced by bodies ſimilar to themſelves, from which they do not ſeparate until they are ſufficiently developed to act by their own force; conſtantly aſſimilate foreign ſubſtances, and depoſit them between their particles; grow by an internal power, and finally periſh by that internal principle, or by the effect of life itſelf.

Origin by *generation*, growth by *nutrition*, termination by *death*, are the general and common characteriſtics of all organized bodies: if, however, there are bodies which perform only theſe functions, and thoſe which are ſubſidiary to them, and poſſeſs only the organs neceſſary for ſuch operations, there is a great number of others which perform particular functions, that not only require appropriate organs, but neceſſarily modify the manner in which the general functions are performed, and the organs proper to thoſe functions.

Among the leſs general faculties which indicate organization, but which are not the neceſſary conſequences of it, the faculty of ſenſation, and that of voluntary motion, in whole or in part, are the moſt remarkable, and thoſe which have the greateſt influence on the other functions.

We are conſcious that theſe faculties exiſt in ourſelves, and we attribute them, by analogy, and from their apparent exiſtence, to a number of other beings, whom we therefore name *animated* beings, or, uſing a ſingle word, *animals*.

It appears that theſe two faculties are neceſſarily connected, the idea of *ſenſation* is even included in that of *voluntary motion*; for we cannot conceive volition without deſire, and unaccompanied by the ſentiment of pleaſure or pain. There may indeed exiſt inanimate bodies, that manifeſt external motion produced by an internal principle; but their movements are not of the ſame nature as thoſe which conſtitute the functions eſſential to life, and do not merit the name of voluntary.

On the other hand, the bounty which nature diſplays in all her productions, does not permit us to believe that ſhe has deprived beings ſuſceptible of ſenſation, that is to ſay, of pleaſure and pain—of the power, in a certain degree, of avoiding the one and purſuing the other. Among the miſfortunes which afflict our ſpecies, one of the moſt painful is the ſituation of a man of courage withheld by a ſuperior power from reſiſting oppreſſion; and the poetic fictions beſt calculated to excite compaſſion, are thoſe which repreſent ſentient beings incloſed within immoveable bodies. The ſighs of Clorinda iſſuing, with her blood, from the trunk of a cypreſs, would arreſt the fury of the moſt ſavage of mortals. La Gieruſalemme Liberata, canto xiii.

But, independently of the chain which connects the two faculties, and the double ſyſtem of organs they require, they are accompanied by ſeveral modifications in thoſe faculties which are common to all organized bodies: theſe modifications, joined to the two firſt mentioned faculties, are what more particularly conſtitute the nature of animals.

With reſpect to nutrition, for example, vegetables, which are attached to the ſoil, abſorb immediately, by their roots, all the nutritive parts of the fluids which they imbibe. Theſe roots are ſubdivided to extreme minuteneſs; they penetrate into the ſmalleſt interſtices, and proceed, if it may be ſo ſaid, to ſeek at a diſtance food for the plant to which they belong. Their action is tranquil and uniform, and never is interrupted except when deprived by drought of the juices which they require.

Animals, on the contrary, which are not fixed, and which frequently change their place, can tranſport with themſelves a portion of the ſubſtances neceſſary for their nutrition: they have therefore received an internal cavity, into which they depoſit the matters deſtined for their aliment; and the inward ſurfaces of this cavity are furniſhed with innumerable abſorbing pores or veſſels, which, according to the energetic expreſſion of Boerhaave, are real *internal roots*: the magnitude of this cavity, in a number of animals, permits them to introduce ſolid ſubſtances into it. It was neceſſary, then, that they ſhould have inſtruments for dividing thoſe ſubſtances, and liquors for diſſolving them. In a word, with ſuch animals nutrition does not immediately commence upon the abſorption of the ſubſtances which the ſoil or the atmoſphere furniſh them. It is neceſſarily preceded by a vaſt number of preparatory operations, the whole of which conſtitute *digeſtion*. See DIGESTION.

Thus, it appears, that digeſtion is a function of a ſecondary order, proper to animals, the exiſtence of which, as well as of the alimentary canal in which it is performed, is rendered neceſſary by the faculty they poſſeſs of voluntary motion; but this is not the only conſequence of that faculty.

The faculties of vegetables being very few, their organization is very ſimple; almoſt all their parts are compoſed of fibres, which are either parallel, or diverge very little. Farther, their fixed poſition admits, that the general motion of their nutritive fluid may be preſerved by ſimple external agents. It appears that it proceeds upwards, by the effect of the ſuction of their ſpongy or capillary texture, and the evaporation which takes place at their top, and that its motion in that direction is the more rapid in proportion as the evaporation is great. It appears alſo that the motion of this fluid may even become retrograde, when it ceaſes to flow in its uſual courſe, or changes into abſorption by the coolneſs and humidity of the air.

It is not only neceſſary that animals deſtined continually to change their place of exiſtence, and to live in all kinds of ſituations and temperatures, ſhould poſſeſs within themſelves an active principle of motion for their nutritive fluid; but their more numerous and more developed faculties requiring a much greater complication of organs, their various parts being differently formed, often at a diſtance from each other, and even capable of changing their reſpective poſitions and directions, means more powerful, and otherwiſe diſpoſed, than in vegetables, are neceſſary for tranſmitting this fluid through ſuch a multiplicity of intricate windings.

In the greater part of animals, therefore, this fluid is contained in innumerable canals, which are the ramifications of two trunks communicating with each other, in ſuch a manner,

ner, that the one receives in its roots the fluid which the other has puſhed into its branches, and carries it back to the centre, to be again driven forward from that point.

Where the two great trunks communicate, the heart is placed: it is merely an organ, the contractions of which drive this fluid forward with great force into all the ramifications of the arterial trunk. It has two orifices, the valves of which are ſo diſpoſed that the fluid contained in the whole vaſcular ſyſtem can proceed in no other manner than in that we have pointed out; that is to ſay, from the heart towards the other parts of the body by the *arteries*, and from thoſe parts back to the heart by the *veins*. See Circulation and Heart.

In this movement, by rotation, conſiſts the circulation of the blood, which is another function of a ſecondary order, proper to animals, and of which the heart is the principal agent and the regulator; but this function is not ſo neceſſarily connected with the faculties of ſenſation and motion as the function of digeſtion is; for two numerous claſſes of animals are completely deprived of circulation, and are nouriſhed like vegetables, by ſimply imbibing a fluid which is prepared in the inteſtinal canal.

In the animals that have a circulation, the blood appears to be merely a vehicle which is continually receiving from the alimentary canal, from the external ſurface of the body, and from the lungs, different ſubſtances, which are intimately incorporated with it, and continually furniſhing ſubſtances to all the different parts of the body, for their preſervation and growth. In its paſſage through the extremities of the arteries the blood effects the real nutrition of the parts; at the ſame time it changes its nature and its colour: and it is only by the acceſſion of the different ſubſtances, which have juſt been pointed out, that the venous blood is rendered proper for nutrition, or, in one word, becomes *arterial* blood.

It is by particular veſſels, called *lymphatics*, that the venous blood receives the ſubſtances with which the ſkin and the alimentary canal ſupply it. By them, alſo, it receives even the reſiduum of nutrition, and the particles which are detached from different parts, to be carried out of the body by various excretions. See Absorbents and Absorption.

With reſpect to the lungs, the air that penetrates into them produces, with the venous blood, a kind of combuſtion, which appears to be neceſſary to the exiſtence of all organized bodies: for it takes place in them all, though in very different ways. See Respiration.

Vegetables, and animals which have no circulation, *reſpire* throughout the whole of their ſurface, or by veſſels which introduce the air at different points into the interior of their bodies. No animals reſpire by a particular organ, except thoſe that have a real circulation, becauſe, in them, the blood coming from one common ſource, the heart, to which it conſtantly returns, the veſſels that contain it are ſo diſpoſed, that it cannot arrive at the other parts until it has paſſed through the lungs. This, however, cannot take place in vegetables, or in thoſe animals in which this fluid is every where diffuſed in an uniform manner, without being contained in veſſels.

Hence it appears that pulmonary or branchial reſpiration is a function of a third order, the exiſtence of which depends on that of circulation, and that it is a remote conſequence of thoſe faculties that characteriſe animals.

Even the mode of generation in animals, at leaſt as far as the fecundation of the ova is concerned, depends on their particular faculties; for the faculties they poſſeſs of moving and advancing towards each other, of deſiring and enjoying, has fitted them for taſting all the delights of love: while, with reſpect to the purely mechanical part, their ſpermatic fluid has no occaſion for any envelope, and is capable of being tranſmitted directly to the ova; but in vegetables, which do not poſſeſs within themſelves the power of directing this fluid, it was neceſſary that it ſhould be encloſed in little capſules, which are ſuſceptible of being tranſported by the winds, and which form what is called the *pollen* of the *ſtamina*. Thus, while animals, for the performance of moſt of their other functions, have, in conſequence of faculties peculiar to themſelves, received more complicated organs, they are enabled, by thoſe characteriſtic faculties, to exerciſe the function of generation in a manner more ſimple than vegetables.

Theſe examples ſhew how much influence the faculties of ſenſation and motion, which animals poſſeſs in addition to thoſe of vegetables, have over the organs of all the other faculties which are common to both theſe kinds of beings. The compariſon which we ſhall hereafter make of the different orders of animals, will, in the ſame manner, demonſtrate that the modifications of their principal functions exerciſe a ſimilar influence on all the others:—ſuch is the union and harmony which prevails in all the parts of living bodies.

We have thus deſcribed the principal functions which compoſe the animal economy. It is obvious that they may be divided into three diſtinct orders. There are ſome which, in conſtituting animals what they are, fit them for fulfilling the part that nature has aſſigned to them in the general arrangement of the univerſe,—in a word, which would be ſufficient for their exiſtence, if that exiſtence were only momentary. Theſe are the faculties of ſenſation and motion: the latter enables them to execute certain actions, and the former determines their choice of the particular actions they are capable of performing. Each animal may be conſidered as a partial machine, co-operating with all the other machines, the whole of which form the univerſe: the organs of motion are the wheels and levers, in ſhort, all the paſſive parts; but the active principle, the ſpring which gives the impulſe to every part, reſides only in the ſenſitive faculty, without which the animal, plunged in a continual ſlumber, would be reduced to a ſtate purely vegetative;—plants themſelves, as Buffon has obſerved, may be called animals which ſleep. Theſe two functions form the firſt order, and are termed *animal functions*. But animal machines, unlike thoſe we conſtruct, poſſeſs an internal principle of preſervation and reparation. This principle conſiſts in the union of the different functions which ſerve to nouriſh the body, that is to ſay, *digeſtion, abſorption, circulation, reſpiration, tranſpiration*, and the *excretions*. Theſe form the ſecond order, and are denominated *vital functions*.

Finally, the duration of each animal's life being determined according to its kind, *generation* is a function of a third order, by which the individuals that periſh are replaced by others, and the exiſtence of each ſpecies maintained. See Function.

Having conſidered theſe functions with reſpect to themſelves, and to their reciprocal relations, we ſhall next examine the organs by which they are performed.

General idea of the organs of which the animal body is compoſed.—No part of the animal body is compoſed entirely of ſolid particles; they all yield fluids by expreſſion, or loſe them by exſiccation; and they all exhibit the appearance of an areolated or reticular texture.

The mechanical diviſion of the ſolids conducts us, in the laſt reſult, to lamellæ, or filaments, which ſeem to be the elementary moleculæ. When the lamellæ are ſeparate, and interrupted by ſenſible vacancies, they form what is called celluloſity. This celluloſity not only envelopes and pervades the moſt denſe parts, but it appears to form almoſt always their baſis; for membranes conſiſt only of a more compact celluloſity, the lamellæ of which are more cloſely approximated, and placed more exactly above each other, and are reſolved into an ordinary celluloſity by maceration. (See CELLULAR *ſubſtance*, and MEMBRANE, *cellular*.) The veſſels are merely membranes rounded into cylinders. All the ſoft parts of the body, the fibres excepted, ſeem to be an aſſemblage of veſſels, differing from each other only according to the nature of the fluids they contain, by their number, their direction, and the ſtructure of their coats.

The chemical analyſis of theſe ſubſtances, ſolids as well as fluids, exhibits only a few principles, almoſt all of which are to be found in each of them, though in very different proportions. Some earths, ſome ſalts, phoſphorus, carbon, azote, hydrogen, oxygen, a little ſulphur, and a little iron, combined in a great variety of ways, produce different compoſitions, *viz.* gelatine, albumen, and fibrous matter, &c. which, uniting in their turn, form animal ſolids and fluids, ſuch as we know them. But, diſtant as we are from a complete analyſis, we ſee enough to convince us, not only that we alter theſe compoſitions by our experiments, but alſo that ſeveral of their principles entirely eſcape our inſtruments. For a more particular account of the elementary tiſſues, into which the body can be reſolved, ſee the article FIBRE.

The general organ, by which we exerciſe the faculty of ſenſation, is the medullary ſubſtance. In all the animals in which we can diſtinguiſh it, that ſubſtance is divided into filaments, which ariſing from certain centres, diſtribute themſelves over moſt parts of the body, where they appear to ſerve other purpoſes beſides that of procuring ſenſations. The centres from which thoſe nervous cords proceed, communicate with each other in a manner more or leſs intimate, and ſeveral of the filaments ſeem of no other uſe than to eſtabliſh thoſe communications.

A nerve, when touched by a foreign body, cauſes the ſenſation of pain, though its contact with the parts of the body which are naturally contiguous to it, produces no ſenſible effect in a ſtate of health. The nerves, by which we diſcern external objects, are provided, at their extremities, with organs, each of which is diſpoſed in a particular manner, and always poſſeſſes an admirable relation to the nature of the objects, a knowledge of which each of theſe ſenſes is deſtined to convey to us. See NERVE and BRAIN.

The general organ of motion is the fleſhy or muſcular fibre. This fibre contracts itſelf by volition; but the will only exerciſes this power through the medium of the nerves. Every fleſhy fibre receives a nervous filament; and the obedience of the fibre ceaſes, when the communication of that filament with the reſt of the ſyſtem is interrupted. Certain external agents, applied immediately to the fibre, likewiſe cauſe contraction: and they preſerve their action upon it, even after the ſection of its nerve, or its total ſeparation from the body, during a period which is longer or ſhorter in different ſpecies of animals. This faculty of the fibre is called its irritability. Does it in the latter caſe depend upon the portion of the nerve remaining in the fibre after its ſection, which always forms an eſſential part of it? Or is the influence of the will itſelf only a particular circumſtance, and the effect of an irritating action of the nerve on a faculty inherent in the muſcular fibre? Haller and his followers have adopted the latter opinion; but every day ſeems to add to the probability of the oppoſite theory. See MUSCLE.

Be this as it may, all the internal parts of the body deſtined to produce a compreſſion on the ſubſtances they contain, have their parietes furniſhed with fleſhy fibres, and receive nervous filaments; ſuch is the caſe with the bladder, the inteſtines, the heart, &c. But the principal uſe of theſe fibres is the formation of *muſcles*. This is the name given to the bundles of fleſhy fibres, the extremities of which are attached to the moveable parts of the animal body. When the fibres which compoſe the muſcle ſhorten, the two points to which it is attached are brought towards each other: this is the ſole means by which all the external motions of the body and the members, even thoſe which are neceſſary for removing the body entirely from one place to another, are produced.

Animals that can only crawl have their muſcles attached to different parts of their ſkin, on which they alternately produce dilatations and contractions, which are the only motions of which they are ſuſceptible: but thoſe which are capable of moving themſelves by ſteps or otherwiſe, either wholly or partially, have their muſcles attached to hard parts placed externally or internally. Thoſe parts perform the office of levers, and have points of ſupport on each other, which are called their *articulations*.

All the hard parts taken together form the ſkeleton. When they are covered by the muſcles, they receive the name of bone; when they cover muſcles, they are denominated ſhell, cruſt, or ſcale, according to their degree of conſiſtency. In both caſes they always encloſe viſcera, and determine the exterior form of the body, and the proportions of its different parts.

The articulations are provided with as many muſcles as are neceſſary for the different movements of which they are ſuſceptible; each muſcle moving the bone to which it is attached, in its proper direction. They may be regarded as the moving powers. Their force, the point of their inſertion, and the length and weight of the parts attached to the lever they have to move, determine the velocity and the duration of the motion they are capable of producing. On theſe different circumſtances depend the force of leaping, the extent of flight, the rapidity of running, and the prehenſile power poſſeſſed by different ſpecies of animals; but, as we have already obſerved, all this organization would remain immoveable, were it not animated by the nervous ſyſtem.

The ſoft white ſubſtance which forms the eſſence of this ſyſtem, is divided into filaments that approach each other, and unite in bundles, which contain more filaments in proportion as they are traced nearer to the common faſciculus of all the nerves, called the ſpinal marrow, the anterior extremity of which is joined to the brain, that is to ſay, to a medullary maſs of more or leſs magnitude, and differently formed according to the various kinds of animals.

From the action of external bodies on our own, we perceive that the nerves affected by that action communicate with the common faſciculus, and that it communicates with the brain. A ligature or a rupture intercepts the phyſical communication, and deſtroys ſenſation.

The only ſenſe which belongs generally to all animals, and which pervades almoſt the whole ſurface of the bodies of each of them, is that of feeling. It reſides in the extremities of the nerves which are diſtributed to the ſkin, and makes us ſenſible of the reſiſtance of bodies, and their temperature.

The other ſenſes ſeem to be only modifications of this one, but more exalted, and capable of receiving more delicate impreſſions. Every one knows that the other ſenſes are ſeeing, which reſides in the eye; hearing, which belongs to the ear; ſmelling, which is attached to the membranes within the noſe; and taſting, the ſeat of which is in the ſurface of the tongue. Theſe ſenſes are almoſt always ſituated in the ſame extremity of the body which contains the brain, and which we call the head.

Light, the vibrations of the air, the volatile emanations which float in the atmoſphere, and ſaline particles ſoluble in water, or ſaliva, are the ſubſtances which act on theſe four ſenſes; and the organs, which tranſmit the action to the nerves, are appropriate to the nature of each. The eye preſents tranſparent lenſes to the light, which refract its rays. The ear offers membranes and fluids to the air, which receive its concuſſions. The noſe inhales the air which is to go to the lungs, and ſeizes, in their paſſage, the odoriferous vapours it contains. Finally, the tongue is covered with ſpongy papillæ, which imbibe the ſavory liquids that are taken into the mouth.

By theſe means we obtain a knowledge of what paſſes around us: but the nervous ſyſtem likewiſe makes us acquainted with a great deal of what paſſes within us. Independently of thoſe internal pains which indicate ſome diſorder in our organization, and the diſagreeable ſtate in which we are placed by hunger, thirſt, and fatigue, it is in conſequence of the operation of this ſyſtem that we experience the agonies of fear, the emotions of pity, the deſires of love. Senſations of this laſt kind ſeem, however, to be rather the effects of the re-action of the nervous ſyſtem, than immediate impreſſions; though, at the ſight of any imminent danger, we haſten to avoid it before it appears that the mind has had time to act; and the ſame obſervation applies to the tranſports we feel on the preſence of a beloved object, or to the tears we ſhed over the ſpectacle of ſuffering virtue. Theſe effects of the nervous ſyſtem are produced by numerous communications which particular nerves, called *ſympathetics*, eſtabliſh between different branches of the general trunk, by means of which the impreſſions are tranſmitted more rapidly than by the brain. The knots called *ganglia*, when they are conſiderable, are each a kind of ſecondary brain; and it is obſervable, that they are larger and more numerous in proportion as the principal brain is leſs.

The faculty of ſenſation, and that of contraction, the firſt of which, in moſt animals, is excluſively appropriated to the nervous ſubſtance, and the ſecond to the fleſhy fibre, appear to be equally diffuſed in all the parts of certain gelatinous animals, in which we cannot perceive either fibres or nerves.

It is by the means of theſe two faculties that animals feel, deſire, and are enabled to provide for their wants. The moſt irreſiſtible feeling of all is that of hunger, which conſtantly reminds the animal of the neceſſity of procuring new materials for its nutrition. This third function commences in the mouth, into which the aliments are taken, and, when they are ſolid, maſticated and moiſtened with diſſolving liquors; thence they traverſe the alimentary canal, which is longer or ſhorter, and more or leſs convoluted and dilated in different animals, and the parietes of which are compoſed of ſeveral continued tunics, analogous to thoſe which form the external teguments of the body.

Theſe coats act in a mechanical manner, on the ſubſtances which they contain, by ſlight contractions of their fibres; and in a chemical manner, by the liquors which are poured out within them.

The firſt dilatation of the alimentary canal is called the ſtomach. There are ſometimes ſeveral ſtomachs, or ſeveral diviſions of that organ; its parietes yield a liquid which reduces the aliments to a homogeneous pulp, during the time they remain in it. The remainder of the canal is more particularly called bowels or inteſtines. Independently of the juices, which the different coats of the bowels produce, there are ſome which are ſeparated from the maſs of the blood by glands, and which penetrate the inteſtinal canal by particular conduits. The moſt remarkable and the moſt general of theſe glands are the liver and the pancreas. The firſt, which ſecretes the bile, is always of a conſiderable ſize; and beſides the effect of its liquid on the inteſtines, produces another very remarkable effect on the blood itſelf, from which it removes ſeveral principles. See STOMACH, INTESTINES, LIVER, and PANCREAS.

It is in the inteſtines that the aliments undergo that change which fits them for nutrition. The nutritive part is abſorbed, during the act of digeſtion, either by the pores of the canal itſelf, in animals that have no circulation, or, in thoſe that have, by very ſmall veſſels which conduct it into the general ſyſtem of nutritive veſſels. Thoſe ſmall veſſels are called *lymphatics*. They are very diſtinct from the veins, in animals whoſe ſtructure moſt reſembles that of man; in the more inferior animals they become gradually more like the veins, and cannot be diſtinguiſhed from them in thoſe which have white blood. The membranes which compoſe the lymphatic veſſels and veins are thin, and without apparent fibres. Internally they are furniſhed with valves, all opening in the direction in which the fluid they convey has to flow, that is to ſay, towards the heart. The arteries, on the contrary, are ſtrong and muſcular, but have no valves; the vigorous impulſe of the heart is ſufficient to impreſs a conſtant direction on the blood they contain.

But the chyle, or the liquor produced by digeſtion, is not ſufficient for renewing the venous blood, and rendering it fit for the nutrition of the different parts of the body. It is neceſſary that it ſhould experience the contact of the air before it enters into the arterial ſyſtem. This is effected by reſpiration. The organs of reſpiration, in animals which have blood-veſſels, conſiſt in a ramification of thoſe veſſels, which increaſes their ſurface to ſuch a degree, that almoſt all parts of the fluid are ſeparated from the ſurrounding element only by a very thin pellicle, which cannot obſtruct its action. This ramification takes place on the ſurface of certain folds or lamellæ in aquatic animals, and on that of certain cells in aerial animals. In the firſt caſe the organ is denominated *branchiæ*, in the ſecond *lungs*. In animals which have no veſſels, the air reaches all parts of the body, and acts on the nutritive fluid at the ſame moment in which that fluid combines with the parts of the body which it is deſtined to nouriſh. This is the caſe with inſects that have *tracheæ*. It will be eaſily conceived that there muſt be muſcular organs, appropriated to each of thoſe ſpecies of reſpiration, deſtined to attract or impel the ambient fluid towards the place where it has to act upon the blood. This office is performed by the ribs, the diaphragm, the muſcles of the abdomen, the flaps of the gills, and ſeveral other parts, according to the nature of the animal. See LUNG.

The air cannot be employed in the formation of the voice, except in the animals that reſpire by cellular lungs, becauſe it is in them only that it enters by a ſingle and lengthened tube. At one or two parts of this tube there are membranes ſuſceptible of tenſion, which vibrate when the air acts upon them, and thereby produce the various ſounds which we call the *voice*. The animals which have no voice, properly ſo called, are not, however, deprived of the power of producing certain ſounds, but they are produced in them by other means. See LARYNX.

The blood, on its paſſage into the organ of reſpiration, experiences a kind of combuſtion, which removes a part of its carbon, carrying it off under the form of carbonic acid, and which thereby augments the proportion of its other elements. The effect of this proceſs on the reſpired air, is to deprive it of its oxygen, which is the only aeriform fluid that can be ſerviceable to reſpiration. Its effect on the blood is leſs known: we know that it heightens the colour of the blood in red-blooded animals, and gives it the power of exciting the heart to contraction. There is even reaſon to believe that it is this action of the air on the blood which gives, indirectly, to the fleſhy fibres their contractile power. It is ſtill neceſſary that the blood ſhould loſe ſeveral other principles: ſome are carried off by the kidnies, which ſecrete the urine, and which are found in all animals that have red blood. The matter which tranſpires through the pores of the ſkin, and the ſubſtances which paſs through the inteſtinal canal, a great part of which are carried away with the excrements, relieve the blood of other principles. Theſe three kinds of excretions, to a certain degree, ſupply the place of each other, and appear, therefore, to tend towards one common object. See INTEGUMENTS, KIDNEY, and RESPIRATION.

Theſe are all the organs which conſtitute the animal, conſidered individually, and which are ſufficient for its ſeparate exiſtence, while the object is not the multiplication of the ſpecies: ſuch are the whole of the organs in the higher orders of animals. We ſhall ſee that, in proportion as we deſcend in the ſcale of being, they ſucceſſively diſappear, and that at laſt we ſhall find, in the loweſt claſſes, only what is neceſſarily connected with the idea of an animal; that is, a ſac, ſenſible, moveable, and capable of digeſting.

Upon a cloſe obſervation of the action of all theſe organs, it will appear, that all the operations which take place in the animal body, depend on the combination and decompoſition of the fluids contained within it. To the animal proceſs, by which one fluid is ſeparated from another, or is formed from a part of the elements of one, mixed with a part of thoſe of another, we give the name of *ſecretion:* this term, however, is uſually confined to the changes which take place in different kinds of glands, that is to ſay, in bodies more or leſs thick, in which the blood-veſſels, being infinitely ſubdivided, permit the liquid which the gland ſeparates from the blood to tranſude from their extremities. (See GLAND.) But the animal economy exhibits a number of other transformations, or ſeparations of humours, which equally merit this name. It cannot be ſuppoſed that the nerves act on the muſcular fibres without producing a chemical change on the fluid that may be contained in the one, by the acceſſion of that which the others may tranſmit, nor that external objects act upon the nerves otherwiſe than by producing a change of the ſame kind. The fluid contained in the nervous ſyſtem muſt have been ſeparated from the blood in the brain, and, in general, in all the medullary organs. The blood itſelf does not attain its ſtate of perfection until a multitude of ſubſtances have been detached from it by the lungs, the kidnies, the liver, &c. and until after it has received a number of others which have been ſeparated from the alimentary maſs by the lacteal veſſels: on the other hand, this maſs is not capable of yielding chyle until it has in its turn received different liquors which have been ſecreted from blood by ſeveral organs; and the blood only nouriſhes the parts to which it is diſtributed, by the particles that are detached from its maſs, while other particles are ſeparated from theſe parts to return into the maſs of the blood through the medium of the lymphatic veſſels.

In a word, all the animal functions appear to reduce themſelves to the transformation of fluids. In the manner in which theſe transformations are produced, the real ſecret of the admirable economy of animals conſiſts, as health depends upon their perfection and regularity.

If we do not perceive this proceſs in a manner ſufficiently clear when the embryos of new individuals begin to develope themſelves within or without the bodies of their mothers, we can at leaſt diſcover it in the preparation of the male liquor, which, by its preſence, excites or occaſions that developement in all the ſpecies in which copulation is neceſſary. This developement takes place in the ſame manner as the ordinary growth. It, therefore, comes under the general rule.

The organs of generation, which alone remain to be noticed, are thoſe which prepare the prolific liquor, and convey it to the ova, and thoſe which are deſtined to contain and protect the embryo during its developement. The firſt conſtitute the male, the ſecond the female ſex.

The teſticles are the glands which ſecrete the ſeminal fluid; ſeveral other glands prepare liquors which mingle with it. The penis contains the ſeminal canal; it ſwells by the accumulation of blood when the nerves are excited by deſire: by that means, it is rendered capable of penetrating the vagina, which leads to the matrix, or to the *oviductus*, and of conveying thither the fluid deſtined to vivify the ova. The oviduct or tube receives the ovum at the moment in which it is detached from the ovarium; and conducts it without the animal if it be of the oviparous kind, or into the matrix if it be viviparous. The little embryo developes itſelf, and draws its nouriſhment, either from the body of its mother, by the abſorption of a large tiſſue of veſſels connected with thoſe of its own body, or from an organized maſs attached to it in the ſame manner, and which forms the yolk of the egg, or the *vitellus*. When the embryo attains a certain ſtate, the matrix expels it; or it breaks the ſhell of the egg in which it is contained, and eſcapes from its priſon. See GENERATION.

View of the principal differences which animals exhibit in their ſeveral organs.—It appears from the preceding account, that what is common to each kind of organs, conſidered in all animals, reſolves itſelf into a very ſmall compaſs, and that frequently they only reſemble one another in the effects they produce. This is particularly obvious with reſpect to reſpiration, which is performed in the different claſſes of animals by organs ſo various, that their ſtructure preſents no common point of compariſon. Thoſe differences in the organs of the ſame kind are preciſely the object of comparative anatomy; and the ſhort expoſition we are about to make, of the principal of theſe differences, may be regarded as a general view of this ſubject. We ſhall, therefore, return to each of the functions of which we have treated, and examine the different degrees of energy it poſſeſſes, and the particular means by which it is carried on in different animals.

The organs of motion preſent us at firſt ſight with two important diſtinctions with reſpect to their ſituation. Sometimes the bones form an internal ſkeleton, articulated and covered by the muſcles; ſometimes there are no internal bones, but merely ſcales or ſhells which cover the ſkin, within which are the muſcles: in other caſes there is no hard part that can ſerve as a lever or point of ſupport for the motions of the animal's body.

Animals of the firſt kind have the whole body ſupported by a ſtrong pillar, formed of ſeveral bony pieces, placed one above the other, and called the ſpine of the back, or the vertebral column. They are, therefore, denominated *vertebral animals*. Theſe are the mammalia, birds, reptiles, and fiſhes.

The animals without vertebræ are either entirely ſoft, or have their bodies and members enveloped in ſcales articulated on one another, or, finally, are encloſed in ſhells. Theſe are the ſoft worms, inſects, and the teſtacea.

It is by the greater or leſs perfection of certain parts that the animals of theſe different claſſes become ſuſceptible of various kinds of motion.

The organs of ſenſation preſent conſiderable varieties;—ſome have a relation to the internal part of the nervous ſyſtem, others to the external ſenſes. The firſt give riſe to three claſſes:—that of animals which have no apparent nervous ſyſtem, and in which we diſcover neither veſſels nor nerves; ſuch are the zoophytes or the polypes:—that of animals in which there is only the brain above the alimentary canal, and which have all the remainder of the common bundle of nerves ſituated underneath, and contained in the ſame cavity with the other viſcera; theſe are the molluſca, the cruſtacea, inſects, and a part of the articulated worms:—laſtly, that of animals in which the common faſciculus of the nerves is ſituated entirely in the back above the alimentary tube, and encloſed in a canal which paſſes through the vertebral column; theſe are all the vertebral animals. Their ganglia are placed on the ſides of their medullary cord, or diſperſed in the large cavities. Among the invertebral animals there are ſome that have ganglia only in the large cavities, as the molluſca, and others, which have them all on the medullary cord itſelf, of which they appear to be ſwellings; theſe are the inſects, and ſome articulated worms.

The differences in the external ſenſes conſiſt in their number, and in the degree of energy that belongs to each.

All vertebral animals poſſeſs the ſame ſenſes as man.

Sight is wanting in the zoophytes, in ſeveral kinds of articulated worms, in ſeveral larvæ of inſects, and in the acephalous molluſca. Hearing does not exiſt, at leaſt we have not yet diſcovered its organ, in ſome molluſca and inſects. The other three ſenſes, but particularly thoſe of taſte and touch, appear never to be wanting.

But each of theſe ſenſes may vary conſiderably in the degree of its ſuſceptibility, and the complication of its ſtructure. The perfection of the ſenſe of touch, for example, depends upon the delicacy of the external teguments, and on the diviſion of the extremities that more particularly enjoy that ſenſe; their formation rendering them capable of being applied more or leſs exactly to the bodies of which the animal wiſhes to acquire a knowledge. Above all, it is in the number and flexibility of the fingers and toes, and the ſmallneſs of the claws or nails, that the anatomiſt diſcovers important characters.

The eyes may be more or leſs moveable, more or leſs covered, and more or leſs numerous. The ears may be ſunk within the cranium, or expoſed outwardly; or they may be provided with an external trumpet, which collects the rays of ſound. The membranes in which the ſenſe of ſmelling reſides, may be more or leſs extenſive: thoſe which are the ſeat of taſte, may be more or leſs delicate and humid; but it is only by particularly conſidering each of thoſe ſenſes, that we can take a comprehenſive view of the differences that exiſt in the various claſſes of animals.

The organs of digeſtion exhibit two important differences in their general diſpoſitions. In certain animals, (in the greater part of zoophytes,) the inteſtines form a ſac with only one aperture, which ſerves at once for the entrance of the aliments, and the iſſue of the excrements: all other animals have two diſtinct apertures, for thoſe purpoſes, at the two extremities of the ſame canal; but the convolutions of this canal may be ſuch as to remove theſe openings to a greater or leſs diſtance from each other. Another difference which has much influence on the nature of the aliments appropriated to each ſpecies, is, that in certain animals the mouth is armed with teeth, or hard parts proper for grinding ſolid ſubſtances, while in others they do not exiſt. In the latter caſe, the animal can only ſwallow whole bodies if its mouth be large, or merely ſuck in fluids if its mouth be in the form of a tube. The ſtructure of thoſe teeth has itſelf much influence on the ſubſtances the animal can ſubmit to maſtication. The remainder of the alimentary canal varies alſo conſiderably in its ſtructure, according to the different ſubſtances which the mouth conveys to it. On this likewiſe depend the length of the canal, and the number of ſtomachs, cæca, &c.

The chyle produced by the action of the digeſtive organs on the alimentary ſubſtances is tranſmitted to the various parts of the body in two different ways. It either ſimply tranſudes through the parietes of the inteſtinal canal, to bathe all the interior of the body, or it is abſorbed by particular veſſels which convey it into the maſs of the blood. The firſt is the mode in which this operation is performed in zoophytes, and, probably, alſo in common inſects, which appear to have no kind of veſſels proper for circulation. As to the other animals, *viz.* the molluſca, and the vertebral animals, that have abſorbent veſſels, they exhibit two new differences. The latter have red blood, and the lymph and chyle white. Almoſt all the others have theſe two fluids of the ſame colour.

Vertebral animals differ among themſelves, with regard to the colour of the chyle, which is white and opaque in the mammalia, and tranſparent, like the other lymph, in birds, reptiles, and fiſhes. The three laſt claſſes, therefore, have no conglobate glands in their chyliferous veſſels, while they are very numerous in the firſt.

The circulation of the blood is accompanied with very important differences in its organs. In the firſt place, there are animals which have no circulation whatever, *viz.* inſects and zoophytes: others have a double, and others a ſingle circulation. We call that a double circulation in which no part of the venous blood can enter the arterial trunk, until it has paſſed through the organ of reſpiration, which is generally formed of the ramifications of two veſſels; the one arterial, the other venous; each nearly as large, but not ſo long, as the two principal veſſels of the body. Such is the circulation of man, of all mammalia, of birds, fiſhes, and a number of molluſca.

In the ſingle circulation a great part of the venous blood re-enters the arteries without paſſing through the lung; becauſe only one branch of the arterial trunk is expanded upon that organ; ſuch is the circulation of the amphibia.

There are, beſides, other differences in the hearts, or muſcular organs, deſtined to give impulſe to the blood. In the ſingle circulation there is only one heart; but when the circulation is double, there is ſometimes an organ at the baſe of the aorta, and alſo at that of the pulmonary artery. At other times it is at one of the two only.

In the one caſe, the two hearts, or rather the two ventricles, may be united, as in man, mammalia, and birds; or they may be ſeparate, as in the cuttle fiſh.

Where there is only one ventricle, it may be placed at the baſe of the artery of the body, as in ſnails, and other molluſca; or at the baſe of the pulmonary artery, as in fiſhes.

The organs of reſpiration are likewiſe diſtinguiſhed by a number of remarkable differences. When the element that acts on the blood is the atmoſpheric air, it penetrates even into the interior of the reſpiratory organ; but when that element is water, it ſimply glides over a ſurface more or leſs multiplied.

The lamellæ which compoſe the organ, in the latter caſe, are called *branchiæ*. They are found in fiſhes, and in a number of molluſca: inſtead of lamellæ, we ſometimes find fringes or tufts.

The air either enters the body by a ſingle aperture, or by ſeveral. In the firſt caſe, which is that of all animals that have what is properly called lungs, the canal which receives the air divides into a number of branches, terminating in as many ſmall cells, that are uſually united into two maſſes, which the animal has the power of compreſſing or dilating at pleaſure.

When there are ſeveral apertures, which is the caſe only with inſects, the veſſels that receive the air are ramified *ad infinitum*, and convey it to all parts of the body without exception. This we call reſpiration by tracheæ.

Laſtly, the zoophytes, if we except the echinodermata, have no apparent organ of reſpiration.

The organs of the voice preſent only two differences, which may be regarded as general. They depend on the poſition of the glottis, in which the ſound is formed. In birds, it is at the lower part of the *trachea* or tube, which conducts the air, where it divides into its two branches to paſs into the lungs. In quadrupeds and reptiles it is ſituated in the beginning of the trachea, at the root of the tongue.

Only theſe three claſſes have a glottis; but the other animals produce ſounds by different means. Sometimes they employ the friction of certain elaſtic parts; ſometimes they beat the air with other parts, or produce a rapid motion in certain portions of air, which they ſomewhere retain in their bodies.

Generation gives riſe to varieties of two kinds. The one relates to the actions which occaſion it, the other to the reſult.

In a ſmall number of animals, belonging almoſt entirely to the claſs of zoophyta, generation is performed without copulation, and the young animal grows on the body of the parent, like a ſhoot on a tree: others only produce in conſequence of copulation, and are therefore provided with two ſexes; but theſe two ſexes may be ſeparate in different individuals, or united in the ſame. It is only in the molluſca and zoophyta that this laſt caſe occurs: all animals with vertebræ, and inſects, have the ſexes ſeparate.

Hermaphrodite animals, ſuch as the bivalve ſhell-fiſh, generate ſingly; in others, a reciprocal copulation takes place, each of the two individuals performing the functions of male and female: this is the caſe with the ſnails and other molluſca that crawl on the belly.

The produce of generation is either a bud which developes itſelf into an animal, remaining ſome time on the body from which it proceeds, and of which it forms as it were a branch; or it is a fœtus, which unfolds itſelf in the uterus of its mother, to which it is connected by a plexus of veſſels, and from which it comes forth alive; or, finally, it is a fœtus incloſed in a ſhell, with a ſubſtance adhering to it by veſſels which it muſt abſorb before it is diſcharged. Theſe are the gemmiparous, viviparous, and oviparous modes of generation.

The firſt occurs in ſome zoophytes, and in ſome articulated worms; the ſecond in man and other mammalia only; the third is common to all other animals; and when their young come forth alive from the body of the mother, as is the caſe with the viper, it is becauſe the eggs are hatched in the oviduct.

Laſtly, if we conſider the ſtates through which the young animal is obliged to paſs before it becomes, in its turn, capable of perpetuating its ſpecies, we again diſcover two principal differences. Some have at their birth the form which they will always preſerve, with the exception of a few inconſiderable parts which have yet to diſcloſe themſelves, and to change their proportions: the others, on the contrary, have a form altogether different from their perfect ſtate, and not only have to produce and unfold new parts, but muſt loſe their old ones: theſe are the animals which undergo a metamorphoſis. Hitherto this change has only been obſerved to take place among inſects, and among the reptiles without ſcales, that is ſay, frogs and ſalamanders.

Such are the chief varieties which the organs belonging to the ſeveral functions of animals exhibit.

We have, however, yet to notice one very important variety which extends to ſeveral of theſe functions; it relates to the organs of ſecretion. In the four claſſes of vertebral animals, and in ſome molluſca, theſe organs are glands, or at leaſt expanſions of blood-veſſels; the name of gland being particularly applied to them when they form maſſes of ſome thickneſs.

It is not ſo in inſects, which, inſtead of ſecretory organs, have only tubes more or leſs long, which attract into the ſpongy texture of their parietes, that portion they have to ſeparate from the maſs of the nutritive fluid.

We are as yet little acquainted with the organs of ſecretion in zoophytes, if indeed they can be ſaid to have any paritcular organ for that purpoſe.

Diviſion of life into the animal and organic.—The preceding ſketch has exhibited to us a general view of life; when we come to examine it more in detail, it offers to us two remarkable modifications. One is common to vegetables and animals, the other peculiar to the latter. Compare together two individuals, one taken from each of theſe kingdoms: one exiſts only within itſelf, has no other relations to ſurrounding objects than thoſe of nutrition, is born, grows, and periſhes, attached to the ſoil, which received its germ: the other joins to this internal life, which it poſſeſſes in a ſtill higher degree, an external life, which eſtabliſhes numerous relations between it and the neighbouring objects, unites its exiſtence to that of other beings, and draws it near to or removes it from them according to its wants or fears. We might ſay that the vegetable is the ſkeleton of the animal, and that, in order to form the latter, it was only neceſſary to clothe the ſkeleton with an apparatus of external organs, calculated to eſtabliſh the neceſſary relations. Hence it follows that the functions of the animal form two very diſtinct claſſes. One of theſe conſiſts of an habitual ſucceſſion of aſſimilation and excretion; by which it is conſtantly transforming into its own ſubſtance the particles of other bodies, and then rejecting them, when they have become uſeleſs. By the other he perceives ſurrounding objects, reflects on his ſenſations, performs voluntary motions under their influence, and generally can communicate, by the voice, his pleaſures or pains, his deſires or fears. By the one he lives only within himſelf; by the other he carries his exiſtence out of the ſphere of his own body.

I call, ſays Bichat, the functions of the former claſs, taken altogether, the organic life, becauſe all organiſed beings, whether vegetable or animal, enjoy it in a more or leſs marked degree, and becauſe organic ſtructure is the only condition neceſſary for its exerciſe. The aſſembled functions of the ſecond claſs form the animal life, ſo named becauſe it is the excluſive attribute of the animal kingdom.

Generation does not enter into the ſeries of phenomena of theſe two lives, which relate entirely to the individual; while that function regards the ſpecies, and is conſequently connected only in an indirect manner to moſt of the other functions. Its exerciſe does not begin until the others have been for a long time in action; and it is extinguiſhed long before they ceaſe. In moſt animals its periods of activity are ſeparated by long intervals of entire inaction: and in man, where the remiſſions are leſs durable, its relations to the other functions are not more numerous.

Each of the lives is compoſed of two orders of functions, ſucceeding each other, and mutually connected. In the animal life, the firſt order takes place from the exterior of the body to the brain; and the ſecond, from the latter organ to thoſe of locomotion and the voice. Objects affect ſucceſſively the ſenſes, the nerves, and the brain. The firſt receive, the ſecond tranſmit, and the laſt perceives that impreſſion which conſtitutes a ſenſation. The animal is nearly paſſive in this firſt order of functions; he becomes active in the ſecond, which reſults from the ſucceſſive operations of the brain, where volition ariſes in conſequence of ſenſation, of the nerves, which tranſmit this volition, and of the locomotive and vocal organs, which are the agents of its execution. A double movement of compoſition and decompoſition exiſts alſo in the organic life. Hence the animal is not the ſame at one time as at another: his organiſation is unchanged, but the component elements are conſtantly varying. The order of functions, which aſſimilate to the animal nutritive ſubſtances, conſiſts of digeſtion, circulation, reſpiration, and nutrition. All foreign matters undergo the influence of theſe four functions, before they belong to the elements of the body. After a certain time abſorption removes them, and conveys them into the circulation; from which they are ſeparated by the cutaneous or pulmonary exhalation, or by the various ſecretions. Thus abſorption, circulation, exhalation, and ſecretion, form the ſecond order of functions in the organic life; or the order oppoſed to aſſimilation. The circulating ſyſtem is the common centre in the organic, as the brain is in the animal life. The blood conſiſts of two parts; one, furniſhed principally by the food, affords the materials of nutrition; while the other, conſtituting the wreck or reſidue of all the organs, ſupplies with materials the ſecretions and external exhalations. Yet the latter functions ſometimes convey out of the body the products of digeſtion where they have never been employed in nouriſhing the organs. This is exemplified in the urinary and cutaneous diſcharges conſequent on copious drinking.

The moſt eſſential difference that appears to exiſt between the organs of the animal and thoſe of the organic life, is the ſymmetry of the one and the irregularity of the other. This obſervation, indeed, does not apply to all animals; nor is it invariably true in man; but it holds good generally in the latter, and forms a ſtriking general feature. Two globes exactly alike receive the impreſſion of light. Sounds and odours have each their double organ. The median line is clearly marked on the tongue, and its two halves exactly reſemble each other. This line is not very manifeſt in the ſkin. The nerves, which tranſmit impreſſions from the ſenſitive organs, are arranged in ſymmetrical pairs. And the brain, in which the impreſſion is received, has a regular form; its double parts reſemble each other on the oppoſite ſides; and its ſingle organs are all ſymmetrically divided by the median line into two exactly correſponding halves. The nerves, which tranſmit our volitions from the brain to the agents of locomotion and the voice; and the locomotive organs, compoſed of a great part of the muſcular ſyſtem, of the bony ſyſtem and its dependencies; and the larynx and its acceſſory organs; the double agents for the execution of volitions, have a ſymmetrical ſtructure throughout.

The muſcles and nerves, when they do not belong to the animal life, no longer exhibit this regularity of form. The heart, and the muſcular coverings of the digeſtive viſcera, prove this with reſpect to the muſcles; and the great ſympathetic nerve, every where employed in the internal life, clearly ſhew the irregularity in the nerves.

On ſurveying the parts concerned in the organic life, we ſhall find that an exactly oppoſite character is applicable to them. The ſtomach, the inteſtines, the ſpleen, liver, &c. are all irregularly formed in the digeſtive ſyſtem. In the circulating apparatus, the heart, and the large veſſels, ſuch as the venæ cavæ, the azygos, the vena portarum, &c. exhibit no trace of ſymmetry. Continual varieties are obſerved in the blood-veſſels of the extremities, and the diſpoſition of one ſide is often by no means the ſame with that of the other.

The reſpiratory apparatus, at the firſt glance, appears regular; but we find the two branches of the trachea diſſimilar in ſize, length, and direction; the two lungs differing in ſize and in the number of their lobes, &c. The organs of exhalation and abſorption, the ſerous membranes, the thoracic duct, and the right lymphatic trunk, as well as the other abſorbing veſſels, have every where an irregular diſtribution.

Among the glands we ſee the mucous follicles every where ſcattered irregularly. The pancreas and liver are out of all ſymmetry: the kidnies differ in poſition, ſize, &c.

It is apparent, from theſe conſiderations, that the organs of the animal life in man are eſſentially characteriſed by ſymmetry; while thoſe of the internal life have the conſtant character of irregularity in their external forms.

It follows from this view, that the animal life is in a manner double; that its phenomena, executed at the ſame time on the two ſides, form an independent ſyſtem on each ſide, of which one may go on while the other ceaſes. This happens in thoſe caſes of paralyſis called hemiplegia, where the animal life is annihilated on one ſide of the body, ſo that the individual has no relation to ſurrounding objects; while the preſervation of ſenſation and motion on the other ſide give him all the uſual powers. The median line in theſe caſes accurately diſtinguiſhes the ſound from the affected ſide.

In the organic life, on the contrary, all the parts conſpire to form one ſyſtem, ſo that the functions of one ſide cannot be interrupted without thoſe of the other being affected. The liver on the left influences the ſtate of the ſtomach on the right; if the colon ceaſe to act on one ſide, that of the other cannot go on; the ſame cauſe that ſhould arreſt the circulation in the large venous trunks and the right ſide of the heart, would ſtop it alſo in the left ſide, and in the arteries, &c. Hence, if all the organs of the internal life on one ſide ſhould have their functions ſtopped, thoſe of the oppoſite ſide would neceſſarily remain inactive, and death muſt follow. This aſſertion, however, is general, and applies to the organic functions collectively; ſome of the organs are in fact double, and may ſupply each other's places, as the kidney and lung.

Bichat proceeds to point out the differences by which the animal and organic lives are diſtinguiſhed when in a ſtate of action. He obſerves that harmony is to the functions of the organs, what ſymmetry is to their conformation; it ſuppoſes a perfect equality of force and action, as ſymmetry indicates an exact analogy between the external form and the internal ſtructure. It is a conſequence of the law of ſymmetry; for two parts, eſſentially alike in their ſtructure, cannot act differently. This reaſoning would lead to the general poſition, that harmony is the character of the external functions, and diſcordance the attribute of the internal ones. He then enters at conſiderable length into a detailed conſideration of this ſubject; but does not ſucceed in proving the point to the extent aſſerted.

A more important diſtinctive character of the two lives is drawn from the periodical intermiſſions of the external functions, and the uninterrupted continuity of the internal ones. Whatever ſuſpends reſpiration and circulation, ſuſpends and even annihilates life if it be continued. All the ſecretions go on uninterruptedly; if ſome periods of remiſſion are obſerved, as in the bile and ſaliva, when digeſtion and maſtication are not going on, theſe affect only the degree of activity and not the entire exerciſe of the function. Exhalation and abſorption ſucceed each other without ceaſing; nutrition is never inactive; the double motion, of compoſition and decompoſition, from which it reſults, ends only with life.

In this concatenation of the organic phenomena, each function depends immediately on thoſe which precede it. The circulation is the centre of the whole, and immediately connected with their exerciſe; if that is diſturbed, the others languiſh; they ceaſe if the blood no longer moves. Thus, the numerous wheels of a clock ſtop as ſoon as the pendulum, which ſets them all in motion, is at reſt. Not only is the general action of the organic life connected to the particular action of the heart, but each function is alſo ſeparately connected to all the others. Without ſecretion there would be no digeſtion; without exhalation, no abſorption; without digeſtion, no nutrition. We may, therefore, lay down as a general character of the organic functions, their continuity of action and mutual dependence on each other.

On the contrary, conſider each organ of the animal life in the exercise of its functions; you will ſee conſtantly alternations of activity and repoſe, complete intermiſſions, and not remiſſions like what may be ſeen in ſome of the organic phenomena. Each ſenſe, fatigued by a long continuance of ſenſations, becomes momentarily unfit for the reception of new ones. The ear is not excited by ſounds, and the eye is cloſed againſt the light, merely becauſe the reſpective functions have been exerted for ſome time. Fatigued by a long exerciſe of the perception, the imagination, memory, &c., the brain requires a ſuſpenſion of action proportioned to the duration of the preceding activity, in order to recruit the powers, without which it could not again become active.

When a muſcle has been contracted ſtrongly, and for a conſiderable time, it cannot perform new contraction until after a certain interval of relaxation. Hence there are intermiſſions in the exertions of the locomotive and vocal powers.

This intermiſſion in the animal life may be either partial or general. The former is ſeen when a particular organ has been a long time in exerciſe, the others remaining inactive; this organ then relaxes; it ſleeps while the others are awake. Each animal function, therefore, is not in an immediate dependence on the others, as is the caſe with the organic functions. When the ſenſes are cloſed againſt external objects, the action of the brain may ſtill continue; memory, imagination, and reflection, are then often exerciſed. Locomotion and the voice may ſtill remain; when the latter are interrupted, the functions of the ſenſes ſtill go on. The animal can fatigue any part ſeparately. Each, therefore, ſhould have the power of reſting in order to recruit its forces ſeparately; this is the partial ſleep of the organs. General ſleep is the aſſemblage of theſe particular acts, and ariſes from the law which we have juſt illuſtrated.

Differences of the organic and animal lives in reſpect to the vital properties.—Phyſicians and phyſiologiſts, in their writings on the vital powers, have generally begun by ſearching for the principle on which they depend: they have wiſhed to deſcend from the ſtudy of its nature to that of the phenomena, inſtead of aſcending from the reſult of obſervation to the concluſions which theory may ſuggeſt. The ſoul of Stahl, the archæus of Van Helmont, the vital principle of Barthez, the materia vitæ of Hunter, with a long train of et ceteras, have been regarded in their turns as the ſingle centres of all thoſe actions which bear the character of vitality, and have ſucceſſively afforded the baſes on which all phyſiological explanations reſt in the laſt reſult. Each of theſe has been ſucceſſively deſtroyed, and nothing has been preſerved from their wrecks, except the facts afforded by experiment on the powers of ſenſation and motion. So narrow are the limits of the human underſtanding, that the knowledge of firſt cauſes ſeem placed for ever beyond our reach. The thick veil which covers them, envelops in its innumerable folds whoever attempts to break through it. In the ſtudy of nature, principles are certain general reſults of firſt cauſes, from which innumerable ſecondary reſults proceed; the art of diſcovering the connection between theſe primary and ſecondary reſults is the object of every judicious mind. To ſeek the connection between firſt cauſes and their general effects, is like walking blindfold through a road from which we may ſtray by a thouſand paths.

Moreover, how are we intereſted in knowing theſe cauſes? is it neceſſary that we ſhould underſtand the nature of light, oxygen, caloric, &c., in order to ſtudy the phenomena? Let us imitate, in the ſcience of phyſiology, the examples of modern metaphyſicians in their inveſtigations of the intellectual phenomena; let us ſuppoſe the cauſes, and fix our attention entirely on the grand reſults.

We may obſerve in nature two claſſes of beings, two claſſes of properties, and two claſſes of ſciences. Beings are either organic or inorganic, properties vital or not vital, and ſciences phyſiological or phyſical. Animals and vegetables are organic; minerals, inorganic. Senſibility and contractility are vital properties; gravity, affinity, elaſticity, are non-vital properties. Animal and vegetable phyſiology, and medicine, compoſe the phyſiological ſciences; aſtronomy, chemiſtry, &c. &c. are phyſical ſciences. Theſe two claſſes of ſciences relate merely to phenomena. Two others, relating to external and internal forms, conſequently deſcriptive, correſpond to them; theſe are botany, anatomy, zoology, for organic; mineralogy, &c. for inorganic bodies.

From theſe properties are derived all the phenomena in each claſs of ſciences. Whatever we ſee in aſtronomy, hydraulics, dynamics, &c. muſt be ultimately referred through the concatenation of cauſes, to gravity, elaſticity, &c. In the ſame way the vital properties are the mainſpring at which we arrive, whatever phenomena we may be contemplating in reſpiration, digeſtion, ſecretion, inflammation, &c.

Each body poſſeſſes a certain number of properties, which eſpecially characterize it, and by virtue of which it concurs in its own manner in the production of the phenomena, which are ſucceſſively developed in the univerſe.

Obſerve ſurrounding objects ; carry your view towards the moſt diſtant ; uſe the teleſcope on the celeſtial bodies moving in ſpace, or penetrate with the microſcope into the world of thoſe concealed from our view by their minuteneſs ; you will conſtantly ſee inert bodies gravitating towards each other, living bodies alſo gravitating, but moreover feeling and performing a motion, which they owe only to themſelves. Theſe properties are ſo inherent in both, that we cannot conceive the bodies without them ; to enjoy them and to exiſt mean the ſame thing. Suppoſe that they ſhould be ſuddenly annihilated, all the phenomena of nature would inſtantly ceaſe.

Differences between the vital properties and the phyſical powers.—The extent of this difference cannot fail to ſtrike us on the firſt glance. The vital properties, conſtantly variable in their intenſity, often paſs with the greateſt rapidity from the loweſt to the higheſt degree of energy, are ſucceſſively exalted and weakened in the different organs, and aſſume, under the influence of the ſlighteſt cauſes, a thouſand different modifications. Sleep, exerciſe, reſt, digeſtion, hunger, the paſſions, the effect of ſurrounding agents, &c. expoſe them at every inſtant to numerous revolutions. The others, on the contrary, conſtantly the ſame at all times, give riſe to a ſeries of phenomena always uniform. Compare ſenſibility to attraction ; the latter is always in proportion to the maſs of the body, in which it is obſerved, while the former is conſtantly changing in the ſame organ, in the ſame maſs of matter.

The invariable nature of the laws which preſide over the phyſical phenomena, enables us to ſubmit to calculation all the ſciences of which they are the objects ; but the application of the mathematics to vital action can only lead to very general formulæ. The reſiſtance experienced by a fluid in paſſing through a dead tube, the velocity of a projectile, &c. may be eaſily reduced to a fixed law ; but to calculate with Borelli the power of a muſcle, the velocity of the blood with Keil, the quantity of air entering the lungs with Irwine and Lavoiſier, is like building on a moving-ſand an edifice which is ſolid in itſelf, but which quickly falls from the inſecurity of its foundation.

From the circumſtances juſt explained, the vital and phyſical phenomena derive reſpectively the characters of irregularity and uniformity. Inert fluids are known, when they have once been accurately analyſed ; but one, or even many examinations do not inform us of the nature of the living fluids. Chemical analyſes give us, ſays Bichat, the anatomy (Anatomie cadaverique) of them ; but their phyſiology conſiſts in a knowledge of the innumerable variations which they exhibit according to the condition of the reſpective organs. The urine differs as it is voided after a meal or after ſleep ; in winter and in ſummer : the mere paſſage from a warm to a cold temperature alters its compoſition : it is not the ſame in the child, the adult, and the old man ; in the male and in the female ; in a quiet ſtate of the mind and in the agitation of paſſion. Add to theſe differences the innumerable alterations produced by diſeaſe. Theſe facts prove that the organs muſt undergo continual changes in their mode of action, to produce correſpondent variations in the ſubſtances ſeparated from the blood.

The ſcience of organized bodies ſhould be treated in a manner entirely different from thoſe, which have inorganic matter for their object. We ſhould employ a different language ; ſince words tranſported from the phyſical ſciences to the animal or vegetable economy conſtantly recal to us ideas not at all connected with the phenomena of that ſcience. If, ſays Bichat, men had cultivated phyſiology before natural philoſophy, inſtead of after it, we cannot doubt that they would have diſcovered numerous applications of the former to the latter ; that they would have deſcribed rivers flowing by the tonic action of their banks ; cryſtals formed by an excitement of the reciprocal ſenſibilities of the particles ; planets moving by their mutual irritation at great diſtances, &c. All this would appear to us very unreaſonable, as we ſee gravity only at the bottom of theſe phenomena : is it more rational to have recourſe to gravity, chemical affinity, and a language entirely founded on theſe fundamental data, in a ſcience where their influence is moſt obſcure? Natural philoſophy, chemiſtry, &c. are connected, becauſe the ſame laws regulate their phenomena : but a vaſt interval ſeparates them from the ſcience of organiſed bodies, becauſe a wide difference exiſts between their laws and thoſe of life. To call phyſiology the natural philoſophy of animals can only lead to inaccurate notions : as well might we denominate aſtronomy the phyſiology of the ſtars.

Difference between the vital properties and thoſe which ariſe from organiſation.—The properties of any living organ are of two kinds : the one immediately connected with life, beginning and ending with it, or rather forming its principle and eſſence ; the other connected to it only indirectly, and appearing rather to depend on the organiſation, on the texture of the part.

Senſibility, and the power of contracting, are vital properties. Extenſibility (the capability of being ſtretched), and the power of recovery, when the extenſion has ceaſed, are properties reſulting from organiſation. The latter derive an increaſed energy from life ; but they ſtill remain in the organs when life has ceaſed, and decompoſition is the only termination of their exiſtence. We ſhall conſider firſt the vital properties.

Of the animal and organic ſenſibilities.—The vital properties are reduced to thoſe of perceiving or feeling (ſenſibility), and moving (contractility): each of theſe has a different character in the animal and organic lives. In the latter, ſenſibility is only the capability of receiving an impreſſion : in the former, it is the capability of receiving an impreſſion, with the additional power of referring it to a common centre, or conſciouſneſs. The ſtomach is ſenſible to the preſence of food, the heart to that of the blood, and an excretory tube to the contact of its proper fluid : but this power ends in the organ itſelf. The organs of ſenſe, the mucous ſurfaces at their origins, the nerves, &c. are ſenſible to the impreſſions of bodies which touch them, and moreover tranſmit theſe impreſſions to the brain, which is the general centre of the ſenſibilities of theſe various organs.

Thus we have an organic and an animal ſenſibility. On the former depend all the phenomena of digeſtion, circulation, ſecretion, exhalation, nutrition, &c. it is common to plants and animals ; the zoophyte enjoys it as well as the moſt perfectly organiſed quadruped. From the latter flow the ſenſations, perception, and pleaſure and pain, which modify them. The perfection of an animal is in proportion to the degree in which he enjoys this ſenſibility. It is not an attribute of vegetables.

The difference in theſe two modifications of ſentient power is well marked in the mode of their termination in ſudden deaths. The animal ſenſibility is immediately extinguiſhed. There is no trace of this faculty left in the inſtant which ſucceeds a powerful concuſſion of the brain, a great hemorrhage, or an aſphyxia : but the organic ſenſibility ſtill ſubſiſts for a longer or ſhorter time. The lymphatics ſtill abſorb ; the muſcle quivers when pricked ; the nails and hairs even ſeem to grow. All traces of this ſenſibility are not deſtroyed until after an interval, occaſionally of conſiderable length.

Yet the eſſential nature of theſe two powers is probably the ſame. In many parts they are connected together and ſucceed each other in an inſenſible manner; as we may obſerve in the origins of the mucous membranes. We are ſenſible of the paſſage of the food through the mouth and the pharynx: this ſenſation becomes weaker in the beginning of the œſophagus, almoſt ceaſes in the middle of that tube, and diſappears at its lower extremity and in the ſtomach, where the organic ſenſibility alone remains. The urinary and generative organs exhibit exactly the ſame phenomenon; there is animal ſenſibility near the ſkin; it gradually diminiſhes, and becomes at laſt organic in the interior of the organs.

Different ſtimuli, applied to the ſame organ, excite in it one or the other of theſe ſenſibilities. When ligaments are cut, or irritated by acids or alkalies, they do not tranſmit to the brain the ſtrong impreſſions which they receive. But, if they are twiſted, diſtended, or torn, acute pain is the conſequence. The blood circulates in the arteries without our feeling it, but inject an extraneous fluid, and the cries of the animal ſhew that he is ſenſible to the impreſſion.

We daily obſerve inflammation, by increaſing the organic ſenſibility of a part, transform it into animal ſenſibility. Cartilages, ſerous membranes, &c. which, in their ordinary ſtate, have only the obſcure ſenſibility neceſſary for their nutrition, become endued, when inflamed, with animal ſenſibility, often more acute than that of the organs, in which it reſides habitually. Inflammation accumulates the vital properties in a part, and thereby changes the organic into animal ſenſibility, which differs from it only in degree.

The diſtinction now explained does not ariſe from the nature of the faculty, which is every where the ſame; but is founded on the different modifications of which it is ſuſceptible. The power is common to all organs, and forms their true vital character; but it is diſtributed in different proportions, and beſtows a different mode of exiſtence on each. In theſe varieties there is a certain meaſure, below which the excited organ alone receives and perceives the ſenſation; and above which it is tranſmitted to the brain.

Although each organ exhibits continual varieties in its ſenſibility, yet it ſeems to poſſeſs originally a certain proportion, to which it always returns after theſe alternations of augmentation and diminution. This proportion conſtitutes the proper life (vita propria) of each part, and fixes the nature of its relations to thoſe bodies, which are foreign to it, but which often come in contact with it. The ſalivary, pancreatic, and biliary ducts, having a proportion of ſenſibility exactly analogous to the nature of the fluids which paſs through them, admit thoſe readily, but reject all others. The larynx refuſes admiſſion to every thing except the air. The excretory tubes are in contact, on the mucous ſurfaces, with various fluids that paſs over theſe ſurfaces, but they never allow them admiſſion. In the ſame way the lacteals, which open on the ſurface of the inteſtinal canal, abſorb chyle only, and not the fluids which may be mixed with it. Theſe relations do not exiſt only between the different proportions of ſenſibility in the organs, and the various animal fluids; they may alſo take place between external matter and the parts of the animal frame. The particular ſenſibility of the bladder and kidnies, and of the ſalivary glands, eſtabliſhes the relations between theſe organs and cantharides, mercury, &c.

It may be enquired, why nature, in the diſtribution of the different proportions of ſenſibility, has beſtowed this property only in inferior degrees on the internal organs, or thoſe of the interior life, while ſhe has ſo abundantly provided with it the external organs? why, conſequently, each organ concerned in digeſtion, circulation, reſpiration, nutrition, abſorption, does not tranſmit to the brain the impreſſions which it receives, while all the acts of the animal life ſuppoſe this tranſmiſſion? The reaſon ſeems to be, that all the phenomena, which eſtabliſh our relations to ſurrounding beings, muſt be, and are in effect, under the influence of the will, while thoſe, which are ſubſervient to the purpoſes of aſſimilation, ought to be exempt from that influence. To make a phenomenon dependent on the will, we muſt be conſcious of it: to exempt it from the influence of that power, this conſciouſneſs muſt not exiſt.

Of the animal and organic contractilities.—Contraction is the moſt common form of motion in the animal organs. Some indeed move by dilatation, as the iris, corpus cavernoſum, &c.; but we know as yet ſo little of this kind of motion, that we ſhall confine our remarks entirely to the former.

Spontaneous motion, a faculty inherent in living bodies, preſents, like ſenſibility, two great modifications diſtinct from each other, as we obſerve it in the phenomena of the two lives: theſe are the animal and the organic contractility. The former, ſubject to the will, has its origin in the brain, ceaſes to exiſt when the organs no longer communicate with the brain, and participates in all the affections of that part. It reſides excluſively in the voluntary muſcles, and preſides over the function of locomotion and the other movements, and the voice. The latter, not dependent on any common centre, has its origin in the part, is not connected with any voluntary acts, and produces the phenomena of digeſtion, circulation, ſecretion, &c. Like the correſponding ſenſibilities, they are eſſentially diſtinguiſhed in violent deaths, which ſuddenly annihilate the animal contractility, allowing the organic ſtill to exert itſelf for a longer or ſhorter time. The ſame difference is obſerved in aſphyxia, which ſo much reſembles death: the animal contractility is entirely ſuſpended, the organic ſtill continuing active. In paralyſis alſo, voluntary motion is deſtroyed, while the organic movements ſtill go on.

Theſe two kinds of contractility are connected to their correſponding ſpecies of ſenſibility. The ſenſations produced by external objects bring the animal contractility into exerciſe: and before the organic contraction of the heart takes place, its ſenſibility has been excited by the contact of blood.

Yet the connection is not the ſame in the two caſes. The animal ſenſibility may be excited, without the analogous contractility being neceſſarily brought into action: but the two other powers are never ſeparately exerciſed. The excretory tubes immediately re-act when the ſecreted fluids are brought into contact with them: the arrival of blood in the heart is neceſſarily followed by its contraction. This conjunction is ſo conſtant, that authors have included both powers in one name. Irritability deſignates both the ſenſation excited by the contact of any body, and the contraction of the organ when it re-acts.

There is a very ſimple reaſon for this difference. In the organic life nothing intervenes between the two faculties in their exerciſe; the ſame organ is the point at which the ſenſation terminates and the contraction begins. In the animal life, on the contrary, the two acts are ſeparated by middle functions, thoſe of the nerves and brain, which, if they are not exerted, interrupt the communication. In the ſame way we explain this further difference; *viz.* that there is always a ſtrict proportion between the ſenſation and the contraction in the organic life, while they may be ſeparately exalted or diminiſhed in the animal.

Two varieties of the organic contractility.—The animal contractility is always nearly the ſame, in whatever part it may exiſt; but the organic diſplays two eſſential modifications, which might ſeem to indicate a difference of nature, although there is only a diverſity of external appearance. Sometimes it may be obſerved very diſtinctly, while, on other occaſions, although it really exiſts, inſpection alone cannot appretiate it.

Senſible organic contractility may be ſeen in the heart, ſtomach, inteſtines, bladder, &c.: its action is exerted on the animal fluids in conſiderable maſſes.

It is by virtue of the inſenſible organic contractility, that the excretory tubes act on their reſpective fluids, the ſecretory organs on the blood which they receive, all parts that are nouriſhed on their nutritive juices, the lymphatics on the ſubſtances applied to theſe orifices, &c. Whenever the fluids exiſt in ſmall maſſes, where they are minutely divided, this ſecond kind of contractility is developed.

We may illuſtrate the difference between them, by comparing one to the attraction, which is exerted between large maſſes of matter, and the other to the chemical affinities, which take place between the component particles of an aggregate. Barthez compares them to the motions of the hands of a watch: that, which marks ſeconds, moves round the circumference in a very obvious manner; the hour hand moves alſo, although we cannot perceive its motion.

The ſenſible organic contractility correſponds nearly to what has been called irritability; the other to the tonic power, or tonicity. Theſe two words are objectionable, becauſe they indicate a diverſity of nature in the two properties. The common term which we employ, deſignates their general character, that of belonging to the internal life, and of being independent of the will; while the additional epithet expreſſes the peculiar attribute of each. This view of the matter is confirmed by the fact, that the two properties are connected by inſenſible gradations. Between the obſcure, but real contractility neceſſary for the nutrition of the hair, nails, &c. and that which we ſee exerted in the motions of the inteſtines, ſtomach, &c., there are many ſhades which form the tranſition; ſuch as the motions of the dartos, of the arteries, of ſome parts of the ſkin.

The circulation will ſerve to give us an idea of the gradual tranſition from one to the other kind of organic contractility. In the heart and large veſſels, this function is regulated by the ſenſible kind; it becomes leſs and leſs apparent, in proportion as the diameter of the veſſels diminiſhes; and it is laſtly inſenſible in the capillaries where tonicity alone is obſervable.

To conſider, with moſt authors, irritability as a property excluſively belonging to muſcles, and conſtituting a character by which they are diſtinguiſhed from other organs, and to expreſs this property by a name indicating this excluſive ſeat, is taking a confined and erroneous view of the matter. The muſcles undoubtedly occupy the firſt rank in this reſpect; they poſſeſs the greateſt ſhare of organic contractility. But every living organ re-acts, like them, though in a leſs apparent manner, on ſtimuli artificially applied, or on the fluids which it receives, and which bring to it the materials of ſecretion, nutrition, exhalation, or abſorption.

Hence nothing can be more uncertain than the rule commonly adopted for deciding whether a part be or be not of a muſcular nature; a rule which conſiſts in examining whether it contracts under the action of natural or artificial ſtimuli. From this mode of judging, a muſcular coat has been aſſigned to the arteries, although their organization is throughout unlike that of the muſcles; the uterus has been pronounced to be muſcular, although there are great differences between it and any muſcles; and a muſcular texture has been admitted in the dartos, iris, &c.

This faculty of contraction, like ſenſibility, is unequally diſtributed in the organs; and theſe differences, like thoſe of ſenſibility, appear to be only differences in degree.

If we were to deſignate any kind of contraction in the muſcles by a particular term, it would be their animal, rather than organic contractility; ſince they alone, of all parts in the body, move under the influence of the brain. This property is foreign to their tiſſue, and is derived entirely from the latter organ.

The two kinds of contractility cannot be changed, like the two ſpecies of ſenſibility. The organic is never transformed into animal; however its intenſity may be increaſed, it is ſtill of the ſame nature. The ſtomach and inteſtines are often ſo ſuſceptible, that the ſlighteſt cauſe will produce violent motions; but theſe are never influenced by the brain.

The extenſibility and contractility ariſing from organization.—Theſe properties depend entirely on the organic arrangement of the parts of the frame. They ſucceed and are connected to each other, and are in a ſtate of mutual dependence, like the vital phenomena of ſenſibility and contractility.

The extenſibility of tiſſue, or the power of elongation beyond the ordinary ſtate, from a foreign impulſe, belongs in a very ſenſible manner to a great number of organs. The extenſor muſcles are remarkably lengthened where the limbs are bent to the greateſt degree; the ſkin gives way and is ſtretched to envelop tumours; aponeuroſes are diſtended by fluids accumulated under them, as in aſcites and pregnancy. The mucous and ſerous membranes preſent analogous phenomena. The fibrous membranes and even the bones are ſuſceptible of this diſtention; as, for inſtance, the dura mater, cranium and pericranium in hydrocephalus, the extremities and middle of the long bones in the various affections of thoſe organs; the kidnies, brain, and liver, in abſceſſes of their interior, the ſpleen and lung when diſtended with blood, the ligaments in hydrops articuli; in a word, all organs, under a thouſand circumſtances, offer to us innumerable proofs of this property, which is inherent in their tiſſue, but not dependent on life. It ſubſiſts, as long as the organic ſtructure remains, even for a long time after life has become extinct. Putrefaction, decompoſition, and whatever affects the organic tiſſue, are the only cauſes that deſtroy the exerciſe of this property, in which the organs are always paſſive, and experience a mechanical influence from the various bodies which act on them.

We may draw out a ſcale of extenſibility for the different organs. At the top are placed thoſe which have the moſt ſoftneſs in the arrangement of their fibres, as the muſcles, ſkin, cellular tiſſue, &c.: at the bottom thoſe characterized by conſiderable denſity, as the bones, cartilages, tendons, nails, &c.

A particular mode of contractility correſponds to this extenſibility; it may be called the contractility of tiſſue, or contractility through the ceſſation of extenſion. For its exertion in any organ, it is only neceſſary that the extenſion ſhould ceaſe. Ordinarily, moſt of our organs are maintained in a certain ſtate of tenſion by particular cauſes; the locomotive muſcles by their antagoniſts; the hollow muſcles, by the various ſubſtances which they encloſe; the veſſels by the fluids which circulate in them; the ſkin of one part, by that of the neighbouring organs; the alveoli of the jaws by the teeth, &c. Now, if any of theſe cauſes ceaſe to act, contraction immediately takes place; divide a muſcle, and its antagoniſt will be ſhortened; empty a hollow muſcular organ, and it will contract; prevent an artery from receiving blood, and it will be converted into a ligament; cut the ſkin, and the edges of the inciſion will be drawn aſunder; remove a tooth, and the ſocket will be obliterated.

In all theſe caſes contraction follows the ceſſation of a natural extenſion; in other inſtances it is the conſequence of the ceſſation of an unnatural extenſion. Thus the abdomen is reduced after parturition or paracenteſis; the cellular tiſſue after the opening of an abſceſs; the tunica vaginalis after the operation for hydrocele; the ſkin of the ſcrotum after the removal of a large diſeaſed teſticle; and aneuriſmal ſacs after the evacuation of the contained fluid.

This kind of contractility is perfectly independent of life; like the extenſibility, it is connected only to the tiſſue or organic arrangement of parts; but the vital powers beſtow on it increaſed energy; thus a divided muſcle retracts much leſs in the dead than in the living ſtate. It terminates only by the diſorganization of the parts from decompoſition, &c., and not by the annihilation of their vital properties.

Moſt authors, as Haller, Blumenbach, Barthez, &c., have confounded the phenomena of this contractility with thoſe of the organic inſenſible kind, or tonicity; they refer the reduction of the abdomen after its diſtention, the retraction of the divided ſkin, and the corrugation of the ſcrotum by cold, and the criſpation of parts by certain poiſons, ſtyptics, &c. to the ſame principle. The two former phenomena belong to the contractility of tiſſue, which never ſuppoſes the application of irritants; the latter to tonicity, which is never exerted without their influence.

In order to render the diſtinctions, which we have made on this ſubject, more clear, let us ſelect for obſervation an organ in which all the kinds of contractility are united; a voluntary muſcle for example. This muſcle acts, 1ſt, through the influence of the nerves, which it derives from the brain; this is the animal contractility; 2dly, by the application of a chemical or phyſical ſtimulus, which produces in it a general movement analogous to thoſe which naturally belong to the heart and other involuntary muſcles; this is the organic ſenſible contractility or irritability; 3dly, by the arrival of fluids, which convey the materials of nutrition to all its parts, and which excite motion in every fibre and particle,—a motion indiſpenſible to the function of nutrition, as it is in the glands to ſecretion, in the lymphatics to abſorption, &c.; this is the inſenſible organic contractility or tonicity; 4thly, by the tranſverſe ſection of its ſubſtance, producing retraction of the divided ends towards their points of inſertion; this is the contractility of tiſſue. Each of theſe properties may be ſeparately deſtroyed in a muſcle; divide its nerves and the animal contractility ceaſes, although the two organic kinds ſtill ſubſiſt. Apply opium to it, and ſtimuli will no longer excite it to motion, although the tonic movements determined by the contact of the blood ſtill remain. Kill the animal, or intercept all the veſſels which go to the limb, and the tonic powers will be deſtroyed, leaving only the contractility of tiſſue, which does not ceaſe until gangrene or putrefaction, the conſequences of deſtroyed vital action, appear.

This example will enable us to appretiate the different kinds of contractility in organs, where they exiſt in ſmaller number than in the voluntary muſcles, as in the heart or inteſtines, which have all the kinds except the animal; in the white organs, as the tendons, aponeuroſes, bones, &c., where the inſenſible organic contractility and that of tiſſue only are found. In general, the two latter belong to all organs, the former belonging excluſively to ſome particular ones. We may therefore ſelect tonicity, or inſenſible organic contractility, as the general character of all living parts; and the contractility of tiſſue as the common attribute of all parts, whether living or dead, which are organically compoſed. The latter property, like the extenſibility of tiſſue, to which it correſponds, has its different degrees; the muſcles, ſkin, cellular ſubſtance, &c. on one part, and the tendons, aponeuroſes, and bones, on the other, form the two extremes of the ſcale.

It will be eaſily ſeen, from what we have juſt ſaid, that in the contractility of any organ two things are to be conſidered; *viz.* the power and the cauſe which brings that power into exerciſe. The power or the contractility is always the ſame, connected to, and inherent in the organ; but the cauſe which determines its exerciſe varies greatly, and hence the various kinds of contraction. Conſequently, the diſtinctive epithets ſhould be applied rather to the contraction, which expreſſes the effect produced, than to the contractility which indicates the principle or cauſe.

The general reſult of the preceding remarks on the vital properties, is exhibited in the following table, which preſents all theſe properties in one point of view.

	Claſſes.	*Genera.*	*Species.*	*Varieties.*
Properties	I. Vital	1 Senſibility	1. Animal. 2. Organic.	
		2. Contractiliy	1. Animal	
			2. Organic	1. Senſible. 2. Inſenſible.
	II. Of tiſſue	1. Extenſibility.		
		2. Contractility.		

The peculiar motions of the iris, corpora cavernoſa, &c. and the dilatation of the heart, are not included in this view, becauſe our ideas on the relations which connect theſe to the other kinds of motion, and the differences which diſtinguiſh them, are not yet ſufficiently clear.

From the properties which have juſt been explained, all the functions, all the phenomena of the animal economy, may be deduced; we may refer them all, in ultimate analyſis, to one or the other, as we conſtantly arrive, in the conſideration of phyſical phenomena, at the ſame principles, *viz.* attraction, elaſticity, &c.

Wherever the vital properties are in activity, a diſengagement of caloric takes place, peculiar to the animal, and compoſing for it a temperature independent of that of the medium in which it lives. The word caloricity, or calorification, is improper to expreſs this phenomenon, which is a general effect of the two great vital powers in exerciſe, and does not flow from any particular faculty. We do not ſay digeſtibility, reſpirability, &c. becauſe reſpiration, digeſtion, and other proceſſes, are the reſults of functions deduced from the common laws: the production of heat is in the ſame caſe. The digeſtive force of Grimaud is an expreſſion

preſſion equally objectionable. The aſſimilation of heterogeneous ſubſtances to our organs is one of the grand reſults of ſenſibility and contractility, and not a peculiar property. The ſame obſervation will apply to the formative power of Blumenbach, that of fixed ſituation of Barthez, and to the various principles admitted by numerous authors who have attributed to functions, or reſults, names that indicate laws, or vital properties.

In the article EMBRYO we have given a ſketch of the ſtate of the two lives in the fœtus: we ſhall add here a ſhort view of the changes which occur after birth.

A new mode of exiſtence commences as ſoon as the child has quitted the uterus: various functions are added to the organic life, and the animal, which has not yet begun, comes into exerciſe, eſtabliſhing relations, hitherto unknown, between the individual and ſurrounding objects. While the organs of the internal life act at once in a perfect manner, thoſe of the external require a kind of education, and arrive only by degrees at that perfection which they exhibit in the ſequel. The ſenſations are at firſt confuſed, and offer only general images: habit gradually deadens theſe firſt impreſſions, and then the particular ſenſations come to be diſtinguiſhed, after long and repeated exerciſe. Thus a man, introduced for the firſt time to the magic ſpectacle of an opera, perceives only a whole which pleaſes him; and he gradually ſeparates the ſources of pleaſure ariſing from the dancing, the muſic, the decorations, &c. The education of the brain in this reſpect reſembles that of the ſenſes: all the mental faculties dependent on its action acquire very gradually the degree of preciſion to which they are deſtined. Perception, memory, and imagination, which are always preceded and determined by ſenſation, are enlarged in proportion to their employment. The judgment, of which they are the triple baſis, at firſt aſſociates irregularly notions which are themſelves irregular: its exertions are ſoon diſtinguiſhed by greater clearneſs; and they become at laſt rigorous and preciſe.

The voice and locomotion preſent the ſame phenomena: the cries of young animals conſiſt, at firſt, of one unformed ſound, without any diſtinct character. Age gradually modifies them; and, after repeated exerciſe, they acquire the characters peculiar to each ſpecies. It is unneceſſary to mention ſpeech, as that is ſo evidently the reſult of education.

The muſcles of the newly born animal are in continual action; but progreſſion, or even ſtanding, cannot be effected. Habit muſt teach the art of connecting together particular contractions for the production of certain effects. Until this period has arrived, there is a vacillation in all the motions, particularly the general ones, which almoſt deprives the child of the power of locomotion.

It is obvious, then, that we are obliged to learn the art of extending our exiſtence beyond ourſelves; that the exterior life acquires freſh developement every day, and demands a kind of apprenticeſhip, which is not obſerved in the organic life.

Society exerciſes a remarkable influence on this kind of education which the external organs undergo: it enlarges the ſphere of action in ſome, contracts it in others, and modifies it in all. The occupation in which an individual is habitually employed, almoſt always exerciſes one particular organ more than the others. The ear of the muſician, the palate of the cook, the brain of the philoſopher, the muſcles of the dancer, the larynx of the ſinger, &c. have, beſides the general education of the external life, a particular education, which frequent exerciſe carries to a high degree of perfection. Hence, the muſician and painter become able to diſtinguiſh in a harmony, or a picture, what eſcapes vulgar obſervation. In ſome inſtances, this perfection of action in an exerciſed organ is accompanied by an exceſs of nutrition, as in the occupations where particular members are exerted greatly and habitually.

It is no leſs true, that when one organ is conſtantly occupied, the others are inactive, and appear to loſe in capability what the other gains. The philoſopher who ſpends his life in his ſtudy, and devotes himſelf to abſtract meditations, condemns his locomotive organs to inactivity, and hence loſes the facility of exerting them: the dancer is in the oppoſite ſtate. The obſervation of man in ſociety will lead us every moment to ſimilar remarks: perfection of action in the locomotive organs ſcarcely ever coincides with that of the brain or ſenſes; and *vice verſâ*. This obſervation naturally leads to a fundamental principle of ſocial education; *viz.* that we ſhould never direct the attention to ſeveral ſtudies at once, if we wiſh to ſucceed in each; that it is vain for any individual to cultivate various departments of human knowledge and exertion with an expectation of ſhining in each; and that in general the ſecret of excelling in any one, is, to be inferior in all the reſt. For a more detailed account of theſe views, which are not, perhaps, ſtrictly phyſiological, ſee Bichat, ſur la Vie et la Mort, p. 121—130.

When the child quits the womb of the mother, its organic life undergoes a remarkable developement: ſeveral functions, which did not exiſt before, are now brought into exerciſe; and thoſe which had begun become more enlarged. But the organs, in either caſe, require no education: they exhibit at once a degree of perfection, which thoſe of the animal life arrive at only after frequent exerciſe. Digeſtion, reſpiration, a great part of the exhalations, and abſorptions, begin at birth: after the firſt acts in the reſpective organs, they proceed with as great facility as they will ever after poſſeſs. The glands, which had been hitherto inactive, or at leaſt had produced a very ſmall quantity of fluid, are excited by various applications to their excretory ducts. The paſſage of food over the openings of the ſalivary ducts, of the chyme over the pancreatic and biliary tubes, &c. ſtimulates the reſpective glands. The excretions now alſo begin: all theſe phenomena are at once executed with preciſion, and no education is required in the organs which exhibit them.

As all the organs of the internal life act perfectly at once, none can acquire in the ſequel a ſuperiority over the others, as in the animal life. Yet it is common, even here, for one ſyſtem to predominate over the reſt: ſometimes the blood-veſſels, ſometimes the pulmonary ſyſtem, ſometimes the gaſtric organs, and particularly the liver, are exerted beyond their due proportion, and give a peculiar character to the temperament. But the foundation of theſe differences ſeems to be laid in original difference of ſtructure: and the ſame is the caſe where one ſyſtem is remarkably weak.

"Such, then, concludes Bichat, is the leading difference of the two lives, in reſpect to the degree of perfection of the various ſyſtems of functions of which each conſiſts: in the animal, predominance or inferiority of one ſyſtem ariſes from the greater activity or indolence of that ſyſtem; in the organic, the original conformation is the cauſe. Hence, the phyſical temperament and the moral character cannot be changed by education, which has ſo vaſt an effect in modifying the animal life. The character, if I may uſe the expreſſion, is the phyſiognomy of the paſſions; the temperament is that of the internal functions: as both are conſtantly the ſame, and not influenced by habit and exerciſe, they cannot be affected by education. That may, indeed, beſtow ſuch perfection on the judgment and reflection, as to make them more powerful than the paſſions: it may fortify the animal life, and make it ſuperior to the impulſes of the organic. But to attempt altering the character, ſoftening or exalting the paſſions, of which it is the habitual expreſſion, or enlarging or contracting their ſphere, would be an enterpriſe analogous to that of permanently raiſing or diminiſhing the extraordinary force of the heart, or accelerating or retarding the motions of the arteries in the ſtate of health. We ſhould inform any perſon who entertained the latter project, that circulation and reſpiration are not under the influence of the will, and cannot, therefore, be modified by the individual, without the occurrence of diſeaſe. The ſame obſervation will apply to thoſe who think they can change the character, and conſequently the paſſions; ſince the latter are the produce of the actions of all the internal organs, or, at leaſt, are eſpecially ſeated in them."

For the mode in which the functions ceaſe, the connections of the animal and organic life to each other, and the reciprocal influences of the heart, brain, and lungs, ſee Death. Cuvier, Leçons d'Anatomie comparée, tom. i. Bichat, Recherches Phyſiologiques ſur la Vie et la Mort; and his Anatomie Generale, in the Conſiderations Generales.

Life *of Mind*, *vita mentis*, as contra-diſtinguiſhed from life of body, *vita corporis*, is held, by the Carteſians, to conſiſt in a perpetual cogitation, or uninterrupted courſe of thinking; which ſeems likewiſe to have been Ariſtotle's meaning, when he calls the ſoul ἐντελέχεια, which his interpreters call *actus*; thinking being the only proper act of the mind. But Mr. Locke endeavours to refute this principle. See Thinking and Soul.

Life *of Man*, *vita hominis*, conſiſts of a continued communication of body and mind; or in operations, to which both the motions of the body and ideas of the mind contribute.

Thus, *e. gr.* the mind now thinking of ſomething, on occaſion of that thought there ariſes a certain motion in the body: and now, again, the body moves firſt, which motion is followed by ſome thought of the mind.

In ſuch alternate or reciprocal operation does the life of man conſiſt; conſidered, as he is a compound of body and mind. See Sensation and Motion.

Life is more particularly uſed for the duration of an animal's being; or the ſpace of time that paſſeth between its birth and death.

Life, conſidered as an object of *Law*. See Rights. See alſo Homicide.

Life-*Annuities*, are annuities, the payments of which depend on the continuance of any given life or lives; and they may be diſtinguiſhed into annuities to commence *immediately*, and annuities to commence at ſome future period, or *reverſionary* life-annuities.

The value of a life-annuity is properly the ſum that will be ſufficient to enable a *ſeller* (allowing for the chances of mortality) to pay the annuity without loſs; and, ſuppoſing money to bear no intereſt, it is always equal to the *expectation* of the life.

For example: —Obſervations ſhew, that according to the *mean* probabilities of the duration of human life, the *expectation* of a life aged ten is nearly forty years; or, in other words, that a ſet of lives at this age will, one with another, enjoy forty years each of exiſtence, ſome of them enjoying a duration as much longer as others enjoy a ſhorter. It is obvious, therefore, that ſuppoſing money to bear no intereſt, 40*l.* in hand for each life, would be ſufficient to enable a ſeller to pay to any number of ſuch lives 1*l. per ann.* for their whole duration; or, in other words, that 40*l.* is, on this ſuppoſition, the value of a life aged ten.

But if any improvement is made of money by putting it out to intereſt this will be *more* than the value; becauſe it will be more than ſufficient to pay the annuity; and as much more than ſufficient as the improvement or the intereſt is greater. If, for inſtance, any ſum now in hand may be ſo improved, by being put out to intereſt, at 4 *per cent.* as to double itſelf in eighteen years; the ſeller of ſuch an annuity will (in conſequence of putting out *half* the purchaſe-money to intereſt) find himſelf, at the end of eighteen years, in poſſeſſion of 42*l.* or of 20*l.* more than is ſufficient to pay the remainder of the annuities, though he ſhould make no farther improvement of the purchaſe-money. If he puts out the money to higher intereſt he will be a greater gainer; if to leſs, he will be a leſs gainer: but at any rate of intereſt he muſt be a gainer. The truth is, that ſuppoſing the intereſt to be that juſt mentioned, or 4 *per cent.* and all the improvement poſſible made of the money at this intereſt, he will find 17*l.* 10*s.* 6*d.* for each annuity (inſtead of 40*l.*) to be ſufficient to enable him to make all his payments. (See the tables at the end of this article.) But that if he improves the money at 5 *per cent.* he will find 15*l.* to be ſufficient.

It may ſeem to follow from hence, that we have nothing to do to find the value of a life-annuity, but to find the expectation of the life, and then to take out of the common tables the value of an annuity *certain* for a term of years equal to the expectation; and it may appear ſtrange that this ſhould not give the true value.

The truth is, that it will give the value *greater* than it is; or that a leſs ſum than that found in this way will be ſufficient to pay the annuity. Suppoſing the intereſt 4 *per cent.* the value of an annuity certain for forty years is 19*l.* 16*s.* (ſee Tab. III. Annuities); but the value of a life aged ten, at this rate of intereſt, is, as hath been juſt ſaid, no more than 17*l.* 10*s.* 6*d.* The principal reaſon of this is the difference between the value of forty payments of an annuity to be made *every* year regularly one after another, till in forty years they are all made; and the value of the ſame number of payments to be made at greater diſtances of time from one another, and not to be all made till the end of ſeventy or eighty years. In this laſt caſe there is more time given for the improvement of the purchaſe-money, and therefore a leſs ſum will be ſufficient to enable a ſeller to make his payments. All that is learned from knowing the expectation of a number of lives, is the *mean* number of payments that will be made to each of them, and not the time in which they will be made. For example:—The expectation of a life at ten being forty years, it follows that to a hundred lives at this age, forty payments for each life, or four thouſand in all, will be made. But, as all the lives will not be extinct in leſs than ſeventy or eighty years, many of the payments will not be made till after the expiration of forty years; and, therefore, a part of the purchaſe-money will be improved for a longer time than forty years. In general, it may be obſerved that *one-half* nearly of the payments of a ſet of life-annuities will be made after the expiration of a term of years equal to the expectations of the lives; and that this half having a longer time for accumulation than the expectations of the lives, the value of the lives muſt be leſs than the value of annuities to be paid regularly every year for a time equal to the expectations. Thus 1980*l.* will, in conſequence of being improved at 4 *per cent.* pay a hundred annuities of 1*l.* for forty years. But a leſs ſum (or 1750*l.*) will pay a hundred ſuch annuities to a ſet of lives whoſe common expectation is forty years; becauſe *one-half* nearly of the payments will not be made till after the end of forty years, and ſome not till after the end of ſeventy or eighty years; and conſequently *one-half* nearly of the purchaſe-money will be improved for more than forty years, and ſome of it for more than ſeventy or eighty years.

Theſe obſervations demonſtrate, that it is a miſtake to reckon the value of a life-annuity the ſame either with the value of an annuity certain for a term of years equal to the expectation of the life ; or with the value of an annuity for a term certain, equal to that which a life has an even chance of exiſting. This is an error into which ſome have fallen, but it only proves their utter ignorance of the ſubject.

The true method of computing the values of life-annuities may be explained in the following manner. Let us ſuppoſe that the duration of the annuity is to be only *one* year. That is, that 1*l.* is to be paid a year hence, provided a life now of a given age ſhould be then in being. Were it *certain* that this life would not fail in the year, the value of the annuity would be the ſame with the value of it payable a year hence, or with the ſum which, now put out to intereſt, would increaſe to 1*l.* in a year ; and this ſum, ſuppoſing intereſt at 4 *per cent.* is 19*s.* 3*d.* See Tab. II. ANNUITIES.

But the payment not being to be made, ſhould the life happen to fail in the year, this ſum ought to be diminiſhed in proportion to the degree of the uncertainty of the life's continuing to exiſt through the year ; and it is eaſy to ſee that this *uncertainty* or *chance* is in the proportion of the number of perſons at that age living at the *end* of the year, to the number living at the *beginning* of it, as ſhewn by obſervations. For example :—if it has been found in any ſituation that but half the number of perſons of the given age living at the *beginning* of the year, are living at the *end* of it, the uncertainty will be as half ; and the value juſt mentioned ought to be leſſened one-half. If it appears that two-thirds, or nine-tenths, or ninety-nine hundredths, are living at the end of the year, the ſame value muſt be diminiſhed only one-third, one-tenth, or one-hundredth. That is, it will be neceſſary to multiply it by $\frac{1}{3}$, $\frac{9}{10}$, or $\frac{99}{100}$. Univerſally then, the preſent value of any ſum to be paid a year hence, provided a given life ſhould be then exiſting, is that ſum multiplied by the value of 1*l.* payable at the end of the year (taken out of Tab. II.. under the article ANNUITIES), and alſo by the fraction formed by making the number of the living at the age of the given life (taken out of the Table of Obſervations) the *denominator*, and the number of the living at the next ſucceeding age (or at the end of the year) the *numerator*. For example :—let the value be ſought of 1*l.* payable a year hence, if a child aged ten ſhould be then living, reckoning intereſt at 4 *per cent.* The value of 1*l.* reckoning this intereſt, and payable a year hence, is (as hath been juſt ſaid) 19*s.* 3*d.* or (in decimal parts of a pound,) .9615. (See Tab. II. under the article ANNUITIES.) The number of the living at the age of ten (in Tab. III. at the end of this article) is 5675 ; and at the next ſucceeding age (or eleven) is 5623. It follows, therefore, that according to this table, out of 5675 living at the age of ten, only 5623 are living at the end of the year : or, in other words, that the chance or probability of a life aged ten exiſting through the year is as $\frac{5623}{5675}$, which fraction, therefore, multiplied by .9615, gives the value ſought, or .9526 equal to 19*s.* 0½*d.*

Again, let us ſuppoſe that the duration of a life-annuity of 1*l.* is to be two years, or that one payment of 1*l.* is to be made a year hence, provided a given life ſhould exiſt a year, and a ſecond payment of the ſame ſum at the end of two years, provided the ſame life ſhould be in exiſtence at the end of two years. The method of finding the value of the firſt payment has been already explained ; and by the very ſame reaſoning it may be eaſily diſcovered, that the value of the ſecond payment muſt be the value of 1*l.* payable at the end of two years, *diminiſhed* in proportion to the uncertainty that the given life will exiſt two years ; or (which is the ſame) *multiplied* by the fraction formed by making the number of the living at the given age the *denominator*, and the number of the living at the next ſucceeding age but one, or at the end of two years, the *numerator*.

Thus. Let the value be required of 1*l.* payable yearly for two years, provided a child aged ten ſhould live two years, reckoning intereſt at 4 *per cent.*

The value of the payment at the end of the firſt year has been juſt found to be .9526 in decimal parts of a pound, or 19*s.* 0½*d.*

The value of the payment at the end of the ſecond year is the value of 1*l.* payable two years hence, leſſened by the uncertainty that a life aged ten will live two years ; or in the proportion of the number of the living in the Table of Obſervations at the age of twelve to the number of the living at the age of ten. That is, it is .9245 (the ſaid value of 1*l.* payable at the end of two years, taken out of Table II. under the article ANNUITIES) *multiplied* by the fraction $\frac{5573}{5675}$, or .9078, equal to 18*s.* 2*d.* (See Table III. at the end of this article.) To this, add the former value, or .9526*l.* and the total, or 1.8604*l.* will be the value of both payments, or of an annuity of 1*l.* on a life aged ten for two years.

By proceeding in this way it will appear that the value of the ſame annuity for three years is $.8889 \times \frac{5523}{5675} + 1.8604 = 2.725$*l.* and for eighty-ſix years (or the whole duration of life, according to the Table of Obſervations) 17.5238*l.* It is evident, that in the ſame method the value of an annuity of 1*l.* on a life at any other age is to be found ; and that ſuppoſing the annuity any other ſum than 1*l.* its value will be this ſum multiplied by the value of an annuity of 1*l.*

The calculations of the values of life-annuities may be otherwiſe explained in the following manner. Suppoſe a life-annuity of 1*l.* payable yearly to every one of 5075 perſons, all now aged ten, the firſt payment of which is to be made a year hence. It appears from the Northampton Table of Obſervations (or Table III. under the article EXPECTATION), that only 5623 of theſe perſons will be living at the end of the year ; and conſequently, that the money then to be paid will be only 5623*l.* The preſent value, therefore, of the firſt payment of the annuities will be the ſum which being now put out to intereſt will increaſe in a year to 5623*l.* That is, it is 5623*l.* diſcounted for a year, or 5406*l.* 14*s.* 10*d.* for this ſum added to its intereſt for a year (reckoned at 4 *per cent.*) will juſt make up 5623*l.* From the ſame Table of Obſervations, it appears farther, that of 5675 perſons living at ten years of age, only 5573 will be living at the end of *two* years. The preſent value, therefore, of the *ſecond* payment of the annuities will be the ſum, which being now put out to compound intereſt at 4 *per cent.* will increaſe to 5573*l.* in two years. The ſum is 5152*l.* 5*s.* In like manner 5523, 5473, 5423, &c. being the number living at the end of three, four, five, &c. years, the value of the third, fourth, fifth, &c. payments of the annuities will be 5523*l.* 5473*l.* 5423*l.* &c. diſcounted for three, four, five, &c. years reſpectively, and continued to the year in which all the lives become extinct. The total of all theſe values is 99443*l.* which, therefore, is the ſum that would be ſufficient, if improved at 4 *per cent.*, to make good the payment of an annuity of 1*l.* for life to every one of 5675 perſons aged ten, according to the Northampton Table of Obſervations. The value, therefore, of ſuch an annuity payable to only one of this number, muſt be the 5675th part of 99,443*l.* or 17*l.* 10*s.* 6*d.*

In the Table of Obſervations, from which the examples here given have been taken, and alſo in the table framed by Dr. Halley, from the bills of mortality at Breſlaw in Sileſia, it may be obſerved, that the numbers dying every year out of a given number born, continue in the middle ſtages of life nearly the ſame for many years together. It was this circumſtance that led M. De Moivre to form his hypotheſis of an equal decrement of life through all its ſtages after ten. In this hypotheſis, the limit or utmoſt probable extent of life is fixed to the age of eighty-ſix; and out of any number living at a given age an equal number is reckoned to die every year, till at eighty-ſix all the lives become extinct. Thus, for inſtance, if there are ſeventy-ſix perſons living at ten, one of them by this hypotheſis will die annually during the term of ſeventy-ſix years, at the end of which time the laſt ſurviving life will have failed. Or, in other words, ſeventy-five will be living at the end of the firſt year, ſeventy-four at the end of the ſecond year, ſeventy-three at the end of the third year, and ſo on for ſeventy-ſix years; from whence it follows that the probability of one perſon's living to the end of the firſt, ſecond, or third year will be $\frac{75}{76}$, $\frac{74}{76}$, $\frac{73}{76}$, &c. reſpectively, where it appears that the fractions, and conſequently the probabilities they expreſs, decreaſe *arithmetically*. The number of years which a life wants of the age of eighty-ſix is in this hypotheſis called the *complement* of the life, and half this complement is always the *expectation* of the life. That is, according to what has been already ſaid, it is the number of years which one with another a ſet of lives at that age will exiſt; or, as the writers on this ſubject ſometimes ſpeak, it is the *ſhare* of life due to each of them.

It is extremely eaſy to calculate the values of life-annuities on this hypotheſis. For by what has been juſt ſaid, the value of an annuity on a life aged ten, is the ſum of the ſeries $\frac{75}{76} \times .9615 + \frac{74}{76} \times .9245 + \frac{73}{76} \times .8889$, &c. continued to $\frac{1}{76} \times .0527l.$ — $.9615l.$ — $.9245l.$ — $.8889l.$ &c. and $.0527l.$ being the values (reckoning intereſt at 4 *per cent.*) of 1*l.* payable at the end of 1, 2, 3, &c. to 76 years; or, calling 1*l.* with its intereſt for a year, r, and 76, n, the value of the life is $\frac{n-1}{nr} + \frac{n-2}{nr^2} + \frac{n-3}{nr^3} +$, &c. $= \frac{1}{r} + \frac{1}{r^2} + \frac{1}{r^3} \ldots\ldots (n) - \frac{1}{nr} - \frac{2}{nr^2} - \frac{3}{nr^3} \ldots\ldots (n) =$ $\frac{1}{r-1} - \frac{r}{n\cdot\overline{r-1}} \times \overline{\frac{1}{\overline{r-1}} - \frac{1}{r^n\cdot\overline{r-1}}}$. But $\frac{1}{\overline{r-1}}$ is equal to the perpetuity, and $\frac{1}{\overline{r-1}} - \frac{1}{r^n\cdot\overline{r-1}}$ is equal to an annuity certain for n years, therefore we have the following rule:

"Find in Table III. under Annuities, the value of an annuity of 1*l.* certain for a number of years equal to the *complement*. Multiply this value by the *perpetuity* increaſed by unity, and divide the product by the complement. The quotient ſubtracted from the perpetuity will be the value."

The complement in the preſent caſe being 76, the value of an annuity for 76 years being (ſee Tab. III. Annuities) 23.7311, and the perpetuity 25, the value of a life aged 10, will come out 16.881. In the ſame manner may the value of a life at any other age be computed according to this hypotheſis: and theſe values are the ſame with thoſe in M. De Moivre's table of the values of lives.

But it is a neceſſary obſervation, that in the firſt and laſt ſtages of life, this hypotheſis differs too much from fact; which may be eaſily ſeen, by comparing it with the following tables of the probabilities of human life. It had better therefore be entirely rejected from the doctrine of annuities, eſpecially as we are now furniſhed with correct tables, deduced from real obſervations, of the values both of *ſingle* and *joint* lives. The labour and difficulty of forming ſuch tables are alſo greatly leſſened by means of an eaſy theorem given by Mr. Simpſon in his book on the Doctrine of Annuities; and ſince by Dr. Price in his Treatiſe on Reverſionary Payments. We ſhall here give the explanation and proof of this theorem from Mr. Morgan's Treatiſe on Annuities and Aſſurances, chap. ii. § 2. p. 56.

"Were it *certain* that a perſon of a given age would live to the end of a year, the value of an annuity of 1*l.* on ſuch a life would be the preſent ſum which would increaſe in a year to the value of a life one year older, together with the value of the ſingle payment of 1*l.* to be made at the end of a year; that is, it would be 1*l.* together with the value of a life aged one year older than the given life, multiplied by the value of 1*l.* payable at the end of a year. Call the value of a life one year older than the given life N, and the value of 1*l.* payable at the end of a year $\frac{1}{r}$; then will the value of an annuity on the given life, on the ſuppoſition of a *certainty* that it will exiſt a year, be $\frac{1}{r} + \frac{1}{r} \times \text{N}$. But the fact is, that it is *uncertain* whether the given life will exiſt to the end of the year. This laſt value, therefore, muſt be diminiſhed in the proportion of this uncertainty; that is, it muſt be multiplied by the probability that the given life will ſurvive one year, which ſuppoſing $\frac{b}{a}$ to expreſs this probability, will make it $\frac{b}{ar} \times \overline{1 + \text{N}}$."

The great utility of this theorem will appear from the following examples. Suppoſe the probabilities of life as they are given in the third of the following tables, or the tables of obſervations for Northampton, and the rate of intereſt 4 *per cent.*, or $r = 1.04$. By reaſoning in the manner already explained, the value of a life aged 95 will be expreſſed by the ſingle fraction $\frac{1}{4} \times .9615 = .2403$. The value of a life one year younger, will, by this theorem, be $\frac{4}{9 \times 1.04} \times \overline{1 + .2403} = .5300$. The value of a life two years younger, by the ſame theorem, will be $\frac{9}{16 \times 1.04} \times \overline{1 + .5300} = .8270l.$ The value of a life three years younger, or at the age of 92, will be $\frac{16}{24 \times 1.04} \times \overline{1 + .8270} = 1.171l.$ If we proceed in this manner, the value of every younger life will be deduced from that next preceding; nor will the number of multiplications neceſſary to determine the values (agreeably to any table of obſervations) of all lives, at all ages, much exceed the number of thoſe which muſt otherwiſe have been uſed for finding the ſingle value of the youngeſt life. See Table VI.

Mr. Morgan, after having given this account of the foregoing

going theorem, and explained the method of verifying all the operations in proceeding by it from one life to another, applies the theorem to the calculation of the values of joint lives, and gives a ſimilar method of verifying all thoſe operations.

But inſtead of following him in this, we ſhall reſume our account of the general principles on which the values of life-annuities are calculated. We have already explained theſe, as far as annuities on ſingle lives are concerned. From the ſame principles the method of finding the value of annuities on the joint continuance of any two lives, may be underſtood. Suppoſe the ages of two perſons to be 50 and 60. It appears in Table III. that of 2857 perſons living at 50, only 2776 will live to be 51; or, in other words, that the probability that a perſon at this age will live a year, is $\frac{2776}{2857}$. Alſo, it appears from the ſame table, that the probability that a perſon aged 60 will live to 61, is $\frac{1956}{2038}$. The probability, therefore, that they will *both* live a year, (or the former to be 51, and the latter 61,) is the product of theſe two probabilities, or $\frac{2776}{2857} \times \frac{1956}{2038} = \frac{5429856}{5822566}$. For it is well known, that the probability that any two independent events will both happen, is always the product ariſing from multiplying the probability of one event by the probability of the other.

In like manner, the probability that the former of theſe lives will live to be 52, 53, 54, &c. and the latter to be 62, 63, 64, &c. or that they will both live two, three, four, &c. years, is by the ſame table $\frac{2694}{2857} \times \frac{1874}{2038}$, $\frac{2612 \times 1793}{2857 \times 2038}$, $\frac{2530 \times 1712}{2857 \times 2038}$, &c. And according to the reaſoning already uſed, theſe probabilities multiplied by the values (in Table II. Annuities) of 1*l.* payable at the end of one, two, three, four, &c. years, will give the preſent value of the firſt, ſecond, third, fourth, &c. payments of an annuity dependent, on the joint continuance of the two lives; and the ſum of theſe products for one, two, three, four, &c. years, will be the value of an annuity of 1*l.* on the joint continuance of the two lives for one, two, three, four, &c. years; and if the products are continued to the extremity of the oldeſt life, their ſum will be the value of an annuity on the whole duration of the joint lives.

The values of annuities on the joint continuance of three, or any other number of lives, are found in a ſimilar manner. The ſeveral fractions expreſſing the reſpective probabilities of their continuing one, two, three, four, &c. years, being multiplied into one another, and alſo into 1*l.* diſcounted as before; and the ſum of the products ariſing from theſe multiplications continued to one, two, three, four, &c. years, or to the extremity of the oldeſt of the lives, will be the values of the annuity for one, two, three, four, &c. years, or for the whole duration of the joint lives.

With reſpect to annuities on the *longeſt* of any number of lives, the reaſoning is not ſo ſimple. The following explanation, however, of the method of determining their values, when only *two* lives are concerned, will be eaſily underſtood. Suppoſe the ages of the two perſons to be 50 and 60; and for the ſake of more perſpicuity, let *a*, *b*, *c*, *d*, *e*, &c. be the number of perſons living in the table at the age of the younger life, at the beginning of the firſt, ſecond, third, &c. years: and, in like manner, let *m*, *n*, *o*, *p*, &c. be the number of perſons living in the table at the age of the older life. From what has been already obſerved, the chances of the younger life's ſurviving the firſt, ſecond, third, &c. year, will be $\frac{b}{a}$, $\frac{c}{a}$, $\frac{d}{a}$, &c.; and the chances of the older life's ſurviving thoſe years reſpectively will be $\frac{n}{m}$, $\frac{o}{m}$, $\frac{p}{m}$, &c.; and the chances that they will *not* ſurvive the firſt, ſecond, third, &c. years, will be $\overline{1-\frac{b}{a}}$, $\overline{1-\frac{c}{a}}$, $\overline{1-\frac{d}{a}}$, &c. and $\overline{1-\frac{n}{m}}$, $\overline{1-\frac{o}{m}}$, $\overline{1-\frac{p}{m}}$, &c. The chance, therefore, that both will die in the firſt year will be $\overline{1-\frac{b}{a}} \times \overline{1-\frac{n}{m}} = 1-\frac{b}{a}-\frac{n}{m}+\frac{bn}{am}$, that both will die in the ſecond year $\overline{1-\frac{c}{a}} \times \overline{1-\frac{o}{m}} = 1-\frac{c}{a}-\frac{o}{m}+\frac{co}{am}$, and ſo on for the other years. If each of theſe expreſſions be ſubtracted from unity, we ſhall have $\frac{b}{a}+\frac{n}{m}-\frac{bn}{am}$ for the chance that they will *not* both die, that is, that one or other of them will live to the end of the firſt year, $\frac{c}{a}+\frac{o}{m}-\frac{oc}{am}$ for the chance that they will *not* both die in two years, &c. By continuing theſe expreſſions for as many years as are equal to the difference between the age of the younger life and of the oldeſt life in the table, and multiplying them reſpectively into 1*l.* diſcounted for one, two, three, &c. years, we ſhall have the whole value of an annuity on the longeſt of the two lives. Let $\frac{1}{r}$, $\frac{1}{r^2}$, $\frac{1}{r}$, be 1*l.* diſcounted for one, two, three, &c. years, and the ſeries expreſſing the annuity will be $\frac{b}{ar}+\frac{c}{ar^2}+\frac{d}{ar^3}+$ &c. .... $+\frac{n}{mr}+\frac{o}{mr^2}+\frac{p}{mr^3}+$ &c. $-\frac{bn}{amr}-\frac{co}{amr^2}-\frac{dp}{amr^3}-$ &c. But the firſt of theſe ſeries is the value of an annuity of 1*l.* on the younger life, the ſecond the value of the like annuity on the older life, and the third the value of the ſame on the two joint lives: whence it follows, that if "from the ſum of the values of the two ſingle lives we ſubtract the value of the two joint lives, the remainder will be the value of an annuity on the longeſt of the two lives."

Example.—Let the ages of the two lives be 20 and 30, and let intereſt be reckoned at 4*l.* *per cent.* The value by Table VI. of a life of 20 is 16.033, and of a life of 30 is 14.781. The ſum of theſe two values is 30.814. The value of the joint lives by Table IX. is 11.873; and this value ſubtracted from 30.814, leaves 18.941 for the value of an annuity on the longeſt of the two lives.

This account leads to an eaſy explanation of the method of finding the value of reverſionary life-annuities mentioned at the beginning of this article, that is, of life-annuities which are to commence on the ſurvivorſhip of one or more lives beyond others. See Reversions and Survivorships.

Problem I.—To approximate to the value of a given life according to any given table of obſervations.

Solution.—Take the difference between twice the expectation of the given life by the given table, and 86; and the value deduced from M. De Moivre's Table of the values of lives correſponding to that difference, provided it is not leſs than ten, will be the value of the life.

Example.—The expectation of a life aged 15 is, by the Northampton Table of Obſervations, (or Table IV. under the article Expectation,) $36\frac{1}{2}$. The difference between twice this number and 86 is 13. And the value correſponding to the age of 13 in M. De Moivre's Table of the values of lives (or Table IV.) is 16.604, reckoning intereſt at 4 *per cent.*; and this is nearly the value of a life aged 15, by the Northampton Table.

Scholium.—It muſt be remembered that this rule is only an approximation, and ſhould not be uſed except when recourſe cannot be had to tables giving the values of lives agreeable to given obſervations. The method of calculating ſuch tables has been before particularly explained.

Problem II.—To determine the value of any two joint lives by M. De Moivre's hypotheſis, or on the ſuppoſition of an equal decrement of life, through all its ſtages.

Solution.—This value is expreſſed by the ſeries $\frac{\overline{n-1}\cdot\overline{m-1}}{nmr} + \frac{\overline{n-2}\cdot\overline{m-2}}{nmr^2} + \frac{\overline{n-3}\cdot\overline{m-3}}{nmr^3} + \ldots\ldots (m)$ ſuppoſing n to be the complement of the younger, and m the complement of the older life, which Mr. Simpſon has given in his Treatiſe on Annuities, and Mr. Morgan in his edition of Dr. Price's Treatiſe on Reverſionary Payments, note L, appendix, has demonſtrated to be $= V - \frac{V+1}{n} \times \overline{\overline{n-m}-\overline{2V-1} \times \frac{P}{m}} + 2V$, V being the perpetuity, and P the value of an annuity certain for m years. From this theorem may be deduced the following rule. Reſerve the difference between the complement of the *youngeſt* life and the complement of the *oldeſt* life increaſed by unity and by twice the perpetuity. Multiply this difference by the value of an annuity certain for a time equal to the complement of the oldeſt life; and by this complement divide the product, reſerving the quotient. From twice the perpetuity ſubtract the reſerved quotient, and multiply the remainder by the perpetuity increaſed by unity. This laſt product divided by the complement of the youngeſt life, and then ſubtracted from the perpetuity, will be the required value. *Example.*—Let the joint lives be 10 and 15. Their complements by M. De Moivre's hypotheſis are 76 and 71. The complement of the oldeſt life, increaſed by unity and twice the perpetuity, (or twice 25, reckoning intereſt at 4 *per cent.*) is 122; which leſſened by 76, the complement of the youngeſt life, leaves 46 for the reſerved difference. This difference multiplied by 23.456, (the value of an annuity certain for 71 years, by Table III. Annuities,) and the product divided by 71, (the complement of the oldeſt life,) gives 15.196, the quotient to be reſerved; which ſubtracted from double the perpetuity (or from 50), and the remainder (or 34.803) multiplied by the perpetuity increaſed by unity (or by 26), gives 904.878; which divided by 76 (the complement of the youngeſt life), and the quotient ſubtracted from the perpetuity, we have 13.093 for the value of two joint lives aged 10 to 15, by M. De Moivre's hypotheſis.

By this rule, Table V. in the following collection of tables, was computed by Dr. Price. (See his Treatiſe on Reverſionary Payments.) To this he was induced by the conſideration, that there was no table extant at that time of the values of *joint* lives, except Mr. Simpſon's for London, (Table III. in this collection,) which being founded on the ſtate of human mortality in one of the worſt of all ſituations, or among the inhabitants of London taken in the groſs, was by no means fitted for general uſe. The truth alſo is, as hath been before obſerved, that neither do the tables formed from M. De Moivre's hypotheſis give the values of ſingle and joint lives with the exactneſs neceſſary to adapt them properly to general uſe; nor can it indeed be ever neceſſary to have recourſe to them, as we are now poſſeſſed of thoſe tables, deduced from real obſervations, which are inſerted at the end of this collection.

Problem III.—To determine the value of an annuity on a given life for any number of years.

Solution.—Find the value of a life as many years older than the given life as are equal to the term for which the annuity is propoſed. Multiply this value by 1 *l.* payable at the end of this term, and alſo by the probability that the life will continue ſo long. Subtract the product from the preſent value of the life; and the remainder multiplied by the annuity will be the anſwer.

Example.—Let the annuity be 10 *l.*, the rate of intereſt 4 *l. per cent.*, the age of the given life 30 years, and the term propoſed 15 years. The value of a life aged 45 (or 15 years older than the given life) appears by Table VI. to be 12.283. The value of 1 *l.* payable at the end of 15 years (by Table II. under Annuities) is .5553, and the probability that the life will exiſt ſo long is (by Table III. under the article Expectation) $\frac{3243}{4385}$. Theſe three quantities multiplied into each other are equal to 5.051, which being ſubtracted from 14.781, (the preſent value of the given life by Table VI.) we have 9.730; and this remainder multiplied into 10 (the annuity) gives 97.30 *l.* for the value required.

Problem IV.—To approximate to the value of an annuity for three joint lives, A, B, and C.

Solution.—Let A be the youngeſt, and C the oldeſt of the three propoſed lives. Take the value of the two joint lives B and C, and find the age of a ſingle life D of the ſame value. Then find the value of the joint lives A and D, which will be the anſwer.

Example.—Let the three given ages be 20, 30, and 60. The value, reckoning intereſt at 4 *per cent.*, of the two oldeſt joint lives B and C (by Table XIII.) is 7.802, anſwering nearly to a ſingle life D of 65 years (by Table VI.); and the value of the joint lives A and D (by Table XVI.) is 6.986, which will be the value required.

This rule was firſt given by Mr. Simpſon in his Select Exerciſes; and the following compariſon, taken from Dr. Price's Treatiſe on Reverſionary Payments, will ſhew its correctneſs.

Ages.	Value by rule at 4 per cent.	Correct Value.	Ages.	Value by rule at 4 per cent.	Correct Value.
10 20 30	10.563	10.438	10 10 10	12.244	12.200
15 25 35	9.840	9.738	20 20 20	10.504	10.342
20 30 40	9.085	8.986	30 30 30	9.351	9.221
30 40 50	7.651	7.571	40 40 40	7.984	7.865
40 50 60	6.046	5.994	50 50 50	6.432	6.317
50 60 70	4.238	4.219	60 60 60	4.816	4.755
55 65 75	3.292	3.298	70 70 70	3.000	2.995
			75 75 75	2.110	2.119

Problem V.—To find the value of an annuity on the longeſt of three lives, A, B, and C.

Solution.—Let a, b, c, d, &c. be the number of perſons living in the table at the age of A, at the beginning of the firſt, ſecond, third, &c. years; m, n, o, p, &c. the ſame numbers at the age of B; and s, t, u, w, &c. the like numbers at the age of C, the older of the three lives. By reaſoning as in the caſe of the longeſt of *two* lives, the probability that A, B, and C, will die in one, two, three, &c. years, will be $\overline{1-\frac{b}{a}} \times \overline{1-\frac{n}{m}} \times \overline{1-\frac{t}{s}} \ldots\ldots \overline{1-\frac{c}{a}} \times \overline{1-\frac{o}{m}} \times \overline{1-\frac{u}{s}} \ldots \overline{1-\frac{d}{a}} \times \overline{1-\frac{p}{m}} \times \overline{1-\frac{w}{s}}$ &c. $= 1-\frac{b}{a}-\frac{n}{m}-\frac{t}{s}+\frac{bn}{am}+\frac{bt}{as}+\frac{nt}{ms}-\frac{bnt}{ams} \ldots\ldots 1-\frac{c}{a}-\frac{o}{m}-\frac{u}{s}+\frac{co}{am}+\frac{cu}{as}+\frac{ou}{ms}+\frac{cou}{ams} \ldots\ldots$ &c. which being ſeverally ſubtracted from unity, the reſpective remainders, or $\frac{b}{a}+\frac{n}{m}+\frac{t}{s}-\frac{bn}{am}-\frac{bt}{as}-\frac{nt}{ms}+\frac{bnt}{ams} \ldots\ldots \frac{c}{a}+\frac{o}{m}+\frac{u}{s}-\frac{co}{am}-\frac{cu}{as}-\frac{ou}{ms}+\frac{cou}{ams} \ldots\ldots$ &c. will expreſs the probability that one or other of them will live to the end of one, two, three, &c. years. Theſe fractions being multiplied into $\frac{1}{r}$, $\frac{1}{r^2}$, &c. we have $\frac{b}{ar}+\frac{c}{ar^2}+\frac{d}{ar^3}$, &c. $+\frac{n}{mr}+\frac{o}{mr^2}+\frac{p}{mr^3}+$ &c. $\ldots\ldots +\frac{t}{sr}+\frac{u}{sr^2}+\frac{w}{sr^3}$, &c. $\ldots\ldots -\frac{bn}{amr}-\frac{co}{amr^2}-\frac{dp}{amr^3}$, &c. $-\frac{bt}{asr}-\frac{cu}{asr^2}-\frac{dw}{asr^3}$, &c. $-\frac{nt}{msr}-\frac{ou}{msr^2}-\frac{pw}{msr^3}$, &c. $+\frac{bnt}{amsr}+\frac{cou}{amsr^2}+\frac{dpw}{amsr^3}$, &c. for the value required. Therefore the value of an annuity on the longeſt of the three lives, A, B, and C, is equal to the "ſum of each pair of the two joint lives, ſubtracted from the ſum of the three ſingle lives, added to the value of the three joint lives."

Example.—Let the ages of A, B, and C, be 20, 30, and 60, reſpectively, and intereſt of money 4*l. per cent.* By Table IX. the value of the two joint lives A and B is 11.873, of B and C 7.802, and by Table XIII. of A and C 7.995, The ſum of theſe three values is 27.67. By Table VI. the value of the ſingle life of A is 16.033, of B 14.781, of C 9.039. By Problem V. the value of the three joint lives is 6.986. Theſe four values added together are equal to 46.839; from which deducting 27.67, the value of each pair of joint lives found above, we have 19.169 for the value ſought.

Problem VI.—To find the value of an annuity granted upon three lives, A, B, and C, on condition of its ceaſing as ſoon as any two of them become extinct.

Solution.—This annuity muſt be paid during the three joint lives, which may be expreſſed by A B C; alſo, during the two joint lives of A and B, after C; during the two joint lives of A and C, after B; and during the two joint lives of B and C, after A. Theſe laſt three values are reſpectively equal to $\overline{AB-ABC}$, $\overline{AC-ABC}$, and $\overline{BC-ABC}$. (See article REVERSIONS.) Conſequently the whole value will be A B + A C + B C − 2 A B C; therefore find the value of each pair of joint lives, *viz.* of A and B, of A and C, and of B and C. Then from the ſum of theſe three values let twice the value of the three joint lives, A, B, and C, be deducted, and the remainder will be the anſwer.

Example.—Let the ages of A, B, and C, reſpectively be 20, 30, and 60. By Tables IX. and XIII. the value of the joint lives,

$$\left.\begin{matrix} A,\ B \\ A,\ C \\ B,\ C \end{matrix}\right\} \text{will be} \left\{\begin{matrix} 11.873 \\ 7.995 \\ 7.802 \end{matrix}\right.$$

the ſum of which three numbers is 27.670. Moreover, the value of the three joint lives, A, B, and C, by problem V. is 6.986; therefore 13.698 is the value required.

See on this ſubject Simpſon's Doctrine of Life Annuities, Dr. Price's Treatiſe on Reverſionary Payments, Mr. Baron Maſeres on Life Annuities, and Mr. Morgan on the Doctrine of Life Annuities and Aſſurances.

TABLE I.

Shewing the probabilities of the duration of life, as deduced by Dr. Halley from obſervations on the bills of mortality at Breſlaw in Sileſia.

Ages.	Perſons living.	Dec. of Life.	Ages.	Perſons living.	Dec. of Life.	Ages.	Perſons living.	Dec. of Life.
1	1000	145	31	523	8	61	232	10
2	855	57	32	515	8	62	222	10
3	798	38	33	507	8	63	212	10
4	760	28	34	499	9	64	202	10
5	732	22	35	490	9	65	192	10
6	710	18	36	481	9	66	182	10
7	692	12	37	472	9	67	172	10
8	680	10	38	463	9	68	162	10
9	670	9	39	454	9	69	152	10
10	661	8	40	445	9	70	142	11
11	653	7	41	436	9	71	131	11
12	646	6	42	427	10	72	120	11
13	640	6	43	417	10	73	109	11
14	634	6	44	407	10	74	98	10
15	628	6	45	397	10	75	88	10
16	622	6	46	387	10	76	78	10
17	616	6	47	377	10	77	68	10
18	610	6	48	367	10	78	58	9
19	604	6	49	357	11	79	49	8
20	598	6	50	346	11	80	41	7
21	592	6	51	335	11	81	34	6
22	586	7	52	324	11	82	28	5
23	579	6	53	313	11	83	23	4
24	573	6	54	302	10	84	19	4
25	567	7	55	292	10	85	15	4
26	560	7	56	282	10	86	11	3
27	553	7	57	272	10	87	8	3
28	546	7	58	262	10	88	5	2
29	539	8	59	252	10	89	3	2
30	531	8	60	242	10	90	1	1

TABLE II.

Shewing the value of an annuity on one life, according to the probabilities of life in London, as given in Table I. under the article EXPECTATION.

Age.	Year's purchaſe at 3 per cent.	Year's purchaſe at 4 per cent.	Year's purchaſe at 5 per cent.	Age.	Year's purchaſe at 3 per cent.	Year's purchaſe at 4 per cent.	Year's purchaſe at 5 per cent.	Age.	Year's purchaſe at 3 per cent.	Year's purchaſe at 4 per cent.	Year's purchaſe at 5 per cent.
6	18.8	16.2	14.1	31	14.8	12.9	11.4	56	10.1	9.1	8.4
7	18.9	16.3	14.2	32	14.6	12.7	11.3	57	9.9	8.9	8.2
8	19.0	16.4	14.3	33	14.4	12.6	11.2	58	9.6	8.7	8.1
9	19.0	16.4	14.3	34	14.2	12.4	11.0	59	9.4	8.6	8.0
10	19.0	16.4	14.3	35	14.1	12.3	10.9	60	9.2	8.4	7.9
11	19.0	16.4	14.3	36	13.9	12.1	10.8	61	8.9	8.2	7.7
12	18.9	16.3	14.2	37	13.7	11.9	10.6	62	8.7	8.1	7.6
13	18.7	16.2	14.1	38	13.5	11.8	10.5	63	8.5	7.9	7.4
14	18.5	16.0	14.0	39	13.3	11.6	10.4	64	8.3	7.7	7.3
15	18.3	15.8	13.9	40	13.2	11.5	10.3	65	8.0	7.5	7.1
16	18.1	15.6	13.7	41	13.0	11.4	10.2	66	7.8	7.3	6.9
17	17.9	15.4	13.5	42	12.8	11.2	10.1	67	7.6	7.1	6.7
18	17.6	15.2	13.4	43	12.6	11.1	10.0	68	7.4	6.9	6.6
19	17.4	15.0	13.2	44	12.5	11.0	9.9	69	7.1	6.7	6.4
20	17.2	14.8	13.0	45	12.3	10.8	9.8	70	6.9	6.5	6.2
21	17.0	14.7	12.9	46	12.1	10.7	9.7	71	6.7	6.3	6.0
22	16.8	14.5	12.7	47	12.9	10.5	9.5	72	6.5	6.1	5.8
23	16.5	14.3	12.6	48	11.8	10.4	9.4	73	6.2	5.9	5.6
24	16.3	14.1	12.4	49	11.6	10.2	9.3	74	5.9	5.6	5.4
25	16.1	14.0	12.3	50	11.4	10.1	9.2	75	5.6	5.4	5.2
26	15.9	13.8	12.1	51	11.2	9.9	9.0				
27	15.6	13.6	12.0	52	11.0	9.8	8.9				
28	15.4	13.4	11.8	53	10.7	9.6	8.8				
29	15.2	13.2	11.7	54	10.5	9.4	8.6				
30	15.0	13.1	11.6	55	10.3	9.3	8.5				

TABLE III.

Shewing the value of an annuity on the joint continuance of any two lives, according to the probabilities of life in London, as given in Table I. under the article EXPECTATION.

Age of the youngeſt.	Age of the eldeſt.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.
10	10	14.7	13.0	11.6
	15	14.3	12.7	11.3
	20	13.8	12.2	10.8
	25	13.1	11.6	10.2
	30	12.3	10.9	9.7
	35	11.5	10.2	9.1
	40	10.7	9.6	8.6
	45	10.0	9.0	8.1
	50	9.3	8.4	7.6
	55	8.6	7.8	7.1
	60	7.8	7.2	6.6
	65	6.9	6.5	6.1
	70	6.1	5.8	5.5
	75	5.3	5.1	4.9
15	15	13.9	12.3	11.0
	20	13.3	11.8	10.5
	25	12.6	11.2	10.1
	30	11.9	10.6	9.5
	35	11.2	10.0	9.0
	40	10.4	9.4	8.5
	45	9.6	8.8	8.0
	50	8.9	8.2	7.5
	55	8.2	7.6	7.0
	60	7.5	7.0	6.5
	65	6.8	6.4	6.0
	70	6.0	5.7	5.4
	75	5.2	5.0	4.8
20	20	12.8	11.3	10.1
	25	12.2	10.8	9.7
	30	11.6	10.3	9.2
	35	10.9	9.8	8.8
	40	10.2	9.2	8.4
	45	9.5	8.6	7.9
	50	8.8	8.0	7.4
	55	8.1	7.5	6.9
	60	7.4	6.9	6.4
	65	6.7	6.3	5.9
	70	6.0	5.7	5.4
	75	5.2	5.0	4.8
25	25	11.8	10.5	9.4
	30	11.3	10.1	9.0
	35	10.7	9.6	8.6
	40	10.0	9.1	8.2
	45	9.4	8.5	7.8
	50	8.7	7.9	7.3
	55	8.0	7.4	6.8
	60	7.3	6.8	6.3
	65	6.6	6.2	5.8
	70	5.9	5.6	5.3
	75	5.1	4.9	4.7
30	30	10.8	9.6	8.6
	35	10.3	9.2	8.3
	40	9.7	8.8	8.0
	45	9.1	8.3	7.6
	50	8.5	7.8	7.2
	55	7.9	7.3	6.7
	60	7.2	6.7	6.2
	65	6.5	6.1	5.7
	70	5.8	5.5	5.2
	75	5.1	4.9	4.7
35	35	9.9	8.8	8.0
	40	9.4	8.5	7.7
	45	8.9	8.1	7.4
	50	8.3	7.6	7.0
	55	7.7	7.1	6.6
	60	7.1	6.5	6.1
	65	6.4	6.0	5.6
	70	5.7	5.4	5.1
	75	5.0	4.8	4.6
40	40	9.1	8.1	7.3
	45	8.7	7.8	7.1
	50	8.2	7.4	6.8
	55	7.6	6.9	6.4
	60	7.0	6.4	6.0
	65	6.4	5.9	5.5
	70	5.7	5.4	5.1
	75	5.0	4.8	4.6
45	45	8.3	7.4	6.7
	50	7.9	7.1	6.5
	55	7.4	6.7	6.2
	60	6.8	6.3	5.8
	65	6.3	5.8	5.4
	70	5.6	5.3	5.0
	75	4.9	4.7	4.5
50	50	7.6	6.8	6.2
	55	7.2	6.5	6.0
	60	6.7	6.1	5.7
	65	6.2	5.7	5.3
	70	5.5	5.2	4.9
	75	4.8	4.6	4.4
55	55	6.9	6.2	5.7
	60	6.5	5.9	5.5
	65	6.0	5.6	5.4
	70	5.4	5.1	4.8
	75	4.7	4.5	4.3
60	60	6.1	5.6	5.2
	65	5.7	5.3	4.9
	70	5.2	4.9	4.6
	75	4.6	4.4	4.2
65	65	5.4	5.0	4.7
	70	4.9	4.6	4.4
	75	4.4	4.2	4.0
70	70	4.6	4.4	4.2
	75	4.2	4.0	3.9
75	75	3.8	3.7	3.6

TABLE IV.

Shewing the preſent value of an annuity of 1 *l.* on a ſingle life, according to M. De Moivre's hypotheſis.

Age.	3 per ct.	3½ per ct.	4 per ct.	4½ per ct.	5 per ct.	6 per ct.
8	19.736	18.160	16.791	15.595	14.544	12.790
9	19.868	18.269	16.882	15.672	14.607	12.839
10	19.868	18.269	16.882	15.672	14.607	12.839
11	19.736	18.160	16.791	15.595	14.544	12.790
12	19.604	18.049	16.698	15.517	14.480	12.741
13	19.469	17.937	16.604	15.437	14.412	12.691

Age.	3 per ct.	3½ per ct.	4 per ct.	4½ per ct.	5 per ct.	6 per ct.
14	19.331	17.823	16.508	15.356	14.342	12.639
15	19.192	17.707	16.410	15.273	14.271	12.586
16	19.050	17.588	16.311	15.189	14.197	12.532
17	18.905	17.467	16.209	15.102	14.123	12.476
18	18.759	17.344	16.105	15.015	14.047	12.419
19	18.610	17.220	15.999	14.923	13.970	12.361
20	18.458	17.093	15.891	14.831	13.891	12.301
21	18.305	16.963	15.781	14.737	13.810	12.239
22	18.148	16.830	15.669	14.641	13.727	12.177
23	17.990	16.696	15.554	14.543	13.642	12.112
24	17.827	16.559	15.437	14.442	13.555	12.045
25	17.664	16.419	15.318	14.340	13.466	11.978
26	17.497	16.277	15.197	14.235	13.375	11.908
27	17.327	16.133	15.073	14.128	13.282	11.837
28	17.154	15.985	14.946	14.018	13.186	11.763
29	16.979	15.835	14.816	13.905	13.088	11.688
30	16.800	15.682	14.684	13.791	12.988	11.610
31	16.620	15.526	14.549	13.673	12.855	11.530
32	16.436	15.367	14.411	13.553	12.780	11.449
33	16.248	15.204	14.270	13.430	12.673	11.365
34	16.057	15.039	14.126	13.304	12.562	11.278
35	15.864	14.871	13.979	13.175	12.449	11.189
36	15.666	14.699	13.8[illegible]9	13.044	12.333	11.098
37	15.465	14.524	13.676	12.909	12.214	11.003
38	15.260	14.345	13.519	12.771	12.091	10.907
39	15.053	14.163	13.359	12.630	11.966	10.807
40	14.842	13.978	13.196	12.485	11.837	10.704
41	14.626	13.789	13.028	12.337	11.705	10.599
42	14.407	13.596	12.858	12.185	11.570	10.490
43	14.185	13.399	12.683	12.029	11.431	10.378
44	13.958	13.199	12.504	11.870	11.288	10.263
45	13.728	12.993	12.322	11.707	11.142	10.144
46	13.493	12.784	12.135	11.540	10.992	10.021
47	13.254	12.571	11.944	11.368	10.837	9.895
48	13.012	12.354	11.748	11.192	10.679	9.765
49	12.764	12.131	11.548	11.012	10.515	9.630
50	12.511	12.004	11.344	10.827	10.348	9.492
51	12.255	11.673	11.135	10.638	10.176	9.349
52	11.994	11.437	10.921	10.443	9.999	9.201
53	11.729	11.195	10.702	10.243	9.817	9.049
54	11.457	10.950	10.478	10.039	9.630	8.891
55	11.183	10.698	10.248	9.829	9.437	8.729
56	10.902	10.443	10.0[illegible]4	9.614	9.239	8.561
57	10.616	10.181	9.773	9.393	9.036	8.387
58	10.325	9.913	9.527	9.166	8.826	8.208
59	10.029	9.640	9.275	8.933	8.611	8.023
60	9.727	9.361	9.017	8.694	8.389	7.831
61	9.419	9.076	8.753	8.449	8.161	7.633
62	9.107	8.786	8.482	8.197	7.926	7.428
63	8.787	8.488	8.205	7.938	7.684	7.216
64	8.462	8.185	7.921	7.672	7.435	6.997
65	8.132	7.875	7.631	7.399	7.179	6.770
66	7.794	7.558	7.333	7.119	6.915	6.535
67	7.450	7.234	7.027	6.831	6.643	6.292
68	7.099	6.902	6.714	6.534	6.362	6.040
69	6.743	6.565	6.394	6.230	6.073	5.779
70	6.378	6.219	6.065	5.918	5.775	5.508
71	6.008	5.865	5.728	5.596	5.468	5.228
72	5.631	5.505	5.383	5.265	5.152	4.937
73	5.246	5.136	5.029	4.926	4.826	4.636
74	4.854	4.759	4.666	4.576	4.489	4.324
75	4.453	4.373	4.293	4.217	4.143	4.000
76	4.046	3.978	3.912	3.847	3.784	3.664
77	3.632	3.575	3.520	3.467	3.415	3.315
78	3.207	3.163	3,111	3.076	3.034	2.953
79	2.776	2.741	2.707	2.673	2.641	2.578
80	2.334	2.309	2.284	2.259	2.235	2.188
81	1.886	1.867	1.850	1.832	1.816	1.783
82	1.429	1.411	1.406	1.394	1.384	1.362
83	0.961	0.955	0.950	0.943	0.937	0.925
84	0.484	0.483	0.481	0.479	0.476	0.472
85	0.000	0.000	0.000	0.000	0.000	0.000

This Table is the ſame with M. De Moivre's Table of the values of ſingle lives, publiſhed in his Treatiſe on Life Annuities, and carried as far as the age of 79 to three places of decimals, by Mr. Dodſon, in his Mathematical Repoſitory, vol. ii. p. 169.

TABLE V.

Shewing the value of an annuity on the joint continuance of two lives, according to M. De Moivre's hypotheſis.

Age of the youngeſt.	Age of the eldeſt.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.
10	10	15.206	13.342	11.855
	15	14.878	13.093	11.661
	20	14.503	12.808	11.430
	25	14.074	12.480	11.182
	30	13.585	12.102	10.884
	35	13.025	11.665	10.537
	40	12.381	11.156	10.128
	45	11.644	10.564	9.646
	50	10.796	9.871	9.074
	55	9.822	9.059	8.391
	60	8.704	8.105	7.572
	65	7.417	6.980	6.585
	70	5.936	5.652	5.391
15	15	14.574	12.860	11.478
	20	14.225	12.593	11.266
	25	13.822	12.281	11.022
	30	13.359	11.921	10.736
	35	12.824	11.501	10.402
	40	12.207	11.013	10.008
	45	11.496	10.440	9.541
	50	10.675	9.767	8.985
	55	9.727	8.975	8.318
	60	8.632	8.041	7.515
	65	7.377	6.934	6.544
	70	5.932	5.623	5.364
20	20	13.904	12.341	11.067
	25	13.531	12.051	10.840
	30	13.098	11.711	10.565
	35	12.594	11.314	10.278
	40	12.008	10.847	9.870

Age of the youngeſt.	Age of the eldeſt.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.
20	45	11.325	10.297	9.420
	50	10.536	9.648	8.880
	55	9.617	8.879	8.233
	60	8.549	7.967	7.448
	65	7.308	6.882	6.495
	70	5.868	5.590	5.333
25	25	13.192	11.786	10.621
	30	12.794	11.468	10.367
	35	12.333	11.093	10.067
	40	11.776	10.655	9.708
	45	11.130	10.131	9.278
	50	10.374	9.509	8.761
	55	9.488	8.766	8.134
	60	8.452	7.880	7.371
	65	7.241	6.826	6.440
	70	5.826	5.551	5.294
30	30	12.434	11.182	10.133
	35	12.010	10.838	9.854
	40	11.502	10.428	9.514
	45	10.898	9.936	9.112
	50	10.183	9.345	8.620
	55	9.338	8.634	8.018
	60	8.338	7.779	7.280
	65	7.161	6.748	6.373
	70	5.777	5.505	5.254
35	35	11.632	10.530	9.600
	40	11.175	10.157	9.291
	45	10.622	9.702	8.913
	50	9.955	9.149	8.450
	55	9.156	8.476	7.879
	60	8.202	7.658	7.172
	65	7.066	6.662	6.294
	70	5.718	5.450	5.203
40	40	10.777	9.826	9.014
	45	10.283	9.418	8.671
	50	9.677	8.911	8.244
	55	8.936	8.283	7.710
	60	8.038	7.510	7.039
	65	6.951	6.556	6.198
	70	5.646	5.383	5.141
45	45	9.863	9.063	8.370
	50	9.331	8.619	7.987
	55	8.662	8.044	7.500
	60	7.831	7.332	6.875
	65	6.807	6.425	6.080
	70	5.556	5.300	5.063
50	50	8.892	8.235	7.660
	55	8.312	7.738	7.230
	60	7.568	7.091	6.664
	65	6.623	6.258	5.926
	70	5.442	5.193	4.964
55	55	7.849	7.332	6.873
	60	7.220	6,781	6.386
	65	6.379	6,036	5.724
	70	5.201	5.053	4.833

Age of the youngeſt.	Age of the eldeſt.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.
60	60	6.737	6.351	6.001
	65	6.043	5.730	5.444
	70	5.081	4.858	4.653
65	65	5.547	5.277	5.031
	70	4.773	4.571	4.385
70	70	4.270	4.104	3.952

TABLE VI.

Shewing the value of an annuity on any ſingle life, according to the probabilities of living at Northampton, as given in Table III. under the article EXPECTATION. Intereſt reckoned at 3, 4, 5, 6, 7 and 8 *per cent.*

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.	Value at 7 per cent.	Value at 8 per cent.
Birth		10.327	8.863			
½ year		13.008	11.274			
1	16.021	13.465	11.563	10.107	8.963	8.046
2	18.599	15.633	13.420	11.724	10.391	9.321
3	19.575	16.462	14.135	12.348	10.941	9.812
4	20.210	17.010	14.613	12.769	11.315	10.147
5	20.473	17.248	14.827	12.962	11.489	10.304
6	20.727	17.482	15.041	13.156	11.666	10.466
7	20.853	17.611	15.166	13.275	11.777	10.570
8	20.885	17.662	15.226	13.337	11.840	10.631
9	20.812	17.625	15.210	13.335	11.846	10.641
10	20.663	17.523	15.139	13.285	11.809	10.614
11	20.480	17.393	15.043	13.212	11.752	10.569
12	20.283	17.251	14.937	13.130	11.687	10.517
13	20.081	17.103	14.826	13.044	11.618	10.461
14	19.872	16.950	14.710	12.953	11.545	10.401
15	19.657	16.791	14.588	12.857	11.467	10.337
16	19.435	16.625	14.460	12.755	11.384	10.268
17	19.218	16.462	14.334	12.655	11.302	10.200
18	19.013	16.309	14.217	12.562	11.226	10.137
19	18.820	16.167	14.108	12.477	11.157	10.081
20	18.638	16.033	14.007	12.398	11.094	10.030
21	18.470	15.912	13.917	12.329	11.042	9.986
22	18.311	15.797	13.833	12.265	10,993	9.947
23	18.148	15.680	13.746	12.200	10.942	9.907
24	17.983	15.560	13.658	12.132	10.890	9.865
25	17.814	15.438	13.567	12.063	10.836	9.823
26	17.642	15.312	13.473	11.992	10.780	9.778
27	17.467	15.184	13.377	11.917	10.723	9.732
28	17.289	15.053	13.278	11.841	10.663	9.685
29	17.107	14.918	13.177	11.763	10.602	9.635
30	16.922	14.781	13.072	11.682	10.539	9.584
31	16.732	14.639	12.965	11.598	10.473	9.531
32	16,540	14.495	12,854	11.512	10.404	9.476
33	16.343	14.347	12.740	11.423	10.333	9.418
34	16.142	14.195	12.623	11.331	10.260	9.359
35	15.938	14.039	12.502	11.236	10.183	9.296
36	15.729	13.889	12.377	11.137	10.104	9.231
37	15.515	13.716	12.249	11.035	10.021	9.164
38	15.298	13.548	12.116	10.929	9.935	9.093
39	15.075	13.375	11.979	10.819	9.845	9.019

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.	Value at 7 per cent.	Value at 8 per cent.
40	14.848	13.197	11.837	10.705	9.752	8.941
41	14.620	13.018	11.695	10.589	9.657	8.863
42	14.391	12.838	11.551	10.473	9.562	8.783
43	14.162	12 657	11.407	10.356	9.466	8.703
44	13.929	12 472	11.258	10.235	9.366	8.620
45	13.692	12.283	11.105	10.110	9.262	8.533
46	13.450	12.089	10.947	9.980	2.154	8.443
47	13.203	11.890	10.784	9.846	9.042	8.348
48	12.951	11.685	10.616	9.707	8.925	8.249
49	12.693	11 475	10.443	9.563	8.804	8.146
50	12.436	11.264	10.269	9.417	8.681	8.041
51	12.183	11.057	10.097	9.273	8.559	7.937
52	11.930	10.849	9.925	9.129	8.437	7.833
53	11.674	10.637	9.748	8.980	8.311	7.725
54	11.414	10.421	9.567	8.827	8.181	7.614
55	11.150	10.201	9.382	8.670	8.047	7.499
56	10.882	9.977	9.193	8.509	7.909	7.379
57	10.611	9.749	8.999	8.343	7.766	7.256
58	10.337	9.516	8.801	8.173	7.619	7.128
59	10.058	9.280	8.599	7.999	7.468	6.996
60	9.777	9.039	8.392	7.820	7.312	6.860
61	9.493	8.795	8.181	7.637	7.152	6.719
62	9.205	8.547	7.966	7.449	6.988	6.574
63	8.910	8.291	7.742	7.253	6.815	6.421
64	8.611	8.030	7.514	7.052	6.637	6.262
65	8.304	7.761	7.276	6.841	6.449	6.095
66	7.994	7.488	7.034	6.625	6.256	5.922
67	7.682	7.211	6.787	6.405	6.058	5.743
68	7.367	6.930	6.536	6.179	5.855	5.559
69	7.051	6.647	6.281	5.949	5.646	5.370
70	6.734	6.361	6.023	5.716	5.434	5.176
71	6.418	6.075	5.764	5.479	5.218	4.978
72	6.103	5.790	5.504	5.241	5.000	4.778
73	5.794	5.507	5.245	5.004	4.781	4.576
74	5.491	5.230	4.990	4.769	4.565	4.375
75	5.199	4.962	4.744	4.542	4.354	4.180
76	4.925	4.710	4.511	4.326	4.154	3.994
77	4.652	4.457	4.277	4.109	3.952	3.806
78	4.372	4.197	4.035	3 884	3.742	3.609
79	4.077	3.921	3.776	3.641	3.514	3.394
80	3.781	3.643	3.515	3.394	3.281	3.174
81	3.499	3.377	3.263	3.156	3.055	2.960
82	3.229	3.122	3.020	2.926	2.836	2.751
83	2.982	2.887	2.797	2.713	2.632	2.557
84	2.793	2.708	2.627	2.551	2.479	2.410
85	2.620	2.543	2.471	2.402	2.337	2.275
86	2.462	2.393	2.328	2.266	2.207	2.151
87	2.312	2.251	2.193	2.138	2.085	2.035
88	2.185	2.131	2.080	2.031	1.984	1.939
89	2.013	1.967	1.924	1.882	1.842	1.803
90	1.794	1.758	1.723	1.689	1.656	1.625
91	1.501	1.474	1.447	1.422	1.398	1.374
92	1.190	1.171	1.153	1.136	1.118	1.102
93	0.839	0.827	0.816	0.806	0.795	0.785
94	0.536	0.530	0.524	0.518	0.512	0.507
95	4.242	0.240	0.238	0.236	0.234	0.232
96	0.000	0.000	0.000	0.000	0.000	0.000

TABLE VII.

Shewing the value of an annuity on the joint continuance of two lives, having the ſame common age, according to the Northampton Table of Obſervations.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1— 1	9.491	8.251	7.287	6.515
2— 2	12.789	11.107	9.793	8.741
3— 3	14.196	12.325	10.862	9.689
4— 4	15.181	13.185	11.621	10.365
5— 5	15.638	13.591	11.984	10.691
6— 6	16.099	14.005	12.358	11.031
7— 7	16.375	14.224	12.596	11.251
8— 8	16.510	14.399	12.731	11.382
9— 9	16.483	14.396	12.744	11.404
10—10	16.339	14.277	12.665	11.345
11—11	16.142	14.133	12.546	11.249
12—12	15.926	13.966	12.411	11.139
13—13	15.702	13.789	12.268	11.023
14—14	15.470	13.604	12.118	10.899
15—15	15.229	13.411	11.960	10.767
16—16	14.979	13.212	11.793	10.626
17—17	14.737	13.019	11.630	10.489
18—18	14.516	12.841	11.483	10.365
19—19	14.316	12.679	11.351	10.255
20—20	14.133	12.535	11.232	10.156
21—21	13.974	12.409	11.131	10.074
22—22	13.830	12.293	11.042	10.002
23—23	13.683	12.179	10.951	9.928
24—24	13.534	12.062	10.858	9.853
25—25	13.383	11.944	10.764	9.776
26—26	13.230	11.822	10.667	9.697
27—27	13.074	11.699	10.567	9.616
28—28	12.915	11.573	10.466	9.533
29—29	12.754	11.445	10.362	9.448
30—30	12.589	11.313	10.255	9.360
31—31	12.422	11.179	10.146	9.270
32—32	12.252	11.042	10.034	9.178
33—33	12.079	10.902	9.919	9.082
34—34	11.902	10.759	9.801	8.984
35—35	11.722	10.612	9.680	8.883
36—36	11.539	10.462	9.555	8.778
37—37	11.351	10.307	9.427	8.670
38—38	11.160	10.149	9.294	8.558
39—39	10.964	9.986	9.158	8.442
40—40	10.764	9.820	9.016	8.322
41—41	10.565	9.654	8.876	8.202
42—42	10.369	9.491	8.737	8.083
43—43	10.175	9.326	8.599	7.965
44—44	9.978	9.160	8.457	7.843
45—45	9.776	8.990	8.312	7.718
46—46	9.571	8.815	8.162	7.589
47—47	9.362	8.637	8.008	7.455
48—48	9.149	8.453	7.849	7.316
49—49	8.931	8.266	7.686	7.173
50—50	8.714	8.081	7.522	7.030
51—51	8.507	7.900	7.366	6.893
52—52	8.304	7.723	7.213	6.758
53—53	8.099	7.544	7.056	6.620
54—54	7.891	7.362	6.897	6.480
55—55	7.681	7.179	6.735	6.336
56—56	7.470	6.993	6.571	6.190
57—57	7.256	6.805	6.404	6.041

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
58—58	7.041	6.614	6.234	5.890
59—59	6.824	6.421	6.062	5.735
60—60	6.606	6.226	5.888	5.579
61—61	6.387	6.030	5.712	5.420
62—62	6.166	5.831	5.533	5.259
63—63	5.938	5.626	5.347	5.089
64—64	5.709	5.417	5.158	4.917
65—65	5.471	5.201	4.960	4.736
66—66	5.231	4.982	4.759	4.551
67—67	4.990	4.760	4.555	4.363
68—68	4.747	4.537	4.348	4.171
69—69	4.504	4.312	4.140	3.977
70—70	4.261	4.087	3.930	3.781
71—71	4.020	3.862	3.719	3.584
72—72	3.781	3.639	3.510	3.387
73—73	3.548	3.421	3.304	3.193
74—74	3.324	3.211	3.105	3.005
75—75	3.114	3.015	2.917	2.827
76—76	2.920	2.833	2.750	2.668
77—77	2.741	2.656	2.583	2.511
78—78	2.550	2.470	2.410	2.346
79—79	2.338	2.271	2.217	2.161
80—80	2.122	2.068	2.018	1.969
81—81	1.917	1.869	1.827	1.786
82—82	1.719	1.681	1.642	1.606
83—83	1.538	1.510	1.472	1.441
84—84	1.416	1.387	1.357	1.330
85—85	1.309	1.339	1.256	1.232
86—86	1.218	1.195	1.171	1.149
87—87	1.141	1.124	1.098	1.078
88—88	1.103	1.030	1.063	1.044
89—89	1.036	1.015	1.001	0.984
90—90	0.938	0.922	0.909	0.895
91—91	0.769	0.756	0.748	0.737
92—92	0.591	0.583	0.576	0.569
93—93	0.369	0.365	0.361	0.357
94—94	0.203	0.201	0.199	0.197
95—95	0.060	0.060	0.059	0.058
96—96	0.000	0.000	0.000	0.000

TABLE VIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—6	12.347	10.741	9.479	8.467
2—7	14.461	12.581	11.100	9.911
3—8	15.300	13.319	11.755	10.498
4—9	15.809	13.775	12.165	10.869
5—10	15.974	13.933	12.315	11.010
6—11	16.110	14.068	12.447	11.136
7—12	16.137	14.111	12.498	11.192
8—13	16.089	14.089	12.492	11.197
9—14	15.957	13.992	12.421	11.144
10—15	15.762	13.841	12.302	11.048
11—16	15.538	13.664	12.158	10.929
12—17	15.308	13.480	12.009	10.805
13—18	15.086	13.303	11.864	10.685
14—19	14.870	13.130	11.723	10.568
15—20	14.660	12.961	11.585	10.453
16—21	14.457	12.799	11.452	10.342
17—22	14.265	12.646	11.327	10.239
18—23	14.082	12.500	11.209	10.140
19—24	13.908	12.361	11.096	10.048
20—25	13 741	12.229	10.989	9.960
21—26	13.584	12.105	10.890	9.879
22—27	13.433	11.987	10.796	9.803
23—28	13.280	11.866	10.699	9.724
24—29	13.124	11.743	10.600	9.643
25—30	12.966	11.618	10.499	9.561
26—31	12.805	11.489	10.396	9.476
27—32	12.641	11.359	10.289	9.389
28—33	12.474	11.225	10.181	9.299
29—34	12.304	11.088	10.069	9.207
30—35	12.131	10.948	9.954	9.112
31—36	11.955	10.805	9.837	9.014
32—37	11.775	10.659	9.716	8.913
33—38	11.592	10.508	9.591	8.808
34—39	11.404	10.354	9.463	8.701
35—40	11.213	10.196	9.331	8.589
36—41	11 021	10.037	9.198	8.476
37—42	10.828	9.877	9.062	8.362
38—43	10.635	9.716	8.927	8.246
39—44	10.437	9.550	8.787	8.127
40—45	10.236	9.381	8.643	8.003
41—46	10.033	9.210	8.497	7.878
42—47	9.829	9.037	8.350	7.751
43—48	9.624	8.862	8 200	7.621
44—49	9.414	8.683	8.046	7.488
45—50	9.204	8.503	7.891	7.353
46—51	8.997	8.326	7.737	7.219
47—52	8.790	8.147	7.582	7.084
48—53	8.579	7.965	7.424	6.945
49—54	8.366	7.780	7.262	6.802
50—55	8.152	7.593	7.098	6.658
51—56	7.941	7.409	6.936	6.515
52—57	7.730	7.225	6.774	6.371
53—58	7.518	7.039	6.609	6.225
54—59	7.304	6.850	6.442	6.076
55—60	7.088	6.659	6.272	5.924
56—61	6.870	6.465	6.100	5.770
57—62	6.651	6.270	5.925	5.613
58—63	6.427	6.070	5.744	5.450
59—64	6.201	5.867	5.561	5.284
60—65	5.970	5.658	5.372	5.112
61—66	5 737	5.447	5.180	4.938
62—67	5.503	5.285	4.986	4.760
63—68	5.265	5.017	4.786	4.576
64—69	5.025	4.798	4.585	4.390
65—70	4.783	4.573	4.378	4.199
66—71	4.540	4.349	4.169	4.005
67—72	4.298	4.124	3.960	3.811
68—73	4.059	3 901	3.752	3.616
69—74	3.825	3.683	3.347	3.423
70—75	3.599	3.471	3.347	3.236
71—76	3.386	3.270	3.159	3.059
72—77	3.176	3.070	2.971	2.882
73—78	2.963	2.869	2.780	2.701

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
74—79	2.743	2.659	2.580	2.511
75—80	2.526	2.448	2.381	2.323
76—81	2.325	2.258	2.195	2.147
77—82	2.131	2.077	2.013	1.975
78—83	1.947	1.899	1.838	1.810
79—84	1.793	1.751	1.750	1.672
80—85	1.645	1.608	1.573	1.539
81—86	1.511	1.478	1.447	1.417
82—87	1.385	1.256	1.329	1.303
83—88	1.284	1.259	1.235	1.212
84—89	1.188	1.164	1.145	1.124
85—90	1.074	1.054	1.038	1.021
86—91	0.921	0.902	0.892	0.879
87—92	0.756	0.738	0.734	0.725
88—93	0.562	0.554	0.547	0.541
89—94	0.377	0.373	0.369	0.365
90—95	0.179	0.177	0.175	0.174
91—96	0.000	0.000	0.000	0.000

TABLE IX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *ten* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—11	12.346	10.782	9.544	8.547
2—12	14.239	12.438	11.010	9.857
3—13	14.895	13.019	11.528	10.324
4—14	15.287	13.374	11.850	10.617
5—15	15.391	13.479	11.954	10.716
6—16	15.486	13.578	12.052	10.812
7—17	15.490	13.599	12.083	10.849
8—18	15.436	13.569	12.070	10.847
9—19	15.316	13.482	12.006	10.799
10—20	15.151	13.355	11.906	10.719
11—21	14.974	13.217	11.797	10.631
12—22	14.795	13.078	11.686	10.541
13—23	14.612	12.934	11.570	10.446
14—24	14.424	12.784	11.450	10.348
15—25	14.230	12.630	11.324	10.244
16—26	14.030	12.470	11.193	10.135
17—27	13.832	12.311	11.063	10.027
18—28	13.642	12.158	10.939	9.924
19—29	13.461	12.013	10.820	9.826
20—30	13.286	11.873	10.707	9.732
21—31	13.121	11.742	10.600	9.644
22—32	12.961	11.615	10.498	9.561
23—33	12.798	11.485	10.393	9.474
24—34	12.632	11.352	10.285	9.386
25—35	12.463	11.217	10.175	9.295
26—36	12.291	11.078	10.062	9.201
27—37	12.116	10.936	9.946	9.105
28—38	11.937	10.791	9.826	9.005
29—39	11.755	10.642	9.703	8.902
30—40	11.568	10.490	9.576	8.795
31—41	11.382	10.336	9.448	8.688
32—42	11.195	10.182	9.320	8.580
33—43	11.007	10.027	9.190	8.471
34—44	10.817	9.869	9.058	8.358
35—45	10.622	9.706	8.921	8.242
36—46	10.424	9.540	8.781	8.122
37—47	10.221	9.370	8.636	7.998
38—48	10.014	9.195	8.487	7.870
39—49	9.803	9.015	8.333	7.737
40—50	9.590	8.834	8.177	7.602
41—51	9.383	8.658	8.025	7.470
42—52	9.179	8.483	7.875	7.340
43—53	8.975	8.308	7.724	7.208
44—54	8.767	8.130	7.569	7.073
45—55	8.557	7.948	7.411	6.935
46—56	8.344	7.763	7.249	6.793
47—57	8.127	7.574	7.084	6.648
48—58	7.907	7.382	6.915	6.498
49—59	7.684	7.186	6.742	6.344
50—60	7.461	6.989	6.568	6.189
51—61	7.240	6.795	6.395	6.035
52—62	7.021	6.600	6.222	5.880
53—63	6.795	6.399	6.042	5.719
54—64	6.568	6.196	5.860	5.555
55—65	6.334	5.986	5.671	5.384
56—66	6.098	5.774	5.479	5.209
57—67	5.860	5.559	5.283	5.031
58—68	5.621	5.341	5.084	4.849
59—69	5.380	5.121	4.883	4.665
60—70	5.139	4.900	4.680	4.478
61—71	4.898	4.679	4.476	4.289
62—72	4.659	4.458	4.272	4.099
63—73	4.420	4.236	4.066	3.908
64—74	4.186	4.019	3.864	3.719
65—75	3.958	3.806	3.665	3.533
66—76	3.743	3.606	3.477	3.357
67—77	3.529	3.405	3.289	3.180
68—78	3.310	3.199	3.095	2.996
69—79	3.077	2.979	2.887	2.799
70—80	2.843	2.757	2.675	2.598
71—81	2.618	2.542	2.470	2.402
72—82	2.401	2.334	2.271	2.211
73—83	2.199	2.141	2.085	2.032
74—84	2.043	1.991	1.941	1.894
75—85	1.903	1.856	1.811	1.769
76—86	1.781	1.739	1.699	1.661
77—87	1.670	1.633	1.597	1.562
78—88	1.580	1.546	1.514	1.483
79—89	1.456	1.427	1.400	1.373
80—90	1.302	1.278	1.255	1.234
81—91	1.096	1.078	1.061	1.044
82—92	0.877	0.864	0.852	0.840
83—93	0.622	0.614	0.606	0.599
84—94	0.408	0.403	0.398	0.394
85—95	0.189	0.187	0.185	0.183
86—96	0.000	0.000	0.000	0.000

TABLE X.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *fifteen* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—16	11.864	10.406	9.243	8.301
2—17	13.659	11.981	10.642	9.555
3—18	14.277	12.531	11.134	9.998
4—19	14.657	12.876	11.447	10.284
5—20	14.776	12.993	11.561	10.391
6—21	14.904	13.121	11.685	10.510
7—22	14.950	13.178	11.748	10.576
8 23	14.929	13.178	11.761	10.597
9—24	14.834	13.112	11.715	10.566
10—25	14.683	12.998	11.627	10.497
11—26	14.508	12.861	11.519	10.410
12 27	14.323	12.715	11.402	10.314
13—28	14.132	12.564	11.280	10.215
14—29	13.936	12.408	11.153	10.110
15—30	13.734	12.246	11.021	10.001
16 31	13.527	12.078	10.883	9.886
17—32	13.320	11.911	10.746	9.771
18—33	13.121	11.750	10.613	9.660
19—34	12.930	11.595	10.486	9.554
20 35	12,744	11.445	10.363	9.451
21—36	12.567	11.302	10.246	9.354
22—37	12.394	11.163	10.132	9.260
23—38	12.218	11.020	10.015	9.163
24—39	12.038	10.874	9.895	9.063
25—40	11.854	10.725	9.771	8.960
26—41	11.670	10.574	9.647	8.855
27—42	11.486	10.423	9.522	8.751
28—43	11.302	10.272	9.396	8.645
29—44	11.114	10.117	9.267	8.536
30—45	10,923	9.959	9.135	8.424
31—46	10.728	9.797	8.998	8.309
32—47	10.530	9.631	8.858	8.189
33—48	10.327	9.461	8.714	8.066
34—49	10.120	9.286	8.565	7.938
35—50	9.912	9.110	8.415	7.809
36—51	9.707	8.937	8.267	7.681
37—52	9.503	8.763	8.119	7.553
38—53	9.296	8.586	7.966	7.421
39—54	9.085	8.406	7.810	7.286
40—55	8.870	8.221	7.651	7.146
41—56	8.655	8.035	7.489	7.005
42—57	8.439	7.848	7.326	6.862
43—58	8.222	7.660	7.162	6.718
44—59	8.003	7.469	6.994	6.570
45—60	7.781	7.274	6.822	6.418
46—61	7.556	7.076	6.648	6.263
47—62	7.328	6.875	6.469	6.104
48—63	7.093	6.667	6.283	5.937
49—64	6.854	6.454	6.093	5.767
50—65	6.611	6.236	5.897	5.590
51—66	6.369	6.019	5.701	5.412
52—67	6.127	5.801	5.504	5.233
53—68	5.884	5.580	5.303	5.050
54—69	5.638	5.357	5.100	4.864
55—70	5.391	5.132	4.893	4.674
56—71	5.145	4.905	4.685	4.482
57—72	4.899	4.679	4.477	4.289
58—73	4.656	4.455	4.269	4.096
59—74	4.418	4.234	4.064	3.906
60—75	4.189	4.021	3.866	3.721
61—76	3.974	3.821	3.679	3.546
62—77	3.760	3.621	3.492	3.371
63—78	3.538	3.414	3.297	3.188
64—79	3.323	3.192	3.088	2.990
65—80	3.063	2.965	2.873	2.786
66—81	2.833	2.746	2.664	2.587
67—82	2.610	2.533	2.461	2.393
68 - 83	2.403	2.336	2.272	2.211
69—84	2.244	2.183	2.126	2.071
70—85	2.097	2.042	1.991	1.941
71—86	1.963	1.914	1.867	1.823
72—87	1.838	1.794	1.753	1.713
73—88	1.736	1.697	1.660	1.625
74—89	1.603	1.570	1.538	1.508
75—90	1.440	1.413	1.387	1.361
76—91	1.221	1.200	1.180	1.160
77—92	0.985	0.970	0.955	0.942
78—93	0.706	0.697	0.688	0.679
79—94	0.458	0.453	0.448	0.443
80—95	0.210	0.208	0.206	0.204
81—96	0.000	0.000	0.000	0.000

TABLE XI.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *twenty* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—21	11.413	10.053	8.961	8.070
2—22	13.172	11.605	10.344	9.313
3—23	13.794	12.161	10.843	9.764
4—24	14.178	12.511	11.163	10.057
5—25	14.301	12.633	11.281	10.170
6—26	14.420	12.754	11.400	10.285
7—27	14.451	12.798	11.452	10.341
8—28	14.417	12.786	11.455	10.354
9—29	14.310	12.710	11.401	10.315
10—30	14.150	12.586	11.304	10.239
11—31	13.965	12.441	11.188	10.144
12—32	13.770	12.286	11.062	10.042
13—33	13.570	12.125	10.932	9.934
14—34	13.363	11.959	10.796	9.822
15—35	13.151	11.787	10.655	9.703
16—36	12.932	11.609	10.507	9.579
17—37	12.714	11.430	10.358	0.454
18—38	12.502	11.257	10.214	9.333
19—29	12.297	11.089	10.074	9.215
20—40	12.096	10.924	9.937	9.100
21—41	11.906	10.768	9.809	8.992
22—42	11.723	10.619	9.685	8.889
23—43	11.540	10.470	9.562	8.785

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
24—44	11.354	10.317	9.435	8.670
25—45	11.164	10.160	9.304	8.569
26—46	10.970	10.000	9.170	8.455
27—47	10.773	9.836	9.032	8.338
28—48	10.572	9.667	8.890	8.217
29—49	10.366	9.495	8.744	8.092
30—50	10.160	9.321	8.596	7.966
31—51	9.957	9.151	8.451	7.841
32—52	9.756	8.980	8.306	7.716
33—53	9.550	8.806	8.157	7.588
34—54	9.342	8.629	8.005	7.457
35—55	9.131	8.448	7.849	7.322
36—56	8.916	8.264	7.690	7.183
37—57	8.699	8.076	7.527	7.041
38—58	8.477	7.884	7.360	6.894
39—59	8.253	7.689	7.189	6.744
40—60	8.025	7.490	7.015	6.590
41—61	7.796	7.290	6.838	6.434
42—62	7.567	7.088	6.660	6.276
43—63	7.332	6.881	6.477	6.112
44—64	7.095	6.671	6.289	5.944
45—65	6.850	6.453	6.094	5.769
46—66	6.602	6.230	5.894	5.588
47—67	6.351	6.004	5.690	5.403
48—68	6.096	5.774	5.481	5.213
49—69	5.839	5.541	5.268	5.019
50—70	5.582	5.306	5.054	4.822
51—71	5.328	5.074	4.841	4.626
52—72	5.077	4.845	4.630	4.430
53—73	4.829	4.614	4.417	4.234
54—74	4.585	4.389	4.208	4.040
55—75	4.350	4.171	4.006	3.852
56—76	4.129	3.966	3.815	3.674
57—77	3.908	3.761	3.623	3.494
58—78	3.682	3.549	3.424	3.308
59—79	3.440	3.322	3.210	3.105
60—80	3.197	3.092	2.992	2.899
61—81	2.964	2.870	2.782	2.699
62—82	2.739	2.656	2.578	2.504
63—83	2.530	2.457	2.387	2.321
64—84	2.371	2.305	2.242	2.182
65—85	2.228	2.163	2.107	2.053
66—86	2.089	2.035	1.984	1.936
67—87	1.963	1.915	1.870	1.826
68—88	1.860	1.817	1.777	1.737
69—89	1.722	1.685	1.650	1.616
70—90	1.545	1.515	1.486	1.459
71—91	1.303	1.280	1.259	1.238
72—92	1.044	1.028	1.012	0.997
73—93	0.743	0.733	0.723	0.714
74—94	0.480	0.474	4.469	0.464
75—95	0.219	0.217	0.215	0.213
76—96	0.000	0.000	0.000	0.000

TABLE XII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *twenty-five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—26	11.037	9.770	8.742	7.897
2—27	12.722	11.264	10.080	9.104
3—28	13.307	11.790	10.555	9.537
4—29	13.661	12.116	10.855	9.813
5—30	13.762	12.220	10.959	9.913
6—31	13.859	12.322	11.062	10.015
7—32	13.871	12.350	11.100	10.060
8—33	13.820	12.323	11.090	10.061
9—34	13.698	12.234	11.024	10.012
10—35	13.525	12.098	10.916	9.925
11—36	13.328	11.941	10.788	9.820
12—37	13.120	11.773	10.651	9.707
13—38	12.906	11.600	10.509	9.588
14—39	12.686	11.420	10.360	9.464
15—40	12.459	11.234	10.205	9.333
16—41	12.229	11.044	10.046	9.198
17—42	12.002	10.856	9.889	9.065
18—43	11.785	10.677	9.739	8.938
19—44	11.574	10.502	9.592	8.814
20—45	11.367	10.330	9.448	8.692
21—46	11.167	10.165	9.310	8.574
22—47	10.969	10.001	9.173	8.458
23—48	10.768	9.833	9.031	8.338
24—49	10.562	9.661	8.886	8.214
25—50	10.356	9.488	8.739	8.089
26—51	10.154	9.318	8.595	7.966
27—52	9.952	9.148	8.451	7.842
28—53	9.748	8.975	8.304	7.716
29—54	9.540	8.799	8.153	7.586
30—55	9.329	8.619	7.999	7.453
31—56	9.115	8.436	7.841	7.316
32—57	8.897	8.250	7.680	7.175
33—58	8.677	8.060	7.515	7.031
34—59	8.454	7.866	7.346	6.884
35—60	8.227	7.669	7.174	6.732
36—61	7.997	7.469	6.998	6.577
37—62	7.765	7.265	6.819	6.418
38—63	7.525	7.053	6.631	6.252
39—64	7.281	6.838	6.440	6.081
40—65	7.030	6.614	6.240	5.901
41—66	6.776	6.388	6.037	5.718
42—67	6.522	6.159	5.831	5.532
43—68	6.266	5.929	5.622	5.343
44—69	6.008	5.696	5.411	5.150
45—70	5.749	5.460	5.195	4.953
46—71	5.488	5.222	4.978	4.753
47—72	5.228	4.983	4.758	4.551
48—73	4.970	4.746	4.539	4.348
49—74	4.716	4.511	4.322	4.146
50—75	4.472	4.285	4.112	3.951
51—76	4.245	4.074	3.916	3.768
52—77	4.019	3.864	3.720	3.586
53—78	3.787	3.648	3.518	3.396
54—79	3.540	3.416	3.299	3.189
55—80	3.291	3.180	3.076	2.978
56—81	3.051	2.953	2.861	2.774

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
57—82	2.820	2.733	2.651	2.574
58—83	2.608	2.530	2.457	2.388
59—84	2.446	2.376	2.310	2.247
60—85	2.297	2.234	2.174	2.118
61—86	2.162	1.105	2.051	2.000
62—87	2.036	1.985	1.937	1.891
63—88	1.932	1.886	1.843	1.802
64—89	1.790	1.751	1.714	1.678
65—90	1.606	1.575	1.544	1.515
66—91	1.354	1.330	1.307	1.285
67—92	1.083	1.067	1.050	1.035
68—93	0.770	0.760	0.750	0.740
69—94	0.497	0.491	0.485	0.480
70—95	0.227	0.224	0.222	0.220
71—96	0.000	0.000	0.000	0.000

TABLE XIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *thirty* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—31	10.605	9.438	8.483	7.691
2—32	12.203	10.865	9.767	8.855
3—33	12.743	11.355	10.213	9.263
4—34	13.061	11.651	10.488	9.518
5—35	13.136	11.732	10.572	9.602
6—36	13.207	11.812	10.656	9.687
7—37	13.195	11.819	10.676	9.715
8—38	13.122	11.772	10.648	9.701
9—39	12.981	11.665	10.565	9.637
10—40	12.791	11.513	10.442	9.537
11—41	12.580	11.342	10.302	9.420
12—42	12.363	11.165	10.156	9.298
13—43	12.144	10.985	10.007	9.173
14—44	11.918	10.799	9.852	9.042
15—45	11.687	10.607	9.690	8.905
16—46	11.448	10.408	9.522	8.762
17—47	11.210	10.208	9.353	8.617
18—48	10.975	10.011	9.186	8.473
19—49	10.746	9.818	9.021	8.332
20—50	10.523	9.630	8.861	8.195
21—51	10.313	9.454	8.712	8.067
22—52	10.111	9.284	8.568	7.944
23—53	9.905	9.111	8.421	7.818
24—54	9.696	8.934	8.270	7.688
25—55	9.484	8.754	8.116	7.555
26—56	9.269	8.570	7.958	7.419
27—57	9.051	8.383	7.797	7.279
28—58	8.830	8.193	7.632	7.135
29—59	8.605	7.999	7.464	6.988
30—60	8.378	7.802	7.292	6.837
31—61	8.147	7.601	7.116	6.682
32—62	7.914	7.397	6.937	6.524
33—63	7.673	7.186	6.750	6.359
34—64	7.429	6.971	6.559	6.189

Ages.	Value at 3 per cent.	Value at 4 per ceut.	Value at 5 per cent.	Value at 6 per cent.
35—65	7.177	6.747	6.360	6.010
36—66	6.922	6.520	6.156	5.827
37—67	6.663	6.288	5.948	5.639
38—68	6.401	6.052	5.735	5.446
39—69	6.137	5.813	5.518	5.249
40—70	5.871	5.571	5.298	5.047
41—71	5.605	5.329	5.076	4.844
42—72	5.341	5.087	4.854	4.640
43—73	5.081	4.848	4.634	4.436
44—74	4.826	4.613	4.417	4.235
45—75	4.580	4.386	4.206	4.040
46—76	4.348	4.171	4.006	3.853
47—77	4.115	3.954	3.805	3.666
48—78	3.875	3.731	3.596	3.469
49—79	3.619	3.490	3.369	3.256
50—80	3.362	3.247	3.140	3.039
51—81	3.117	3.015	2.920	2.829
52—82	2.882	2.792	2.707	2.627
53—83	2.665	2.585	2.510	2.438
54—84	2.501	2.428	2.360	2.295
55—85	2.349	2.284	2.222	2.164
56—86	2.211	2.153	2.097	2.044
57—87	2.082	2.030	1.980	1.932
58—88	1.975	1.928	1.883	1.841
59—89	1.828	1.788	1.750	1.713
60—90	1.641	1.608	1.577	1.547
61—91	1.382	1.358	1.334	1.311
62—92	1.105	1.088	1.071	1.055
63—93	0.785	0.774	0.764	0.754
64—94	0.506	0.500	0.494	0.489
65—95	0.230	0.228	0.226	0.224
66—96	0.000	0.000	0.000	0.000

TABLE XIV.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *thirty-five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—36	10.104	9.047	8.173	7.442
2—37	11.600	10.392	9.390	8.551
3—38	12.087	10.838	9.800	8.928
4—39	12.362	11.097	10.043	9.157
5—40	12.405	11.150	10.102	9.219
6—41	12.446	11.203	10.163	9.283
7—42	12.412	11.190	10.165	9.296
8—43	12.325	11.130	10.124	9.270
9—44	12.174	11.012	10.031	9.197
10—45	11.976	10.851	9.900	9.088
11—46	11.756	10.697	9.774	8.962
12—47	11.525	10.481	9.592	8.827
13—48	11.288	10.284	9.425	8.686
14—49	11.045	10.080	9.252	8.538
15—50	10.799	9.872	9.076	8.386
16—51	10.554	9.665	8.899	8.234
17—52	10.313	9.461	8.724	8.033

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
18—53	10.076	9.260	8.552	7.934
19—54	9.845	9.063	8.383	7.788
20—55	9.617	8.869	8.216	7.643
21—56	9.394	8.679	8.053	7.502
22—57	9.174	8.491	7.891	7.362
23—58	8.951	8.299	7.725	7.218
24—59	8.725	8.104	7.556	7.070
25—60	8.495	7.906	7.383	6.919
26—61	8.263	7.704	7.207	6.764
27—62	8.028	7.499	7.027	6.605
28—63	7.785	7.286	6.839	6.439
29—64	7.539	7.069	6.648	6.268
30—65	7.286	6.844	6.447	6.089
31—66	7.028	6.615	6.243	5.905
32—67	6.768	6.382	6.033	5.717
33—68	6.504	6.146	5.820	5.524
34—69	6.239	5.906	5.603	5.326
35—70	5.971	5.663	5.382	5.125
36—71	5.703	5.419	5.159	4.920
37—72	5.435	5.174	4.934	4.714
38—73	5.169	4.930	4.710	4.507
39—74	4.908	4.690	4.488	4.301
40—75	4.656	4.457	4.272	4.101
41—76	4.420	4.238	4.069	3.912
42—77	4.184	4.019	3.865	3.722
43—78	3.942	3.794	3.655	3.525
44—79	3.685	3.552	3.428	3.312
45—80	3.426	3.308	3.197	3.093
46—81	3.176	3.072	2.973	2.881
47—82	2.936	2.843	2.756	2.673
48—83	2.714	2.632	2.554	2.481
49—84	2.544	2.470	2.400	2.334
50—85	2.388	2.322	2.258	2.198
51—86	2.248	2.188	2.131	2.077
52—87	2.117	2.063	2.012	1.963
53—88	2.008	1.960	1.914	1.870
54—89	1.858	1.817	1.778	1.740
55—90	1.666	1.633	1.601	1.570
56—91	1.402	1.377	1.353	1.330
57—92	1.120	1.102	1.085	1.069
58—93	0.794	0.784	0.773	0.763
59—94	0.511	0.505	0.499	0.494
60—95	0.233	0.230	0.228	0.226
61—96	0.000	0.000	0.000	0.000

TABLE XV.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *forty* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—41	9.523	8.585	7.800	7.135
2—42	10.907	9.839	8.942	8.182
3—43	11.343	10.242	9.315	8.528
4—44	11.578	10.468	9.531	8.733
5—45	11.597	10.500	9.571	8.778
6—46	11.610	10.528	9.609	8.823
7—47	11.550	10.491	9.589	8.815
8—48	11.435	10.404	9.524	8.767
9—49	11.260	10.263	9.409	8.673
10—50	11.044	10.085	9.260	8.548
11—51	10.816	9.894	9.100	8.411
12—52	10.582	9.698	8.934	8.270
13—53	10.344	9.497	8.763	8.123
14—54	10.100	9.290	8.586	7.970
15—55	9.851	9.077	8.403	7.812
16—56	9.595	8.858	8.214	7.648
17—57	9.340	8.639	8.024	7.481
18—58	9.089	8.422	7.835	7.316
19—59	8.841	8.207	7.648	7.153
20—60	8.597	7.995	7.463	6.990
21—61	8.357	7.787	7.281	6.830
22—62	8.119	7.580	7.100	6.670
23—63	7.874	7.365	6.910	6.503
24—64	7.626	7.147	6.717	6.331
25—65	7.370	6.920	6.515	6.151
26—66	7.110	6.689	6.309	5.966
27—67	6.847	6.454	6.098	5.776
28—68	6.581	6.215	5.883	5.581
29—69	6.313	5.973	5.664	5.383
30—70	6.043	5.729	5.442	5.180
31—71	5.772	5.483	5.218	4.974
32—72	5.502	5.236	4.992	4.767
33—73	5.235	4.991	4.766	4.559
34—74	4.973	4.749	4.543	4.353
35—75	4.720	4.516	4.327	4.152
36—76	4.481	4.295	4.123	3.962
37—77	4.242	4.073	3.916	3.770
38—78	3.996	3.844	3.702	3.570
39—79	3.734	3.598	3.471	3.352
40—80	3.469	3.349	3.236	3.130
41—81	3.216	3.109	3.009	2.914
42—82	2.973	2.878	2.789	2.705
43—83	2.750	2.666	2.587	2.511
44—84	2.581	2.505	2.433	2.365
45—85	2.424	2.356	2.291	2.230
46—86	2.282	2.221	2.162	2.107
47—87	2.148	2.093	2.041	1.991
48—88	2.036	1.987	1.941	1.895
49—89	1.882	1.840	1.800	1.761
50—90	1.685	1.651	1.619	1.590
51—91	1.417	1.391	1.367	1.343
52—92	1.130	1.113	1.095	1.079
53—93	0.801	0.790	0.780	0.770
54—94	0.515	0.509	0.503	0.498
55—95	0.234	0.232	0.230	0.228
56—96	0.000	0.000	0.000	0.000

TABLE XVI.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *forty-five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—46	8.888	8.071	7.379	6.787
2—47	10.147	9.221	8.435	7.760
3—48	10.515	9.566	8.759	8.063
4—49	10.697	9.744	8.932	8.230
5—50	10.679	9.742	8.941	8.248
6—51	10.664	9.745	8.956	8.271
7—52	10.586	9.690	8.919	8.248
8—53	10.458	9.591	8.841	8.188
9—54	10.276	9.442	8.718	8.085
10—55	10.055	9.256	8.560	7.951
11—56	9.814	9.052	8.386	7.801
12—57	9.566	8.839	8.203	7.643
13—58	9.312	8.622	8.015	7.479
14—59	9.053	8.399	7.821	7.310
15—60	8.790	8.170	7.622	7.135
16—61	8.521	7.935	7.416	6.953
17—62	8.252	7.700	7.208	6.770
18—63	7.981	7.462	6.998	6.583
19—64	7.714	7.226	6.789	6.396
20—65	7.444	6.986	6.576	6.205
21—66	7.177	6.749	6.364	6.015
22—67	6.911	6.512	6.151	5.824
23—68	6.643	6.271	5.934	5.628
24—69	6.372	6.027	5.713	5.427
25—70	6.099	5.780	5.489	5.223
26—71	5.826	5.532	5.263	5.016
27—72	5.554	5.283	5.035	4.807
28—73	5.284	5.036	4.808	4.597
29—74	5.019	4.792	4.583	4.390
30—75	4.764	4.557	4.365	4.188
31—76	4.523	4.335	4.160	3.997
32—77	4.282	4.111	3.952	3.804
33—78	4.035	3.881	3.737	3.602
34—79	3.771	3.633	3.505	3.384
35—80	3.506	3.383	3.268	3.160
36—81	3.251	3.142	3.040	2.944
37—82	3.005	2.909	2.818	2.733
38—83	2.779	2.694	2.613	2.537
39—84	2.607	2.530	2.457	2.388
40—85	2.448	2.379	2.313	2.251
41—86	2.304	2.241	2.182	2.126
42—87	2.168	2.113	2.060	2.009
43—88	2.055	2.006	1.959	1.914
44—89	1.901	1.859	1.818	1.779
45—90	1.702	1.668	1.635	1.604
46—91	1.431	1.405	1.380	1.356
47—92	1.140	1.122	1.105	1.089
48—93	0.808	0.797	0.786	0.776
49—94	0.519	0.512	0.507	0.501
50—95	0.235	0.233	0.231	0.229
51—96	0.000	0.000	0.000	0.000

TABLE XVII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *fifty* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—51	8.171	7.479	6.885	6.370
2—52	9.300	8.520	7.848	7.264
3—53	9.611	8.815	8.128	7.529
4—54	9.751	8.957	8.269	7.668
5—55	9.707	8.931	8.256	7.665
6—56	9.659	8.902	8.241	7.662
7—57	9.549	8.817	8.176	7.612
8—58	9.395	8.691	8.073	7.527
9—59	9.191	8.519	7.927	7.403
10—60	8.952	8.314	7.750	7.250
11—61	8.696	8.092	7.557	7.081
12—62	8.433	7.863	7.357	6.905
13—63	8.161	7.625	7.147	6.719
14—64	7.884	7.381	6.931	6.527
15—65	7.597	7.127	6.705	6.325
16—66	7.304	6.866	6.472	6.115
17—67	7.012	6.604	6.236	5.903
18—68	6.721	6.343	6.001	5.689
19—69	6.434	6.084	5.766	5.476
20—70	6.149	5.826	5.532	5.262
21—71	5.870	5.572	5.300	5.050
22—72	5.595	5.321	5.070	4.840
23—73	5.323	5.072	4.841	4.628
24—74	5.056	4.827	4.615	4.419
25—75	4.799	4.589	4.396	4.216
26—76	4.556	4.365	4.188	4.024
27—77	4.313	4.140	3.979	3.829
28—78	4.064	3.908	3.762	3.626
29—79	3.798	3.659	3.528	3.406
30—80	3.530	3.406	3.290	3.181
31—81	3.274	3.164	3.060	2.963
32—82	3.027	2.929	2.838	2.751
33—83	2.800	2.713	2.632	2.555
34—84	2.627	2.549	2.476	2.406
35—85	2.468	2.398	2.331	2.268
36—86	2.323	2.260	2.200	2.143
37—87	2.187	2.130	2.077	2.026
38—88	2.072	2.022	1.974	1.929
39—89	1.915	1.872	1.832	1.792
40—90	1.713	1.679	1.646	1.614
41—91	1.439	1.413	1.388	1.364
42—92	1.146	1.128	1.111	1.094
43—93	0.811	0.800	0.790	0.779
44—94	0.521	0.515	0.509	0.503
45—95	0.236	0.234	0.232	0.230
46—96	0.000	0.000	0.000	0.000

TABLE XVIII.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *fifty-five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—56	7.412	6.843	6.346	5.911
2—57	8.392	7.756	7.199	6.709
3—58	8.630	7.986	7.421	6.922
4—59	8.712	8.075	7.514	7.017
5—60	8.629	8.011	7.466	6.982
6—61	8.542	7.944	7.415	6.945
7—62	8.400	7.828	7.319	6.865
8—63	8.214	7.669	7.184	6.750
9—64	7.984	7.470	7.010	6.598
10—65	7.718	7.236	6.803	6.414
11—66	7.437	6.987	6.581	6.215
12 67	7.149	6.730	6.351	6.009
13—68	6.857	6.468	6.116	5.796
14—69	6.562	6.202	5.876	5.578
15—70	6.264	5.933	5.631	5.355
16—71	5.964	5.660	5.382	5.127
17—72	5.667	5.389	5.133	4.899
18—73	5.378	5.123	4.889	4.673
19—74	5.098	4.866	4.651	4.453
20—75	4.831	4.619	4.424	4.242
21—76	4.583	4.391	4.212	4.046
22—77	4.339	4.164	4.001	3.850
23—78	4.087	3.930	3.783	3.646
24—79	3.820	3.679	3.548	3.424
25—80	3.550	3.425	3.308	3.198
26—81	3.292	3.181	3.077	2.979
27—82	3.043	2.945	2.853	2.765
28—83	2.815	2.728	2.646	2.568
29—84	2.641	2.563	2.489	2.418
30—85	2.481	2.411	2.344	2.280
31—86	2.336	2.272	2.212	2.154
32—87	2.198	2.142	2.088	2.036
33—88	2.083	2.033	1.985	1.939
34—89	1.925	1.882	1.841	1.802
35—90	1.723	1.688	1.654	1.622
36—91	1.446	1.420	1.395	1.371
37—92	1.152	1.134	1.116	1.099
38—93	0.815	0.804	0.793	0.783
39—94	0.523	0.517	0.511	0.505
40—95	0.237	0.235	0.233	0.231
41—96	0.000	0.000	0.000	0.000

TABLE XIX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *ſixty* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—61	6.571	6.123	5.725	5.372
2—62	7.391	6.894	6.452	6.059
3—63	7.545	7.048	6.605	6.209
4—64	7.562	7.076	6.641	6.251
5—65	7.429	6.963	6.546	6.171
6—66	7.290	6.846	6.447	6.087
7—67	7.104	6.684	6.306	5.963
8—68	6.884	6.490	6.134	5.811
9—69	6.628	6.262	5.929	5.626
10—70	6.347	6.008	5.700	5.418
11—71	6.056	5.744	5.460	5.199
12—72	5.763	5.478	5.216	4.976
13—73	5.473	5.212	4.972	4.751
14—74	5.188	4.950	4.731	4.528
15—75	4.911	4.695	4.495	4.310
16—76	4.649	4.452	4.270	4.101
17—77	4.388	4.210	4.045	3.892
18—78	4.123	3.964	3.815	3.677
19—79	3.846	3.704	3.571	3.447
20—80	3.569	3.443	3.325	3.214
21—81	3.307	3.195	3.091	2.992
22—82	3.057	2.958	2.865	2.777
23—83	2.828	2.740	2.657	2.579
24—84	2.653	2.574	2.499	2.429
25—85	2.492	2.421	2.354	2.290
26—86	2.346	2.282	2.221	2.163
27—87	2.208	2.151	2.096	2.044
28—88	2.091	2.041	1.992	1.946
29—89	1.933	1.889	1.848	1.808
30—90	1.729	1.694	1.660	1.628
31—91	1.451	1.425	1.400	1.376
32—92	1.155	1.137	1.119	1.102
33—93	0.817	0.806	0.795	0.785
34—94	0.524	0.518	0.512	0.506
35—95	0.238	0.235	0.233	0.231
36—96	0.000	0.000	0.000	0.000

TABLE XX.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *ſixty-five* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—66	5.633	5.295	4.996	4.728
2—67	6.266	5.896	5.569	5.276
3—68	6.330	5.965	5.641	5.352
4—69	6.277	5.924	5.611	5.332
5—70	6.102	5.768	5.472	5.209
6—71	5.925	5.610	5.331	5.084
7—72	5.714	5.418	5.157	4.929

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
8—73	5.480	5.204	4.963	4.752
9—74	5.225	4.969	4.747	4.556
10—75	4.962	4.725	4.522	4.350
11—76	4.707	4.487	4.301	4.148
12—77	4.449	4.368	4.195	3.943
13—78	4.185	4.022	3.871	3.729
14—79	3.904	3.759	3.624	3.497
15—80	3.621	3.492	3.372	3.259
16—81	3.348	3.235	3.128	3.028
17—82	3.087	2.987	2.893	2.804
18—83	2.849	2.760	2.677	2.598
19—84	2.668	2.589	2.513	2.442
20—85	2.503	2.431	2.364	2.299
21—86	2.354	2.290	2.229	2.171
22—87	2.216	2.158	2.104	2.051
23—88	2.099	2.048	1.999	1.953
24—89	1.939	1.895	1.854	1.814
25—90	1.734	1.699	1.665	1.633
26—91	1.455	1.429	1.404	1.379
27—92	1.158	1.140	1.122	1.105
28—93	0.819	0.808	0.797	0.786
29—94	0.525	0.519	0.513	0.507
30—95	0.238	0.236	0.234	0.231
31—96	0.000	0.000	0.000	0.000

TABLE XXI.

Shewing the value of an annuity on the joint continuance of two lives, according to the Northampton Table of Obſervations.

Difference of age *ſeventy* years.

Ages.	Value at 3 per cent.	Value at 4 per cent.	Value at 5 per cent.	Value at 6 per cent.
1—71	4.611	4.380	4.169	3.976
2—72	5.061	4.814	4.588	4.380
3—73	5.051	4.811	4.591	4.389
4—74	4.953	4.726	4.516	4.323
5—75	4.768	4.557	4.362	4.181
6—76	4.599	4.403	4.221	4.053
7—77	4.402	4.222	4.055	3.899
8—78	4.180	4.016	3.864	3.722
9—79	3.921	3.775	3.638	3.510
10—80	3.647	3.517	3.395	3.281
11—81	3.380	3.264	3.156	3.054
12—82	3.122	3.020	2.924	2.833
13—83	2.884	2.794	2.709	2.628
14—84	2.703	2.622	2.545	2.472
15—85	2.535	2.462	2.393	2.327
16—86	2.380	2.315	2.253	2.194
17—87	2.235	2.177	2.121	2.069
18—88	2.112	2.061	2.012	1.965
19—89	1.948	1.904	1.862	1.822
20—90	1.739	1.704	1.670	1.638
21—91	1.459	1.432	1.407	1.382
22—92	1.160	1.142	1.124	1.107
23—93	0.820	0.809	0.798	0.788
24—94	0.526	0.520	0.514	0.508
25—95	0.238	0.236	0.234	0.232
26—96	0.000	0.000	0.000	0.000

LIFE-*Annuities, payable half-yearly.* Theſe are more valuable than life-annuities payable yearly, on the two following accounts. Firſt, the annuitant in this caſe receives one-half of every payment half a year ſooner; and, ſecondly, he has the chance of receiving one half-year's payment more than if he had been paid yearly. Mr. Simpſon, in his Select Exercifes, p. 283, obſerves, that the value of theſe two advantages put together (let the rate of intereſt and the number of lives on which the annuity depends be what they will) will always amount to $\frac{1}{4}$ of a year's purchaſe; and that if the payments are to be made *quarterly*, theſe advantages will be always worth $\frac{3}{8}$ of a year's purchaſe. But Dr. Price, in an eſſay in the Philoſophical Tranſactions, vol. lxvi. part i. p. 109. has ſtated the differences of value between life-annuities, as they are made payable yearly, half-yearly, or quarterly, with more preciſion; and from his inveſtigations it appears, that a *fifth* of a year's purchaſe is generally an addition more than ſufficient to the yearly value of an annuity, in order to obtain its value, payable half-yearly; and *three-tenths* of a year's purchaſe, in order to obtain its value, payable quarterly.

Dr. Price has given the following ſhort and eaſy theorems for finding in all caſes theſe differences of value.

Let *r* be (not 1*l.* with its intereſt, but merely) the intereſt of 1*l.* for a year, *n* the complement of a given life; *y*, *h*, *q*, *m*, the values reſpectively of an annuity *certain* for *n* years, payable yearly, half-yearly, quarterly, or momently (ſee the article ANNUITIES); P the perpetuity; Y the preſent value of an annuity on a life, whoſe complement is *n*, payable yearly; H the value of the ſame annuity payable half-yearly; Q the value of the ſame annuity payable quarterly; and M its value payable momently.

$$\text{Then, } Y = P - \frac{1+r}{rn} \times y$$

$$H = P - \frac{1 + \frac{r}{2}}{nr} \times h$$

$$Q = P - \frac{1 + \frac{r}{4}}{nr} \times q$$

$$M = P - \frac{m}{nr}$$

Example.—Let the life ſuppoſed be of the age of 36. The complement of ſuch a life is (by what has been already ſaid) 50, according to M. De Moivre's hypotheſis; therefore, *n* will be 50. Let the rate of intereſt be 4 *per cent.*, or $r = 0.04$, $P = 25$, $Y = 21.482$ (ſee Table III. ANNUITIES), $h = 21.549$ (by the theorems given under ANNUITIES), $q = 21.582$, by the ſame theorems, and $m = 21.616$. Therefore,

$$Y = 25 - \frac{1.04}{50 \times 0.04} \times 21.482 = 13.829$$

$$H = 25 - \frac{1.02}{50 \times 0.04} \times 21.949 = 14.010$$

$$Q = 25 - \frac{1.01}{50 \times 0.04} \times 21.582 = 14.101$$

$$M = 25 - \frac{21.616}{50 \times .04} = 14.191$$

Theſe theorems, though founded on the hypotheſis of an equal decrement of life, give the differences between the yearly, half-yearly, and quarterly values, almoſt exactly the ſame, whether thoſe values be deduced from real obſervations or from this hypotheſis.

For determining the differences between the values of annuities on two joint lives, when payable half-yearly, quarterly, or momently, Mr. Morgan, in the 6th edition of Dr. Price's Treatiſe on Reverſionary Payments, (note L, appendix,) has given the following theorems. Let *h*, *q*, *m*, denote the ſame quantities as above for *t* years. Let *n* be the complement of the younger, and *t* the complement of the older life. Let *r* alſo be the intereſt of 1*l.* for a year, and V the perpetuity: then will the value of the annuity be

$$V - \frac{V + \frac{1}{2}}{n} \times \overline{\overline{n - t - \tfrac{1}{2} - 2V} \times \frac{b}{t} + 2V}, \text{ or } V - \frac{V + \frac{3}{4}}{n} \times \overline{\overline{n - t - \tfrac{1}{4} - 2V} \times \frac{q}{t} + 2V}, \text{ or } V - \frac{V}{n} \times \overline{\overline{n - t - 2V} \times \frac{m}{t} + 2V},$$

according as it is payable half-yearly, quarterly, or momently.

Thus, if the ages of the two lives be 20 and 36 years, the value of the annuity at 4*l.* *per cent.*, when payable yearly, may be found by the theorem in the preceding article to be equal to 11.227; and its value, when payable either half-yearly, quarterly, or momently, may be found by theſe theorems to be either 11.427, 11.565, or 11.629. If the ages of both lives be 36, theſe values reſpectively will be 10.394, 10.600, 10.703, and 10.808. It may be obſerved, that the differences between the values of two joint lives are always greater than the differences between the values of the ſingle lives, when payable at ſhorter intervals than a year; and therefore, that the addition, in this caſe, to be made to the value of an annuity on the longeſt of two lives will be leſs than the addition to be made either to the joint or ſingle lives.

Life-*Annuities ſecured by land*, differ from other life-annuities only in the ſingle circumſtance, that the annuitant, whenever he dies, is entitled to a payment for the time which has lapſed between the payment laſt due, and the moment of his death; whereas other annuities ſuppoſe nothing due for this time. In order to obtain the value of ſuch an annuity, $\frac{y}{2n}$ muſt be added to the expreſſion in the firſt theorem, if it is payable yearly; $\frac{b}{4n}$ muſt be added to the expreſſion in the ſecond theorem, if it is payable half-yearly; and $\frac{q}{8n}$ muſt be added to the expreſſion in the third theorem, if the annuity is payable quarterly. For ſince $\frac{1}{n}$ is the probability that a life, whoſe complement is *n*, fails in any year of its duration, and it is an equal chance whether more or leſs than *half* the yearly, half-yearly, or quarterly payment is due at the death of the annuitant, it follows that the additional value of the annuity will be either $\frac{1}{n} \times \frac{y}{2}$, or $\frac{1}{n} \times \frac{1}{2} \times \frac{b}{2}$, or $\frac{1}{n} \times \frac{1}{2} \times \frac{q}{4}$, according as the ſame is payable either yearly, half-yearly, or quarterly. See Dr. Price's Eſſay, before quoted.

The value, therefore, in the laſt example, of an annuity payable yearly on a life aged 36, being 13.829; its value, if ſecured by land, or to be enjoyed to the laſt moment of life, will be $13.829 + \frac{21.482}{100} = 14.043$; if ſecured by land, and payable half-yearly, its value will be $14.010 + \frac{21.549}{200} = 14.117$; if ſecured by land, and payable quarterly, its value will be $14.101 + \frac{21.582}{400} = 14.155$.

Life-*Annuities*, in the contemplation of *Law*, are in ſome caſes ſold and purchaſed in an improvident manner, and with great privacy; and therefore, in order to throw ſome check on tranſactions of this kind, the ſtatute 17 Geo. III. c. 26. has directed, that upon the ſale of any life-annuity of more than the value of 10*l.* *per annum*, (unleſs on a ſufficient pledge of lands in fee-ſimple, or ſtock in the public funds,) the true conſideration, which ſhall be in money only, ſhall be ſet forth and deſcribed in the ſecurity itſelf; and a memorial of the date of the ſecurity, of the names of the parties, *ceſtui que truſts*, *ceſtui que vies*, and witneſſes, and of the conſideration money, ſhall, within 21 days after its execution, be inrolled in the court of chancery, elſe the ſecurity ſhall be null and void; and, in caſe of colluſive practices reſpecting the conſideration, the court, in which any action is brought, or judgment obtained upon ſuch colluſive ſecurity, may order the ſame to be annulled; and the judgment, if any, to be vacated; and alſo all contracts for the purchaſe of annuities from infants ſhall remain utterly void, and be incapable of confirmation after ſuch infants arrive to the age of maturity. By 29 Geo. III. c. 41. § 27, and other acts that reſpect life-annuities, oath of an annuitant's life may be made before a juſtice of the peace, who ſhall give a certificate thereof, without fee or ſtamp-duty, in order to entitle ſuch perſon to receive his annuity.

Life-*Boat*. See Boat.

Life, *Complement of*. See Complement.

Life *Eſtates*, in *Law*, are ſuch eſtates of freehold as are only for life. (See Estate.) Of theſe ſome are *conventional*, and others merely *legal*. Eſtates for life of the firſt kind, expreſly created by deed or grant, are where a leaſe is made of lands or tenements to a man to hold for the term of his own life, or that of any other perſon, or for more lives than one; in any of which caſes he is ſtyled tenant for life; only when he holds the eſtate by the life of another, he is uſually called tenant *pur autre vie*. Theſe eſtates for life are like inheritances, of a feodal nature; and for ſome time were the higheſt eſtate that any man could have in a feud, which was not in its original hereditary. They are given or conferred by the ſame feodal rights and ſolemnities, the ſame inveſtiture or livery of ſeiſin, as fees themſelves are; and they are held by fealty, if demanded, and ſuch conventional rents and ſervices, as the lord or leſſor, and his tenant or leſſee, have agreed on. Eſtates for life may be created, not only by expreſs words, but alſo by a general grant, without defining or limiting any ſpecific eſtate. As if we grant to A.B. the manor of Dale, this makes him tenant for life. (Co. Litt. 41.) Such eſtates for life will, generally ſpeaking, endure as long as the life for which they are granted; but there are ſome eſtates for life, which may determine upon future contingencies, before the life for which they are created expires; as an eſtate granted to a woman during her widow-hood, or to a man till he be promoted to a benefice. Theſe, while they ſubſiſt, are reckoned eſtates for life; becauſe the time for which they will endure being uncertain, they may by poſſibility laſt for life, if the contingencies upon which they determine do not ſooner happen.

The *incidents* to an eſtate for life are principally the following; and they are applicable not only to that ſpecies of tenants for life which are expreſsly created by deed, but alſo to thoſe which are created by act or operation of law. 1. Every tenant for life, unleſs reſtrained by covenant or agreement, may of common right take upon the land demiſed to him reaſonable eſtovers, or botes. (Co. Litt. 43.) But he is not permitted to cut down timber or do other waſte upon the premiſes. (Id. 53.) 2. Tenant for life, or his repreſentatives, ſhall not be prejudiced by any ſudden determination of his eſtate, becauſe ſuch a determination is contingent and uncertain. (Ibid. 55.) The advantages alſo of emblements are particularly extended to the parochial clergy by ſtat. 28 Hen. VIII. c. 11. 3. Another incident to eſtates for life relates to the under-tenants, or leſſees. For they have the ſame, nay greater indulgences than their leſſors, the original tenants for life.

The ſecond eſtate for life is of the *legal* kind, as contradiſtinguiſhed from *conventional; viz.* that of tenant "in tail after poſſibility of iſſue extinct." This happens where one is tenant in ſpecial tail, and a perſon, from whoſe body the iſſue was to ſpring, dies without iſſue; or, having left iſſue, that iſſue becomes extinct; in either of theſe caſes, the ſurviving tenant in ſpecial tail becomes tenant in tail after poſſibility of iſſue extinct. This eſtate muſt be created by the act of God: that is, by the death of that perſon out of whoſe body the iſſue was to ſpring; for no limitation, conveyance, or other human act can make it. A poſſibility of iſſue is always ſuppoſed to exiſt in law, unleſs extinguiſhed by the death of the parties; even though the donees be each of them 100 years old. (Litt. § 34. Co. Litt. 28.) This eſtate is of an amphibious nature, partaking partly of an eſtate-tail, and partly of an eſtate for life. In truth, the tenant is only tenant for life, but with many of the privileges of a tenant in tail, as, not to be puniſhable for waſte, &c. (Co. Litt. 27.); or, he is tenant in tail, with many of the reſtrictions of a tenant for life; as, to forfeit his eſtate if he alienes it in fee-ſimple (Ibid. 28.); whereas ſuch alienation by tenant in tail, though voidable by the iſſue, is no forfeiture of the eſtate to the reverſioner; who is not concerned in intereſt, till all poſſibility of iſſue be extinct. But, in general, the law looks upon this eſtate as equivalent to an eſtate for life only; and, as ſuch, will permit this tenant to exchange his eſtate with a tenant for life: which exchange can only be made of eſtates that are equal in their nature. (Blackſt. Com. b. ii.) See LEASE and TENANT.

LIFE, *Expectation of.* See EXPECTATION.

LIVES, *Inſurance* or *Aſſurance on.* See ASSURANCES *on Lives.*

LIFE-*everlaſting*, a name by which the *ilichryſum*, or *gnaphalium* of botanical writers, is ſometimes called. See CUDWEED.

LIFE *Guards.* See GUARDS.

LIFE *Preſerver*, againſt drowning. Many different articles under this denomination have been made, particularly within theſe few years, by Collins, Spencer, Daniels, and others. But we believe they have all been copied, in a greater or leſs degree, from an apparatus conſtructed by John Bentley, eſq. about the year 1797. It is however remarkable, that although he exhibited it in public ſeveral times, ſome very important parts of it ſeem to have eſcaped their notice, or at leaſt their application of them to their own purpoſes. The following is his account of it.

The human body in moſt inſtances is of the ſame ſpecific gravity as water; therefore, any ſubſtance which is lighter than water, being attached to the body, muſt cauſe it to float. The ſituation beſt adapted for fixing it is round the body, immediately under the arms; and as it is deſirable to be able to keep the head, neck, ſhoulders, and arms above water without any exertion, the article uſed muſt diſplace a bulk of water equal in weight to thoſe parts. The next thing to be attended to, is to enable a perſon who cannot ſwim to make progreſs through the water. The hands and feet are too narrow to accompliſh this without a knowledge of the art of ſwimming, therefore the fingers and feet muſt be artificially *webbed.* Thus the whole apparatus, which he calls a *nautilus*, conſiſts of three diſtinct parts, and are to be thus conſtructed.

The *buoyant* is made of copper, in the form of a tube, to fit the round of the body, about ſix inches diameter, the ſeam brazed with hard ſolder. It ſhould be made in three lengths, the ends quite flat, to fit each other exactly, ſo that, when put together, they form a ring or belt. This is in caſe of accident happening to one part by leaking, that it may not extend to the other two, which will be ſufficient to prevent ſinking. Each of theſe parts is ſewed up in baize, with three ſtrong tapes near the end of each piece, by which all of them are ſecurely tied together. A flexible pipe, of the thickneſs of a quill, is inſerted in each piece, from the upper ſide to the bottom, ſo that if any leakage happens, the water is readily drawn out by the mouth and diſcharged. The buoyant, thus prepared, muſt be ſecurely tied with ſtrong tapes, croſſed round and over the ſhoulders, to prevent it getting down. It cannot get over the arms. When it is thus fixed, the body will, by its own gravity, be erect in the water, with the feet downwards, and will always retain this poſition unleſs force is applied to alter it, and which it will again recover when the force ceaſes to act. The ſecond part, which is for the hands, is a pair of oiled ſilk gloves, which, after being made in the uſual way, the fingers are opened to their full extent breadthways, and a piece of the ſame material ſewed over them on the under ſide. Tapes are ſewed at the top to tie them round the wriſt.

The third part, being for the feet, is made thus: take a piece of half-inch wainſcot or mahogany, 11 inches long, and 10 inches wide. Cut it longitudinally into three pieces, two of them $3\frac{3}{4}$ inches broad, and the other $2\frac{1}{2}$ inches. Faſten them well together with two pair of braſs hinges, and rule joints to fall and riſe like a two-leaved table, the narrow piece being in the middle. On the under-ſide of the middle-piece, in the centre, a wooden turn buckle muſt be ſcrewed, to prevent the ſide-pieces from falling down, when walking to or from the water. Two wooden ſtops are ſo fixed upon this piece as to prevent the ſides, when down, coming to a right angle with the middle-piece, that the riſing and falling may be duly performed with the action of the feet. To the upper ſide of the middle-piece, a common leather ſhoe, (to fit the perſon) muſt be faſtened on with two ſcrews through the ſole, and near each end of this middle-piece two ſmall holes are made with a centre-bit, through which good tapes are paſſed, to tie round the inſtep and over the foot. A pair of theſe muſt of courſe be provided, and a perſon thus equipped, being perfectly buoyant in water, and web-footed and web-fingered, will be able to outſwim any other perſon, and may exiſt in the water as long as cold and hunger will permit.

By increaſing the dimenſion of the buoyant, a proportionate quantity of proviſions, or any other article, may be carried. The inventor has wrote a letter, and otherwiſe amuſed himſelf on the ſea, with this apparatus, and believes he could croſs from Dover to Calais in perfect ſafety. It is very convenient for croſſing deep rivers, where there are neither boats nor bridges. It is procured at little expence, very portable, and put on in one minute. Perſons provided with it, and being ſhipwrecked near the coaſt, would ſeldom be loſt.

Life-*Rent*, in *Law*, a rent which a man receives for a term of life, or for ſuſtentation of it. Skene.

LIFFAMATULA, in *Geography*, an iſland in the Eaſt Indian ſea, 25 miles long and ſix broad. S. lat. 2°. E. long. 126 18′.

LIFFEY, a river of Ireland, which riſes in the north-weſtern mountains of the county of Wicklow, and winding through the county of Kildare, it paſſes through the city of Dublin, and flows into Dublin bay. It derives its chief importance from the greatneſs of the city ſituated on its banks.

LIFFORD, the county-town of the county of Donegal, Ireland, a very ſmall place, and at one extremity of that large county, but fixed upon to accommodate the judges and gentlemen of the bar: one mile W. from Strabane, and 101 N.W. by N. from Dublin.

LIFFRE, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the diſtrict of Rennes; 9 miles N.E. of Rennes. The place contains 2096, and the canton 8372 inhabitants, on a territory of 205 kiliometres, in 7 communes.

LIFTING-Pieces, in a clock, are thoſe parts which lift up and unlock the detents in the clock part.

LIFTS, in a *Ship*, ropes belonging to the yard-arms of all yards. Their uſe is to ſtop the yard-arms, *i. e.* to make the end of the yards hang higher or lower, as occaſion ſerves. The top-ſail lifts ſerve as ſheets for the top-gallant yards, as well as for lifts to the top-ſail yards. The haling of theſe ropes is called *topping the lifts*: thus they ſay, *top a ſtarboard*, or *top a port*, *i. e.* hale upon the ſtarboard or larboard lift.

The lifts for the ſprit-ſail-yard are called *ſtanding lifts*.

LIGAMENT, in its general ſenſe, denotes any thing that ties or binds one part to another.

In which ſenſe the ancients applied the word to membranes, ſkin, fleſh, veins, and arteries; as being common ligaments.

Ligament, in its more proper ſignification, denotes a white, tough, ſolid, inflexible part, ſerving to incloſe, and keep together the junctures of the body.

It has no conſpicuous cavities, nor has it any ſenſe, leſt it ſhould ſuffer on the moving of the bones. It is found very different, according to the different parts where it is uſed. It is harder than a membrane, yet ſofter than a cartilage: its principal uſe is to gird and ſtrengthen the junctures, to prevent the diſlocation of the bones, and even to faſten them together, when they have no articulation. It alſo ſerves as a covering to the tendons to ſeparate them from the muſcles, and to hold up the ſuſpended entrails, leſt their weight ſhould throw them down. Such are the ligaments of the liver, the bladder, and matrix.

Ligaments are of different ſubſtances; ſome hard, others ſoft, membranous, nervous, and cartilaginous; as alſo of different figures and ſituations: ſome ariſe from bones, others from cartilages, and others from membranes.

LIGAMENTUM, in *Anatomy*, a ligament or part connecting organs together, and limiting their reſpective motions. In its moſt proper ſenſe it denotes the fibrous bodies by which the bones are united at their articulations (ſee Joint); but it is often applied to parts of an entirely different kind, as to the membranous folds which attach various organs in the cheſt and abdomen.

Ligamentum *Annulare*, is a name given to different fibrous organs about the wriſt and foot, which confine the tendons of the extenſor and flexor muſcles in their ſituation. For an account of the annular ligament of the carpus, ſee Extremities. The annular ligament of the fore-arm, which confines the extenſor tendons, is deſcribed in the articles Extensor *communis digitorum*, and Fascia. The deſcription of the annular ligaments of the cord will be found under Fascia.

Ligamentum *Arterioſum*, is the fibrous cord connecting together the trunks of the pulmonary artery and the aorta, conſiſting of the remains of the canalis arterioſus of the fœtus. See Embryo.

Ligamentum *Ciliare*, in the eye, is the white union of the ſclerotica and choroid coats. See Eye.

Ligamenta *Coli*. See Intestine.

Ligamentum *Denticulatum*, in the ſpinal marrow. See Brain.

Ligamentum *Nuchæ*. See Head.

Ligamentum *Fallopii*, or *Poupart's Ligament*. See Obliquus *externus abdominis*.

Ligamentum *Latum*, or *Suſpenſorium Hepatis*, lig. coronarium hepatis, et ligamenta lateralia hepatis. See Liver.

Ligamentum *Latum Uteri*, et lig. rotundum uteri. See the deſcription of the uterus in the article Generation.

Ligamentum *Teres* of the hip-joint. See Extremities.

LIGAN, in *Law*, denotes a wreck conſiſting of goods ſunk in the ſea, but tied to a cork or buoy, in order to be found again. Over theſe, as well as flotſam and jetſam, the high-admiral hath juriſdiction, as they are in and upon the ſea. 5 Rep. 106.

LIGANI, in *Geography*, a town of Turkiſh Armenia; 30 miles E. of Iſpira.

LIGARDES, a town of France, in the department of the Gers; 7 miles N.E. of Condom.

LIGATURE, among *Myſtic Divines*, ſignifies a total ſuſpenſion of the ſuperior faculties, or intellectual powers of the ſoul. They pretend, that when the ſoul is arrived at a perfect contemplation, ſhe remains deprived of all her operations, and ceaſes to act in order to be more ready and prepared to receive the impulſe and communications of divine grace. This paſſive ſtate of theſe contemplative people they call their *ligature*.

Ligature is alſo uſed for a ſtate of impotency, in reſpect to venery, pretended to be cauſed by ſome charm, or witchcraft.

Kæmpfer tells of an uncommon kind of ligature, or knotting, in uſe among the people of Maſſacar, Java, Malaya, Siam, &c. By this charm, or ſpell, a man binds up a woman, and a woman a man, ſo as to put it out of their power to have to do with any other perſon; the man being thereby rendered impotent to any other woman, and all other men impotent with reſpect to the woman.

Some of their philoſophers pretend that this ligature may be effected by the ſhutting of a lock, the drawing of a knot, or the ſticking of a knife in the wall, at the point of time wherein the prieſt is joining a couple together; and that a ligature, thus effected, may be diſſolved, by the ſpouſe's urining through a ring. This piece of ſuperſtition is ſaid to obtain alſo among the Chriſtians of the Eaſt.

The ſame author tells us, that during the ceremony of marriage in Ruſſia, he obſerved an old fellow lurking behind the church-door, and mumbling over a ſtring of words; and, at the ſame time, cutting a long rod, which he held under his arm, into pieces; which, it ſeems, is a common practice at the marriages of great perſons, and done with deſign to elude and counter-work any other perſon, that might poſſibly be inducing the ligature.

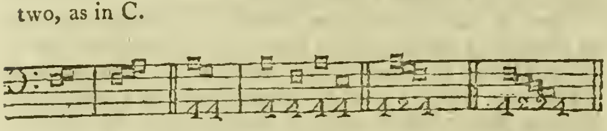
The ſecret of inducing a ligature is delivered by the ſame author, as he was taught it on the ſpot by one of their adepts; which, being a curioſity, we ſhall not ſcruple to add in his own words; not daring to make it ſpeak Engliſh. "Puella amaſium, vel conjux maritum ligaturus, abſterget a concubitus actu, priapum, induſio—ut ſeminis quantum poteſt excipiet. Hoc probe convolutum ſub limine domus ſuæ in terram ſepeliat. Ibi quamdiu ſepultum reliquerit, tamdiu ejus haſta in nullius præterquam ſui (faſcinantis) ſervitium obediet, et prius ab hoc nexu non liberabitur quam ex clauſtro liminis liberetur ipſum linteum: vice verſa, vir lecti ſociam ligaturus, menſtruatum ab eo linteum comburit; ex cineribus cum propria urina ſubactis, efformato figuram priapi, vel, ſi cineres icunculæ ſingendæ non ſufficiant, eoſdem ſubigito cum parte terræ, quam recens perminxerit. Formatam iconem caute exſiccato, ſiccamque aſſervato loco ſicco, ne humorem contrahat. Quamdiu ſic ſervaveris, omnes artus, dum ad ſcopam ſociæ collimaverint, momento contabeſcent: ipſe vero dominus. Abrunum hunc ſuum prius humectato, quamdiu ſic manebit, tamdiu ſuſpenſo nexu priapus ipſi parebit, quin & alios quotquot fœmina properantes admiſerit."

M. Marſhal mentions another ridiculous form of ligature, which he received from a Bramin at Hindooſtan: "If," ſays he, "the little worm in the wood lukerara kara be cut into two, and the one part ſtirs, and the other not, if the ſtirring part be bruiſed, and given with half a beetle to a man, and the other half to a woman, the charm will keep each from ever having to do with any other perſon." Phil. Tranſ. No. 268.

Ligature, *Ligatura*, in the *Italian Muſic*, ſignifies a tying or binding together of notes.

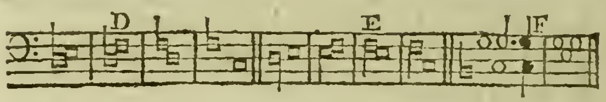
Hence ſyncopes are often called ligatures, becauſe they are made by the ligature of many notes. There is another ſort of ligatures for breves, when there are many of theſe on different lines, or in different ſpaces, to be ſung to one ſyllable.

To underſtand this, it muſt be obſerved, that only breves are capable of this ſpecies of ligature, becauſe their figure admits of their being placed ſo cloſe together, as to ſeem one character only, though placed on different degrees, unleſs there be occaſion to place a ſemicircle either above or below them, to ſhew that they are tied. This kind of ligature regards common time only. Breves again muſt be conſidered as ſimple, as having a tail, and as being of different colours. Firſt, if they be ſimple ⌶ and aſcend, they contain their natural quantity, *i. e.* each two ſemi-breves, as in example A. But if they deſcend, then each is equivalent to four ſemi-breves, if only two follow one another, as in B. If there are three or four following ones, the firſt and laſt contain each four ſemi-breves, and thoſe in the middle but two, as in C.



Secondly, if they have tails ⌶, and the tail be turned upwards, the breves contain only one meaſure, as well aſcending as deſcending. See Ex. D. But if it be marked downwards, the breve then contains its natural quantity. See Ex. E. This ſpecies of ligature was invented only becauſe the minim, being round, could not be uſed in this manner. And the ſemicircle was not at that time in uſe.

It may be here remarked, that ordinarily the firſt breve alone of every ligature has a tail, and that uſually placed on the left ſide. Laſtly, if they be of different colours, *i. e.* if the firſt be white, or open in the middle, and the ſecond black, the firſt contains a ſemi-breve, and the ſecond a pointed minim. Example F.



Theſe are the principal ligatures, beſides which there are many others, for which ſee Character. See alſo Legatura.

Ligatures, among *Printers*, are types conſiſting of two letters or characters joined together, as *ct*, &, *ff*, *ſl*; *fi*. The old editions of Greek authors are extremely full of ligatures; the ligatures of Stephens are, by much, the moſt beautiful.

Some editions have been lately printed without any ligatures at all; and there was a deſign to explode them quite out of printing. Had this ſucceeded, the fineſt ancient editions would, in time, have grown uſeleſs; and the reading of old manuſcripts would have been rendered almoſt impracticable to the learned themſelves.

Ligature, in *Surgery*, is the only means to be depended upon for putting a permanent ſtop to all bleedings from arteries of conſiderable ſize. In ordinary caſes, the mouth of the bleeding veſſel being expoſed, is taken hold of with the tenaculum, or forceps, and tied. In ſome inſtances, the artery being punctured, and not cut through, nor brought into view, the ſurgeon has firſt to cut down to the wounded portion of the veſſel, and then paſs a double ligature under it by means of an aneuriſm-needle, or an eye-probe. The latter inſtrument, having fulfilled its office, is to be removed by dividing the double ligature with a pair of ſciſſors. One part of the ligature is then to be applied round the artery in a firm knot above the opening from which the blood iſſues, and the other below it. In caſes of aneuriſm, the ligature is introduced under the artery in a very ſimilar way.

Whoever is acquainted with the hiſtory of ſurgery, muſt be fully ſenſible of the immenſe advantage which the moderns have over the ancients in the familiar employment of ligatures for the ſtoppage of hemorrhage. But, although many years have elapſed ſince this important improvement in practice began, it was not till very lately that ſeveral moſt intereſting circumſtances, relative to the uſe of the ligature, were brought to light. For this elucidation of a difficult, though highly momentous, ſubject to the practical ſurgeon, we are indebted to the judgment, accuracy, and talents of Dr. J. F. D. Jones, whoſe Treatiſe on Hemorrhage demands the earneſt attention of every enlightened practitioner. Before this work appeared, ſcarcely any ſurgeon had a juſt conception of the manner in which ligatures effected the ſuppreſſion of hemorrhage; nor were the principles on which they ought to be made and applied properly underſtood. One of the firſt and moſt material effects of a ligature applied to an artery, is to produce a diviſion of the middle and internal coats of the veſſel. This fact was communicated to Dr. Jones by Mr. Thomſon of Edinburgh, and is alleged to have been known to the celebrated M. Deſault of Paris. The inner coats of the artery, thus cut through by the preſſure of the ligature, are in the fitteſt ſtate for inflaming and effuſing coagulable lymph, and, in ſhort, for undergoing that proceſs, by which the permanent cloſure of the veſſel is to be accompanied. Hence, ligatures ſhould not be thick, irregular, and clumſy; but ſmalliſh, firm, and round; and they ſhould be applied with tightneſs, as it is of conſequence that they divide the inner coats of the artery, and the fear of their cutting the veſſel quite through is deſtitute of foundation. Theſe, however, and numerous other particulars, having been explained in a previous part of this Cyclopædia, we muſt avoid unneceſſary repetition, by referring the reader to the article Hemorrhage.

LIGEANCE, Ligeantia, in *Law*, is the true and faithful obedience of a ſubject to his ſovereign; and is alſo applied to the dominion or territory of the liege lord: thus children are ſaid to be born in or out of the ligeance of the king, &c. Stat. 25 Edw. III. See Allegiance and Liege.

LIGHT, that ſenſation occaſioned in the mind by the view of luminous bodies; or that property in bodies, whereby they are fitted to excite thoſe ſenſations in us.

Light is alſo uſed to denote a certain action of the luminous body, on a medium between it and the eye; by means of which, ſome ſuppoſe the one to act on the other. This they call *ſecondary*, or *derivative* light: to diſtinguiſh it from that of luminous bodies, which is called *primary*, or *innate*.

Ariſtotle explains the nature of light, by ſuppoſing ſome bodies to be tranſparent, as air, water, ice, &c.; but ſince, in the night-time, we do not ſee any thing through thoſe bodies, he ſays, they are only tranſparent potentially; whereas, in the day, they become really and actually tranſparent: and ſince it is light alone that can reduce that power into act, he defines light to be the act of a tranſparent body, conſidered as ſuch. He adds, that light is not fire, nor is it any thing bodily radiating from the luminous body, and tranſmitted through the tranſparent one; but the mere preſence of fire, or ſome other luminous body, at the tranſparent one.

This is Ariſtotle's doctrine of light, which his followers miſtaking, have charged on him another, very different; making light and colours to be qualities of the luminous and coloured bodies themſelves, and in all reſpects like thoſe ſenſations which they occaſion in us: adding, that things lucid, or coloured, could not produce any ſenſation in us, unleſs they had ſomething ſimilar in themſelves, ſince *nihil dat quod in ſe non habet*.

But the ſophiſm is apparent; for we find, that a needle, in pricking the fleſh, gives us pain, which nobody ever imagined to exiſt in the needle. But that it is not neceſſary there ſhould be any ſimilitude between the quality of the object, and the ſenſation it produces, appears ſtill more evident from a glaſs priſm, which is found to exhibit blue, yellow, red, and other colours extremely vivid; and yet no body will ſay there is any thing in the glaſs priſms like to thoſe ſenſations.

The Carteſians have refined conſiderably on this notion; and own that light, as it exiſts in the luminous body, is nothing but a power or faculty of exciting in us a very clear and vivid ſenſation; adding, that what is required to the perception of light, is, that we be ſo formed, as to be capable of ſuch ſenſations; that in the hidden pores of tranſparent bodies, there be a certain ſubtile matter, which, by reaſon of its exceeding ſmallneſs, may penetrate even glaſs, and yet be ſtrong enough to ſhake certain capillaments at the bottom of the eye; and laſtly, that this matter be impelled by the luminous body, ſo as to move the organ of ſight.

Primary light, therefore, they ſay, conſiſts in a certain motion of the particles of the luminous body, whereby they are enabled to propel, every way, the materia ſubtilis, lodged in the pores of tranſparent bodies; and ſecondary or derivative light, in a conatus to motion, or an inclination of that matter to recede from the centre of the luminous body in right lines.

Father Malebranche explains the nature of light, from a ſuppoſed analogy between it and ſound.

Thus he ſuppoſes all the parts of a luminous body are in a rapid motion, which, by very quick pulſes, is conſtantly compreſſing the ſubtile matter between the luminous body and the eye, and excites vibrations of preſſion. As theſe vibrations are greater, the body appears more luminous; and as they are more quick, or more ſlow, the body is of this or that colour.

This hypotheſis, how ingenious ſoever, is now deſervedly diſcarded, ſince the great diſcoveries made by ſir Iſaac Newton on the nature of light. The primary light they talk of, we now know, conſiſts wholly in a certain motion of the particles of the lucid body, whereby they do not propel any fictitious matter, ſuppoſed to be lodged in the hidden pores of tranſparent bodies; but throw off from the luminous body certain very ſmall particles, which are emitted every way with great force; and the ſecondary or derivative light conſiſts not in a conatus, but a real motion of theſe particles, receding every way from the luminous body, in right lines, and that with an incredible velocity.

The moſt diſtinguiſhing property of light is that by which it renders objects viſible by ſome power, which transfers their exterior figure to the retina of the eye.

We obtain light from three diſtinct ſources, which will divide our ſubject into three heads; namely, ſolar light, light of combuſtion, and phoſphoreſcent light.

Very little was known of the nature and properties of light before the experimental reſearches of Newton; and it is remarkable that at this time ſo little ſhould have been added to the labours of that acute philoſopher. It is ſtrange, that after the evidence of his experiments there could have been two opinions reſpecting the nature of light. Huygens ſuppoſed the phenomena of light to be cauſed by an undulatory motion, excited in a ſuppoſed ſubtile and elaſtic medium, pervading all ſpace: that theſe waves or pulſes are propagated, firſt at the luminous body, ſuch as the ſun or a candle, and tranſmitted in all directions. The impreſſion made by theſe waves upon the eye is the cauſe of viſion. This doctrine has ſince been taken up by Euler, who, with much zeal and mathematical labour, ſupported it to his death. Newton, however, had given an hypotheſis, ſupported by clear and ſtriking experiments; and at the ſame time had pointed out inſurmountable objections to the undulatory hypotheſis, ſo that the labour and great talents of Euler were exhauſted to little purpoſe.

Sir Iſaac Newton argued, with great propriety, that the undulatory motion was inconſiſtent with the phenomena of light. The paſſage of light would not be confined to ſtraight lines, but might, like ſound, be conveyed through crooked tubes, which is contrary to the fact.

Beſides, if light conſiſted in a mere preſſion, or pulſe, it would be propagated to all diſtances in the ſame inſtant of time; the contrary of which appears from the phenomena of the eclipſes of Jupiter's ſatellites, which we ſhall preſently mention.

We ſhall therefore, with Newton, conſider light as a material agent, moving with an immenſe velocity from the point where it is liberated. If its motion be in free ſpace, it moves in ſtraight lines in the form of radii, and would continue for ever in the ſame direction, if not changed in its courſe by the attraction of other matter. Light, therefore, like electricity and caloric, appears in a high degree to be repellent of itſelf, although it poſſeſſes attraction for ponderable matter. Indeed, it is to this great repulſion of the particles of light that we are to attribute its progreſſive velocity, which, therefore, is as the force by which its particles are ſeparated.

The ſmall extent of the limits of viſion upon the ſurface of our globe does not enable us to appreciate the velocity with which light moves.

Roemer, a Daniſh philoſopher, at length found the means of determining this point by the difference of time in the eclipſes of Jupiter's ſatellites, when the earth was on the ſame, or on the contrary ſide of the ſun, with that planet. The immerſions of theſe ſatellites, as the earth approaches towards Jupiter, are found to anticipate ſomewhat on the true time, and to commence ſooner; and again, as the earth retires from Jupiter, their emerſions, which alone in that caſe can be obſerved, happen later and later, or loſe time; deviating thus, very conſiderably on either ſide, from the true time marked by the tables.

This was firſt obſerved by M. Roemer, and ſince by other aſtronomers; the reaſon of which is not owing to any eccentricity; but apparently follows from this circumſtance, that the light of the ſun, reflected from the ſatellites, has farther to travel, before it reaches the eye, in the one caſe than in the other, by a ſpace equal to the diameter of the earth's annual orbit.

The obſervations, whence this concluſion was deduced, were made at the obſervatory belonging to the Royal Academy of Sciences at Paris, from 1670 to 1675: the principal fact was, that the firſt ſatellite ſometimes emerged exactly at the times calculated by the tables, and ſometimes not, inſomuch that the greateſt variation was about fourteen minutes. The particular obſervation that was the moſt ſtriking, was the emerſion of this ſatellite obſerved at Paris, Nov. 9, 1676, ten minutes later than it had been obſerved in the month of Auguſt, when the earth was much nearer to Jupiter. Hence Caſſini and Roemer both concluded, that this circumſtance depended on the diſtance of Jupiter with reſpect to the earth; and that in order to account for it, they muſt ſuppoſe that the light was about fourteen minutes in croſſing the earth's orbit.

But the concluſion was afterwards abandoned and attacked by Monſieur Caſſini. M. Roemer's opinion found an able advocate in Dr. Halley; who removed Caſſini's difficulty, and left M. Roemer's concluſion in its full force. In a memoir preſented to the academy in 1707, Monſieur Maraldi endeavoured to give a new force to Caſſini's arguments; but Monſieur Roemer's doctrine found a new defender in Mr. Pound. See Phil. Tranſ. N° 136. Phil. Tranſ. Abr. by Lowth, vol. i. p. 409, 422. S'Grav. Phyſ. Elem. N° 2636, ſeq.

It has been ſince found, that when the earth is between the ſun and Jupiter, his ſatellites are eclipſed about eight minutes ſooner than they could be according to the tables, and that when the earth is nearly in the oppoſite point of its orbit, theſe eclipſes happen about eight minutes later than the tables predict them. Hence it is undeniably certain, that the motion of light is not inſtantaneous, ſince it takes about 16½ (or 16′ 10″) minutes of time to go through a ſpace equal to the diameter of the earth's orbit, which is at leaſt 190 millions of miles in length; and conſequently the particles of light fly about 191919 or 200000 miles every ſecond of time, which is near a million of miles ſwifter than the motion of a cannon-ball. And as light is 16½ minutes in travelling acroſs the earth's orbit, it muſt be 8¼ (or 8′ 5″) minutes in coming from the ſun to us; therefore, if the ſun were annihilated, we ſhould ſee him for 8¼ minutes after; and if he were again created, he would be 8¼ (or 8′ 5″) minutes old before we could ſee him. In order to explain this progreſſive motion of light, let A and B, *Plate* IX. *Optics*, *fig.* 1, be the earth in two different parts of its orbit, whoſe diſtance from each other is 95 millions of miles, equal to the earth's diſtance from the ſun S.

It is plain, that if the motion of light were inſtantaneous, the ſatellite 1 would appear to enter into Jupiter's ſhadow F F, at the ſame moment of time to a ſpectator in A, as to another in B. But it is now well known that the immerſion of the ſatellite into the ſhadow is ſeen 8½ (or 8′ 5″) minutes ſooner when the earth is at B, than when it is at A. As the earth moves from D to C, through the ſide A B of its orbit, it is conſtantly meeting the light of Jupiter's ſatellites ſooner, which occaſions an apparent acceleration of their eclipſes; and as it moves through the other half H of its orbit, from C to D, it is receding from their light, which occaſions an apparent retardation of their eclipſes, becauſe their light is then longer before it overtakes the earth. That theſe accelerations and retardations are not occaſioned by any inequality ariſing from the motions of the ſatellites in eccentric orbits is plain, becauſe it affects them all alike, in whatever parts of their orbits they are eclipſed. Beſides, they go often round their orbits every year, and their motions are no way commenſurate to the earth's. Therefore a phenomenon not to be accounted for from the real motions of the ſatellites, but ſo eaſily deducible from the motion of the earth, and ſo anſwerable to it, muſt be allowed to reſult from it. And this affords one very good proof of the earth's annual motion. See the ſequel of this article.

We ſhall here obſerve, that the firſt perſon, who conceived the thought of meaſuring the velocity of light was Galileo, who has given a particular deſcription of his contrivance for this purpoſe, in his Treatiſe on Mechanics, p. 39. He had two men with lights, one of whom was to obſerve when the other uncovered his light, and to exhibit his own the moment that he perceived it: the experiment was tried, as may naturally be imagined, without ſucceſs, at the diſtance of one mile; but the members of the academy Del Cimento reſumed the experiment, and placed the obſervers, to as little purpoſe, at the diſtance of two miles. However, the method uſed by M. Roemer, already mentioned, was the only one adequate to the diſcovery of the velocity of light.

Our excellent aſtronomer, Dr. Bradley, has found nearly the ſame velocity of light, from his accurate obſervations, and moſt ingenious theory, to account for ſome apparent motions in the fixed ſtars. Phil. Tranſ. N° 406, or Abridg. vol. vi. p. 150. And for a ſummary account of theſe obſervations, &c. ſee EARTH and STAR.

To underſtand this, it muſt be premiſed, that the fixed ſtars are luminous bodies, and at reſt, with reſpect to our planetary ſyſtem, from which they are vaſtly remote. In this ſyſtem alſo the earth is conſidered as one of the planets, and moving about the ſun.

Suppoſe the ſun repreſented in S, (*Plate* IX. *Optics*, *fig.* 2.) and that the circle A B C D repreſents the path of the earth, or the ecliptic. At the centre S ſuppoſe a perpendicular S P raiſed to the plane of the ecliptic, and that this perpendicular paſſes through any fixed ſtar. If a ſpectator were placed in S, he would ſee the ſtar in the ſame perpendicular; but if the ſpectator paſſes over the circle A B C D, the diameter of which is ſuppoſed to bear a ſenſible though ſmall proportion to the diſtance of the ſtar, it will be perceived to change its ſituation in the heavens. For a ſpectator in A would ſee the ſtar in the line A P *a*; in C he would ſee the ſame ſtar in the line C P *c*;

and ſo in any other point of his progreſs; whence it follows, that the ſtar would ſeem to deſcribe a circle in the heavens repreſented by *abcd*. If the diſtance of the ſtar was ſo very great, that in reſpect of it the diameter of the earth's orbit A C might be eſteemed a point; in this caſe, the foreſaid circle would be entirely inſenſible; all the lines drawn from the points of the orbit to the ſtar might paſs for perpendiculars to the plane of the ecliptic, and in appearance would correſpond to the ſame point in the heavens with the perpendicular in S, in which point the ſtar would always appear, if its light could reach us in an inſtant. But if in this caſe, where the ſtar is ſo remote, the light is ſuppoſed to be propagated from the ſtar with a certain velocity, at the ſame time that the earth proceeds in its orbit, the ſtar will be ſeen in an oblique direction to the plane of the orbit; becauſe of the motion compounded of the motion of light, and that of the ſpectator.

Suppoſe the light to move in the line E G (*fig.* 3.) making an angle with the line F G, in which the ſpectator is carried along; whom we ſhall conceive placed in F. Let the velocity of the ſpectator be to the velocity of the light, as F G to E G. While the ſpectator moves along F G, the light does the ſame along E G; and the particle of light, which is in E when the ſpectator is in F, enters the eye only when he arrives at G. Now the direction of the light, with reſpect to the eye, makes with the line F G the angle E F G. For if we conceive the line F E drawn, and to be carried with a parallel motion along with the eye, ſo that in reſpect thereof it be at reſt, while this continues moving, the light will reach the eye in the direction of the ſaid line; for when the eye ſhall be in *f*, the middle point between F and G, the transferred line, will cut E G in its middle point *g*, to which the particle of light has reached, and which is likewiſe the middle point of the transferred line *fe*; wherefore the particle of light, which was in E, in the extremity of the line E F, arrives at, and will enter the eye in the direction *eg*.

Let the angle E G F (*fig.* 4.) be a right one, and E G to F G as the velocity of the light to the velocity of the earth in its orbit; then E F G will be the angle, which the ray of light entering the eye, makes with the plane in which the earth moves round the ſun.

If the earth be in B (*fig.* 5.) it moves in the direction of the tangent to its orbit in this point; that is, if we ſuppoſe the ſpectator in the ſun, the direction of the earth's motion is parallel to S C; and making the angle *a* S C equal to the angle E G F in the former figure, the line S *a* will repreſent the line in which the ſpectator would ſee the ſtar.

In the ſame manner when the earth is in D, the ſpectator in the ſun will ſee the ſtar in S *c*, the angles P S *c* and P S *a* being equal; and the line S *a* or S *c*, by its revolution about P S, would deſcribe a cone, whoſe baſe in the heavens would be a circle repreſenting the apparent path of the ſtar through a whole year. Let us ſuppoſe this circle to be *abcd*, as in *fig* 5.

When the ſtar is not in the perpendicular to the plane of the ecliptic, but the line P S (*fig.* 6.) is inclined to that plane, the lines which determine the apparent motion of the ſtar in the heavens will form cones, as in the caſes already explained; only they would be oblique, and in both caſes the apparent path of the ſtar in the heavens would be determined as above: but in this laſt caſe it would be an ellipſis, the greater diameter of which would be equal to the diameter of the circle *abcd* of the former figures; ſo that knowing this ellipſis, the circle might eaſily be found which the ſtar would deſcribe, if placed in the perpendicular to the plane of the ecliptic.

The only way to determine, whether the ſtars deſcribe ſuch ellipſes, is by obſervations; in making which there are great difficulties, which, however, Dr. Bradley has with incomparable induſtry ſurmounted.

Nothing can immediately be determined concerning the foreſaid elliptic motion. The diſtance of the ſtar from the pole of the world muſt be meaſured at different times of the year, and from the different diſtances the elliptic motion is to be determined by calculation, allowing for the motion of the pole itſelf during the ſpace of time between the obſervations; for the pole moves in a leſſer circle, one degree of which it paſſes over in ſeventy-two years.

Dr. Bradley, making all neceſſary allowances, obſerved ſeveral ſtars at different times of the year, whereby he immediately diſcovered, that their diſtances from the pole of the world varied; and was convinced that this variation could not be attributed to the nutation of the pole; for he examined two ſtars at equal diſtances from the pole, but ſo oppoſite, that the one ought to have receded from the pole as much as the other acceded to it, if the motion was in the pole itſelf. But this did not fall out ſo; for the change of the one ſtar was double of that of the other; a proper allowance being always made for the pole's motion ariſing from the above revolution. However, this indefatigable obſerver inferred from his obſervations, that the ſtars in certain times receded from, and acceded to, the pole of the world with a motion entirely analogous to that which is performed in an ellipſis; and alſo that they move in ſuch curves, for each of which the motion in the ſame little circle, as *abcd* (*fig.* 6.) anſwers, when the ſtars are referred to the perpendicular in S to the plane of the ecliptic; and the diameter of this minute circle for them all is $40''\frac{1}{2}$.

It is plain from obſervations, to which of the above mentioned cauſes we are to aſcribe the motion of the ſtar. For if the firſt takes place, the ſtar would be carried from *a* to *c*, while the earth paſſed over the part A B C of its orbit; but this, being contrary to obſervation, cannot be the true cauſe. But this change in the ſituation of the ſtar takes place according to the obſervations, while the earth deſcribes the part B C D of its orbit, which is juſt what the ſecond cauſe requires.

If both the cauſes took place at the ſame time, the arc deſcribed by the earth would differ from that indicated by either of them; beſides, this concurrence of the cauſes is contrary to the obſervations; unleſs, perhaps, it may be thought reaſonable to attribute a little influence to the firſt cauſe; but ſo very ſmall a portion, as not to be ſenſibly perceived in the obſervations.

Dr. Bradley himſelf conſidered this matter in the following manner: he imagined C A (*Plate* IX. *Optics*, *fig.* 7.) to be a ray of light falling perpendicularly upon the line B D; that, if the eye is at reſt at A, the object muſt appear in the direction A C, whether light be propagated in time or in an inſtant. But if the eye is moving from B towards A, and light is propagated in time, with a velocity that is to the velocity of the eye as C A to B A, then light, moving from C to A, whilſt the eye moves from B to A, that particle of it by which the object will be diſcerned when the eye comes to A, is at C, when the eye is at B. Joining the points B, C, he ſuppoſed the line C B to be a tube, inclined to the line B D in the angle D B C, of ſuch a diameter as to admit but one particle of light. Then it was eaſy to conceive, that the particle of light at C, by which the object muſt be ſeen, when the eye, as it moves along, arrives at A, would paſs through the tube B C, if it is inclined to B D in the angle D B C, and accompanies the eye in its motion from B to A; and that it could not come to the eye placed behind ſuch a tube, if it had any other inclination to the line B D. If, inſtead of ſuppoſing C B ſo ſmall a tube, we imagine it to be the axis of a larger; then, for the ſame reaſon, the particle of light at C would not paſs through that axis, unleſs it is inclined to B D in the angle C B D. In like manner, if the eye move the contrary way, from D towards A, with the ſame velocity, then the tube muſt be inclined in the angle B D C. Although, therefore, the true or *real* place of an object is perpendicular to the line in which the eye is moving, yet the *viſible* place will not be ſo, ſince that, no doubt, muſt be in the direction of the tube; but the difference between the true and apparent place will be, *cæteris paribus*, greater or leſs, according to the different proportion between the velocity of light and that of the eye. So that if we could ſuppoſe that light was propagated in an inſtant, then there would be no difference between the real and viſible place of an object, although the eye were in motion; for in that caſe, A C being infinite with reſpect to A B, the angle A C B, the difference between the real and viſible place, vaniſhes. But if light be propagated in time, it is evident, from the foregoing conſiderations, that there will be always a difference between the true and viſible place of an object, unleſs the eye is moving either directly towards or from the object. And in all caſes the ſine of the difference between the real and viſible place of the object will be to the ſine of the viſible inclination of the object to the line in which the eye is moving, as the velocity of the eye is to the velocity of light.

He then ſhews that if the earth revolve round the ſun annually, and the velocity of light be to the velocity of the earth's motion in its orbit, as one thouſand to one, that a ſtar really placed in the very pole of the ecliptic, would, to an eye carried along with the earth, ſeem to change its place continually; and neglecting the ſmall difference on the account of the earth's diurnal revolution on its axis, would ſeem to deſcribe a circle round that pole every way diſtant from it $3\frac{1}{2}$; ſo that its longitude would be varied through all the points of the ecliptic every year, but its latitude would always remain the ſame. Its right aſcenſion would alſo change, and its declination, according to the different ſituation of the ſun with reſpect to the equinoctial points, and its apparent diſtance from the north pole of the equator, would be 7′ leſs at the autumnal than at the vernal equinox.

The greateſt alteration of the place of a ſtar in the pole of the ecliptic, or which, in effect, amounts to the ſame thing, the proportion between the velocity of the light and the earth's motion in its orbit being known, it will not be difficult, he obſerves, to find what would be the difference, upon this account, between the true and apparent place of any other ſtar at any time; and, on the contrary, the difference between the true and apparent place being given, the proportion between the velocity of light and the earth's motion in its orbit may be found.

From all which the following concluſions may be deduced: 1. That the ſecond cauſe above-mentioned alone takes place in this caſe, *viz.* that the diſtance of the ſtars is ſo great, that the diameter of the earth's orbit has no ſenſible proportion to it. 2. That the angle F E G (*fig* 3.) in the above mentioned triangle, is $20''\frac{1}{4}$; or, ſince the apparent declination of the ſtar γ Draconis, obſerved by Dr. Bradley, on account of the ſucceſſive propagation of light, would be to the diameter of the little circle which a ſtar would ſeem to deſcribe about the pole of the ecliptic as 39″ to 40″.4; the half of this is the angle A C B (*fig.* 7.) which is equal to 20″.2; and conſequently the ratio of E G to F G (*fig.* 3.) or of A C to A B (*fig.* 7.) or the velocity of the light to the velocity of the earth in its orbit, as 10210 to 1; whence it follows, that the light comes from the ſun to the earth in 8′ 12′. This, Dr. Bradley obſerves, is very probably the truth, becauſe it is a medium between 7 and 11, which were the times which it had before been ſuppoſed to take up, according to different obſervations of the eclipſes of Jupiter's ſatellites. Comparing his obſervations on other ſtars, he afterwards concluded, that light is propagated from the ſun to the earth in 8′ 13″; and the near agreement of his obſervations induced him to think, that this ſuppoſition could not differ ſo much as a ſecond of a degree from the truth; ſo that the time which light ſpends in paſſing from the ſun to us may be determined by theſe obſervations within 5″ or 10″, which is ſuch a degree of exactneſs as we can never hope to attain from the eclipſes of Jupiter's ſatellites. 3. That the light proceeds with the ſame velocity from all the ſtars; for all have the ſame angle F E G. Whence (if we ſuppoſe that all the ſtars are not equally diſtant from us, as many arguments prove) it will follow, that the motion of light, all the way it paſſes through the immenſe ſpace above our atmoſphere, is equable or uniform. And ſince the different methods of determining the velocity of light thus agree in the reſult, it is reaſonable to conclude, not only that the phenomena above recited are owing to the cauſes to which they are aſcribed, but alſo that, in the ſame medium, light is propagated with the ſame velocity after it has been reflected, as before. 4. Laſtly, it muſt be conſidered, that very ſmall differences cannot be perceived; and nobody will deny, but that in meaſuring a ſmall angle, an error of a ſecond may be committed, whatever care is uſed to prevent it; and therefore, although we have ſaid, that the firſt cauſe is to be rejected, we do not deny that the ſtars may poſſibly by its influence deſcribe a minute circle, whoſe diameter is 1″, or even a little more. S'Graveſande's Phyſ. Elem. Math. lib. ii. cap. 1. p. 708, ſeq.

Hence it appears, that the ſucceſſive propagation of light will cauſe an aberration in the appearances of the ſtars, planets, and comets. (See ABERRATION.) After Dr. Bradley had diſcovered this cauſe of error in the apparent places of the fixed ſtars, M. Clairaut and others inveſtigated ſeveral rules for the computation of this aberration. M. Euler alſo has given us a paper on this ſubject. Mem. Acad. Scienc. 1756. Mr. Simpſon, in his Eſſays. Mem. de l'Acad. de Berlin, tom. ii. p. 141, ſeq.

See remarks on the effect of the aberration of light on the time of the tranſit of Venus over the ſun, by Dr. Price, in Phil. Tranſ. vol. lx. art. 47. p. 536.

For an account of Mr. Melville's hypotheſis of the different velocities of differently coloured rays, ſee REFRANGIBILITY.

Whether the light emitted by candles and other luminous bodies acquires the ſame velocity it is difficult to determine. So far as our knowledge extends on that head, it does not appear inferior to ſolar light.

But to return to the hypotheſis of preſſure, by which ſome have accounted for the propagation of light, it might be obſerved farther, if light were not a body, but conſiſted in a mere preſſion, or pulſion, it would never be propagated in right lines, but would be continually inflected ad umbram. Thus ſir Iſaac Newton: "A preſſure on a fluid medium, *i. e.* a motion propagated by ſuch a medium, beyond any obſtacles, which impedes any part of its motion, cannot be propagated in right lines, but will be always inflecting and diffuſing itſelf every way, to the quieſcent medium beyond that obſtacle. The power of gravity tends downwards; but the preſſure of water ariſing from it tends every way with an equable force, and is propagated with equal eaſe, and equal ſtrength, in curves, as in ſtraight lines. Waves, on the ſurface of the water, gliding by the extremes of any very large obſtacle, inflect and dilate themſelves, ſtill diffuſing, gradually, into the quieſcent water beyond that obſtacle. The waves, pulſes, or vibrations of the air, wherein ſound conſiſts, are manifeſtly inflected, though not ſo conſiderably as the waves of water; and ſounds are propagated with equal eaſe, through crooked tubes, and through ſtraight lines; but light was never known to move in any curve, nor to inflect itſelf ad umbram." The rays of light, therefore, are ſmall corpuſcles, emitted with exceeding celerity from the luminous body. As to the force wherewith theſe corpuſcles are emitted, ſo as to enable them to move at the inconceivable rate of 200,000 miles a ſecond; the ſame great author obſerves; "Among bodies of the ſame kind and virtue, by how much any one is ſmaller, by ſo much is its attractive power greater in proportion to its bulk. This power we find ſtronger in ſmall magnets, than in large ones, regard being had to the difference of their weights: and the reaſon is, that the particles of ſmall magnets being nearer each other, more eaſily unite their forces intimately together, and act conjunctly. For the ſame reaſon the rays of light, being of all other bodies the moſt minute, it may be expected that their attractive powers ſhould be, of all others, the ſtrongeſt; and how ſtrong in effect they are, may be gathered from the following rules: the attraction of a ray of light, according to the quantity of its matter, is to the gravity which any projected body has, according, likewiſe, to the quantity of its matter, in a ratio compounded of the velocity of the ray of light, to the velocity of that projected body, and of the bending or curvature of the line which the ray deſcribes in the place of refraction, to the bending of the curvature deſcribed by that projected body; provided, however, the inclination of the ray to the refracting ſurface be the ſame with that of the projected body to the horizon. From which proportion I gather, that the attraction of the rays of light is above 1,000,000,000,000,000 times greater than the gravity of bodies on the ſurface of the earth, in proportion to the quantity of matter in each, if the light paſs from the ſun to the earth in the ſpace of ſeven minutes. But now, as in algebra, where affirmative quantities ceaſe, there negative ones begin; ſo in mechanics, where attraction ceaſes, there the repelling power muſt ſucceed: therefore a ray of light, as ſoon as it is caſt off from the luminous body, by the vibrating motion of its parts, and is got out of the ſphere of its attraction, is propelled with an immenſe velocity."

The wonderful diviſibility of the parts of matter is nowhere more apparent than in the minuteneſs of the particles of light. Dr. Nieuwentyt has computed, that an inch of candle, when converted to light, becomes divided into 269,617,040 parts, with 40 ciphers annexed; at which rate there muſt iſſue out of it, when burning, 418,660, with 39 ciphers more, particles in the ſecond of a minute; vaſtly more than a thouſand times a thouſand million times the number of ſands the whole earth can contain; reckoning ten inches to one foot, and that 100 ſands are equal to one inch. See Relig. Philoſ. vol iii. p. 865.

It muſt be acknowledged, that many difficulties and objections have been urged againſt the materiality of light, or the hypotheſis of light's conſiſting of ſmall particles emitted from luminous bodies; and that many eminent philoſophers, both foreigners and Engliſh, have recurred to the opinion, that light conſiſts of vibrations propagated from the luminous body through a ſubtile etherial medium.

The ingenious Dr. Franklin, in a letter dated April 23d, 1752, expreſſes his diſſatisfaction with the doctrine, that ſuppoſes particles of matter, called light, continually driven off from the ſun's ſurface, with a ſwiftneſs ſo prodigious. "Muſt not," ſays he, "the ſmalleſt portion conceivable have, with ſuch a motion, a force exceeding that of a twenty-four pounder diſcharged from a cannon? Muſt not the ſun diminiſh exceedingly by ſuch a waſte of matter; and the planets, inſtead of drawing nearer to him, as ſome have feared, recede to greater diſtances through the leſſened attraction? Yet theſe particles, with this amazing motion, will not drive before them, or remove, the leaſt and lighteſt duſt they meet with; and the ſun appears to continue of his ancient dimenſions, and his attendants more in their ancient orbits." Accordingly, he conjectures, that all the phenomena of light may be more conveniently ſolved, by ſuppoſing univerſal ſpace filled with a ſubtile elaſtic fluid; which, when at reſt, is not viſible, but whoſe vibrations affect that fine ſenſe in the eye, as thoſe of air do the groſſer organs of the ear: and that different degrees of the vibration of this medium may occaſion the appearances of different colours. The elaſtic fluid, he ſays, is always the ſame, and yet weaker and ſtronger ſparks differ in apparent colour, ſome white, blue, purple, red; the ſtrongeſt, white; the weak ones, red. Franklin's Exp. and Obſ. &c. p. 264, &c. ed. 1769.

The celebrated Mr. Euler (as we have already obſerved), has alſo ſtrenuouſly maintained the ſame hypotheſis, in his Theoria Lucis & Colorum. In the ſummary of his arguments againſt the common opinion, recited in Acad. Berl. 1752. p. 271, beſides the objections abovementioned, he diſputes the poſſibility, that particles of matter, allowed to move with the amazing velocity of light, ſhould penetrate tranſparent ſubſtances with ſo much eaſe. In whatever manner they are tranſmitted, thoſe bodies muſt have pores, diſpoſed in right lines, and in all poſſible directions, in order to form canals for the paſſage of the rays: but ſuch a ſtructure muſt take away all ſolid matter from thoſe bodies, and all coherence among their parts, if they do contain any ſolid matter.

Dr. Horſley has taken conſiderable pains to obviate the difficulties ſuggeſted by Dr. Franklin; and ſuppoſing that the diameter of each particle of light does not exceed one millionth of one millionth of an inch, and that the denſity of each particle is three times that of iron, that the light of the ſun traverſes the ſemi-diameter of the orbis magnus in 7′, and that this ſemi-diameter is 22919 ſemi-diameters of the earth, he calculates, that the momentum or force of motion in each particle of light coming from the ſun, is leſs than that in an iron ball of ¼th of an inch diameter, moving at the rate of leſs than an inch in twelve thouſand millions of millions of Egyptian years. Hence, he concludes, that a particle of matter, which is probably larger than any particle of light, moving with the velocity of light, has a force of motion, which, inſtead of exceeding the force of a twenty-four pounder diſcharged from a cannon, is infinitely leſs than that of the ſmalleſt ſhot diſcharged from a pocket-piſtol, or leſs than any that art can create. Moreover, he thinks it poſſible, that light may be produced by a continual emiſſion of matter from the ſun, without any ſuch waſte of his ſubſtance as ſhould ſenſibly contract his dimenſions, or alter the motions of the planets, within any moderate length of time. In proof of this, he obſerves, that it is not neceſſary to the production of any of the phenomena of light, that the emanation from the ſun ſhould be continual in a ſtrict mathematical ſenſe, or without any interval; and likewiſe that part of the light which iſſues from the ſun is continually returning to him by reflection from the planets, and other light is continually coming to him from the ſuns of other ſyſtems. He proceeds by calculation to ſhew, that in 385,130,000 Egyptian years, the ſun would loſe $\frac{1}{13232}$d of his matter, and, therefore, that the gravitation towards the ſun, at any given diſtance, would diminiſh in the ſame proportion. But this alteration is much too ſmall to diſcover itſelf in the motion of the earth, or of any of the planets. He alſo computes, that the greateſt ſtroke which the retina of a common eye ſuſtains, when the eye, in a bright day, is turned up directly to the ſun, does not exceed that which an iron ſhot, $\frac{1}{4}$th of an inch diameter, would give, moving only at the rate of 16.16 inches in a year; but the ordinary ſtroke is leſs than the $\frac{1}{2054}$th part of this. (Phil. Tranſ. vol. lx. art. 35. vol. lxi. part ii. art. 50.) One of the principal difficulties attending the hypotheſis of the materiality of light, is the non-interference of its particles with each other. There is, probably, ſays Mr. Melville, Edinb. Eſſ. vol. ii. p. 17, &c. no phyſical point in the viſible horizon, that does not ſend rays to every other point, unleſs where opaque bodies interpoſe. Light; in its paſſage from one ſyſtem to another, often paſſes through torrents of light iſſuing from other ſuns and ſyſtems, without ever interfering, or being diverted from its courſe either by it, or by the particles of that elaſtic medium, which ſome have ſuppoſed to be diffuſed through all the mundane ſpace. In accounting for this fact, he ſuppoſes that the particles of light muſt be incomparably rare, even when they are the moſt denſe; that is, that the ſemidiameters of two of the neareſt particles, in the ſame, or in different beams, ſoon after their emiſſion, are incomparably leſs than their diſtance from one another. This conſideration obviates the objection urged by Euler and others againſt the materiality of light, from its influence in diſturbing the freedom and perpetuity of the celeſtial motions. Boſcovich and others ſolve the difficulty concerning the non-interference of the particles of light, by ſuppoſing that each particle is endued with an inſuperable impulſive force; but in this caſe, their ſpheres of impulſion would be more liable to interfere, and they would, on that account, be more likely to diſturb one another. This difficulty, attending the ſuppoſition, that particles of light move through other light, in all imaginable directions, without perpetual colliſions among the particles, and continual deflections from a rectilinear courſe, is, in a great degree, obviated, by an eaſy computation of Mr. Canton. He obſerves, that it is neceſſary to allow only a very ſmall portion of time between the emiſſion of every particle, and the next that follows in the ſame direction. Suppoſe, for inſtance, that one lucid point of the ſun's ſurface emits 150 particles in one ſecond, which are more than ſufficient to give continual light to the eye, without the leaſt appearance of intermiſſion; yet ſtill the particles of which it conſiſts will, on account of their great velocity, be more than a thouſand miles behind one another, and thereby leave room enough for others to paſs in all directions. Phil. Tranſ. vol. lviii. art. 45. p. 344.

If we adopt the concluſions drawn from the chevalier d'Arcy's experiments on the duration of the ſenſations excited by light, who ſtates it at the ſeventh part of a ſecond (Hiſt. Acad. Scienc. 1765, Mem. 2.) we may admit an interval of more than 20,000 miles between each particle. Some, in order to anſwer the chief objections of this kind againſt the materiality of light, have adopted the hypotheſis of M. Boſcovich; who advances, in his Theoria Philoſophiæ Naturalis, that matter is not impenetrable, but that it conſiſts of phyſical points only, endued with powers of attraction and repulſion, taking place at different diſtances; that is, ſurrounded with various ſpheres of attraction and repulſion, in the ſame manner as ſolid matter is generally ſuppoſed to be; provided, therefore, that any body move with a ſufficient degree of velocity, or have ſufficient momentum, to overcome any powers of repulſion it may meet with, it will find no difficulty in making its way through any body whatever; for nothing will interfere or penetrate one another, but powers, ſuch as we know, do, in fact, exiſt in the ſame place, and counterbalance or overrule one another. Prieſtley's Hiſt. &c. of Light, &c. p. 391. That light is a real ſubſtance, notwithſtanding the objections that have been urged againſt this hypotheſis, ſeems to be eſtabliſhed by the phenomena of the Bolognian ſtone, and of other ſubſtances, which poſſeſs the remarkable property of imbibing light, of retaining it for ſome time, and afterwards of emitting it. See PHOSPHORUS, and the ſequel of this article.

The doctrine of the materiality of light is farther confirmed by thoſe experiments, which demonſtrate, that the colour and inward texture of ſome bodies are changed, in conſequence of their being expoſed to the light.

The firſt obſervation of this kind appears to have been made by M. Duhamel, who found that the juice of a certain ſhell-fiſh in Provence contracted a fine purple colour when it was expoſed to the light of the ſun, and that the ſtronger was the light, the more ſplendid was the colour. Pieces of cloth dipped in this liquor, and expoſed to the ſun, became red, though they were incloſed in glaſs; but they acquired none of this colour in the ſame expoſure, if they were covered with the thinneſt plates of metal. It was afterwards obſerved by Beccarius, Com. Bonon. vol. iv. p. 75, that a quantity of luna cornea, expoſed to the rays of the ſun, became of a violet colour, whilſt part of the ſame compoſition, covered with black paper, remained white. This effect was found by M. H. Schulze to depend on the ſilver that happened to be in it. (Ac. Cæſar. vol. i. p. 528, &c.) G. Bonzius was thus led to ſome ſubſequent experiments, which ſeem to prove that various colours are conſiderably affected by light, excluſive of heat or any thing elſe. By expoſing ribbons of different colours to the rays of the ſun for ſeveral days in the open air, he found that all, except the yellow and light green, loſt part of their luſtre, and were conſiderably faded; but when the ſame ribbons were expoſed to a much greater degree of heat in a dark room, none of the colours were affected, except that a ſmall part of their luſtre was loſt; nor was any ſenſible change made in them after remaining for a conſiderable time in a room that faced the north. By incloſing them in an exhauſted receiver, he found that the change was not occaſioned by the air; but no change could be produced in them by the light of torches. Beccarius alſo found by experiments on paper, and a great variety of ſubſtances, mineral, vegetable, and animal, that the light of the ſun produced many changes in the internal ſtructure of bodies, and that thoſe ſubſtances which imbibed light were much injured. The ſtronger the light, and the longer they were expoſed to it, the more injury they received; and the injury thus ſuſtained was found to be laſting. Com. Bon. vol. vi. p. 77, &c. See Prieſtley's Hiſtory, p. 378, &c.

Some writers have attempted to prove the materiality of light, by determining the momentum of their component particles, or by ſhewing that they had a force, ſo as, by their impulſe, to give motion to light bodies. M. Homberg, Ac. Par. 1708. H. p. 25, imagined, that he could not only diſperſe pieces of amianthus, and other light ſubſtances, by the impulſe of the ſolar rays, but alſo that by throwing them upon the end of a kind of lever, connected with the ſpring of a watch, he could make it move ſenſibly quicker; whence, and from other experiments, was inferred the weight of the particles of light. But M. Du Fay, and M. Mairan, made other experiments of a more accurate kind, which exhibited no ſuch effects as M. Homberg imagined. However, Dr. Prieſtley informs us, that Mr. Mitchell endeavoured to aſcertain the momentum of light with ſtill greater accuracy, and that his endeavours were not altogether unſucceſsful. Having found that the inſtrument which he uſed acquired, from the impulſe of the rays of light, a velocity of one inch in a ſecond, he inferred, that the quantity of matter contained in the rays falling upon the inſtrument at that time, amounted to no more than one twelve hundred millionth part of a grain. In the experiment, the light was collected from a ſurface of about three ſquare feet; and as this ſurface reflected only about half what falls upon it, the quantity of matter contained in the rays of the ſun, incident upon a ſquare foot and half of ſurface in one ſecond of time, ought to be no more than the twelve hundred millionth part of a grain, or upon one ſquare foot only, the eighteen hundred millionth part of a grain. But the denſity of the rays of light at the ſurface of the ſun is greater than at the earth, in the proportion of 45000 to 1; there ought, therefore, to iſſue from one ſquare foot of the ſun's ſurface in one ſecond of time, in order to ſupply the waſte by light, one forty thouſandth part of a grain of matter; that is, a little more than two grains a day, or about four millions ſeven hundred and fifty-two thouſand grains, which is about ſix hundred and ſeventy pounds, avoirdupois, in ſix thouſand years; a quantity which would have ſhortened the ſun's ſemi-diameter no more than about ten feet, if it was formed of matter of the denſity of water only. Prieſtley, ubi ſupra, p. 389.

The nature of light has not been ſatisfactorily aſcertained by any of the experiments and inveſtigations of philoſophers. Some incline to the Newtonian hypotheſis, which aſcribed it to the emiſſion of very minute particles from luminous ſubſtances, as we have already ſtated; and others to the excitation of an undulatory motion, analogous to that which conſtitutes ſound, in a very rare and elaſtic medium, which pervades the univerſe. There are alſo ſome circumſtances which induce thoſe who entertain the firſt hypotheſis, either to believe, with Newton, that the emanation of the particles of light is always attended by the undulations of an etherial medium, accompanying it in its paſſage, or to ſuppoſe, with Boſcovich, that the minute particles of light themſelves receive, at the time of their emiſſion, certain rotatory and vibratory motions, which they retain as long as their projectile motion continues. Theſe additional ſuppoſitions, however neceſſary they may have been thought for explaining ſome particular phenomena, have never been very generally underſtood or admitted, although no attempt has been made to accommodate the theory in any other manner in theſe phenomena. Dr. Young, in his "Courſe of Lectures on Natural Philoſophy, &c." has examined in detail the manner in which the two principal hypotheſes reſpecting light may be applied to its various affections and properties; for which we refer to vol. i. p. 458, &c. to the ſequel of this article, and to other appropriate terms that occur in the Cyclopædia.

The expanſion or extenſion of any portion of light is inconceivable. Dr. Hook ſhews it is as unlimited as the univerſe; proving it from the immenſe diſtance of ſome of the fixed ſtars, the light whereof becomes ſenſible to the eye by means of a teleſcope: nor, adds he, are they only the great bodies of the ſun or ſtars that are thus liable to diſperſe their light through the vaſt expanſe of the univerſe, but the ſmalleſt ſpark of a lucid body muſt do the ſame, even the ſmalleſt globule ſtruck from a ſteel by a flint.

The method of meaſuring the intenſity of different lights, or of the ſame light in different circumſtances, affords a curious ſubject of inveſtigation. M. Bouguer purſued it with particular attention, and deſcribed an apparatus which he has contrived for this purpoſe, in his Traité de Optique, publiſhed in Paris, 1760. Dr. Prieſtley (ubi infra) has given an abridged account of the two methods uſed for this purpoſe by M. Bouguer. The firſt of theſe two methods has been uſed by others ſince, and probably before that time, and particularly by count Rumford. See PHOTOMETER.

It is well known that the action of a ſtrong light upon the eye, and alſo the impreſſion which it leaves upon the eye, makes it inſenſible to the effect of a weaker light. M. Bouguer found, that when one light is ſixty-four times leſs than another, its preſence or abſence will not be perceived; and, allowing for different effects on different eyes, he ſuppoſes that the boundaries, with reſpect to different perſons, may lie between ſixty and eighty. Being unable to determine the variation of the light of the ſun, becauſe it is too ſtrong, and that of the ſtars, becauſe it is too weak, at different altitudes, he made his obſervations on the moon, the diminution of the light being in the ſame proportion in this caſe and in the others, and found that its light at 19° 16′ is to its light at 66° 11′, as 1681 to 2500; or the one is nearly two-thirds of the other. When one limb of the moon touched the horizon of the ſea, its light was two thouſand times leſs than at the altitude of 66° 11′. But this proportion, he ſays, is liable to variations, the atmoſphere near the ſurface of the earth varying ſo much in its denſity. Hence he concludes, that, at a medium, light is diminiſhed in the proportion of about 2500 to 1681, in traverſing 7469 toiſes of denſe air. He alſo found, that the centre of the ſun is conſiderably more luminous than the extremities of it; whereas, both the primary and ſecondary planets are more luminous at their edges than near their centres. In a compariſon of the light of the ſun and moon, he compared each of them to that of a candle in a dark room, one in the day time, and the other in the night following, when the moon was at her mean diſtance from the earth, and, after many trials, he concluded, that the light of the ſun is about three hundred thouſand times greater than that of the moon; and, therefore, it is no wonder that philoſophers have had ſo little ſucceſs in their attempts to collect the light of the moon with burning-glaſſes; for the largeſt of them will not increaſe the light a thouſand times, which will ſtill leave the light of the moon, in the focus of the mirror, three hundred times leſs than the intenſity of the common light of the ſun. Dr. Smith, in his Optics, vol. i. p. 29, thought that he had proved, from two different conſiderations, that the light of the full moon would be to our day-light as 1 to about 90900, if no rays were loſt at the moon. His method of calculation follows, as far as it is juſt, ſays Mr. Robins, Math. Tracts, vol. ii. p. 225, directly from the propoſition for the ſame purpoſe of that excellent geometer, James Gregory, in his Geom. Par. Univerſ. p. 144; and the general propoſition there mentioned for diſtinguiſhing the proportion between the degrees of light received from any planet, and from the ſun, as repeated in David Gregory's Aſtronomy, lib. iii. prop. 58. Mr. Robins remarks, that though his eſtimate is founded on the ſuppoſition, that the moon reflects all the light it receives from the ſun; yet his argument is drawn from comparing the light of the moon ſeen in the day with the light of the clouds; that is, is deduced from the quantity of light actually reflected by the moon. In the firſt place he ſuppoſes that the moon, enlightened by the ſun, is as luminous as the clouds are at a medium. He, therefore, ſuppoſed the light of the ſun to be equal to that of a whole hemiſphere of clouds, or as many moons as would cover the ſurface of the heavens. But upon this it may be obſerved, that the light of the ſun ſhining perpendicularly upon any ſurface, would be equal to the light reflected from the whole hemiſphere, if every part of it reflected all the light that fell upon it; but the light that would, in fact, be received from the whole hemiſphere (part of it being received obliquely) would be only one-half as much as would be received from the whole hemiſphere, if every part of it ſhone directly upon the ſurface to be illuminated. In his Remarks, &c. p. 17, he draws the ſame concluſion from a different method of induction; but in this caſe alſo he made a miſtake of one-half, ſuppoſing all the enlightened hemiſphere of the moon to receive the direct rays of the ſun; whereas, in fact, no more can be received than would fall perpendicularly on the ſuperficial ſection of one great circle, which is juſt one-half of the ſurface of the hemiſphere. Prieſtley, ubi ſupra, p. 540, &c.

Mr. Mitchell made this computation in a more eaſy and accurate manner. Conſidering the diſtance of the moon from the ſun, and that the denſity of the light muſt decreaſe in the proportion of the ſquare of that diſtance, he calculated the denſity of the ſun's light at that diſtance, in proportion to its denſity at the ſurface of the ſun: and in this manner he found that, if the moon reflected all the light it receives from the ſun, it would be only the 45000dth part of the light we receive from that greater luminary. Admitting, therefore, with M. Bouguer, that the moon reflects only a 300,000dth part of it, Mr. Mitchell concludes, that it reflects no more than betwixt the ſixth and ſeventh part of the light that falls upon it. Phil. Tranſ. vol. lvii. art. 27, p. 234, &c.

Dr. Pemberton, in his Courſe of Chemiſtry, lect. 2. ſtates the greateſt light which we can receive from the moon, when at the full, and neareſt to the earth, to exceed the light of the ſun more than 87,000 times, ſuppoſing that the moon reflected all the light of the ſun which falls upon it; but if it reflects only half the light that falls upon its ſurface, which is the moſt that can be ſuppoſed, then the light of the moon will be exceeded by the ſun's light more than 170,000 times: and in the mean diſtance of the moon from the earth, her light will be exceeded by the ſun more than 190,000 times.

The mutual action between light and other matter is productive of numerous phenomena. Theſe of late have conſtituted two diſtinct branches of ſcience. The one has for its object the inveſtigation of the phyſical properties of light, for which we are principally indebted to Newton, and which forms the baſis of the ſcience of optics. The other is confined to the chemical agency of light, reſting upon facts diſcovered ſince the time of that great genius, and which has hitherto occupied the attention of the chemical philoſopher.

When a ray of light falls upon the ſurface of a body, it is either reflected, abſorbed, and extinguiſhed, or tranſmitted. And under ſome circumſtances all theſe effects take place.

The reflection of the ray depends, firſt, upon the nature of the body; ſecondly, upon the ſtate and colour of the ſurface; and, thirdly, upon the quantity of the angle of incidence. Under all theſe circumſtances, however, the angle at which the ray is reflected is equal to the angle of incidence. The ſame laws, therefore, which govern the colliſion between perfectly elaſtic bodies and abſolutely hard ſurfaces, may be applied to the reflection of light. Of the different bodies which reflect light, metals poſſeſs this power in the greateſt degree, and perhaps in proportion to their denſity and hardneſs. Smooth or poliſhed ſurfaces reflect more light than rough ones.

Of coloured ſurfaces the lighteſt colours reflect the moſt; hence the whiteſt metals make the beſt reflectors. The order will therefore, in all probability, be as follows, beginning with the beſt reflectors, white, yellow, red, blue, black. The two extremes are very ſtriking, in the well-known experiment of two pieces of cloth, one white and the other black, laid on the ſurface of ſnow in the ſun. The black piece very ſoon ſinks into the ſnow, from abſorbing a greater quantity of light, which cauſes the heat. The white piece reflects a greater portion, and is longer in becoming heated. With regard to the quantity of reflection, as affected by the angle of the incidence; it is found that opaque bodies are more heated as the rays ſtrike their ſurfaces more perpendicularly, and the quantity of light which enters tranſparent bodies is as the ſame. In both inſtances, therefore, more light enters the bodies, and leſs is reflected. In the firſt inſtance, the light which is not reflected becomes extinguiſhed, producing heat; in the ſecond it is tranſmitted, ſtill retaining the property of light. Hence, therefore, we ought to conclude that the reflection will be inverſely as the angle of incidence, ſuppoſing the angle to be formed by the ray and the ſurface of the medium.

M. Bouguer has informed us, that the light reflected from a ſurface of mercury, when the angle of incidence was $11\frac{1}{2}^{\circ}$, was only equal to $\frac{1}{4}$th of the whole; and he thinks it probable that no ſubſtance reflects more. It is certain, however, that poliſhed ſilver reflects much more. The ſame philoſopher obſerves, that metallic reflectors change leſs in their power of reflection with the angle of incidence. He made the following experiment with poliſhed black marble. At an angle of 3° 35′ with the reflecting ſurface, .6 were reflected, the whole being unity; at 15′ of incidence, .156 were reflected; at 30′, .051; and at 80°, .023. The reſt of courſe became extinguiſhed, and would heat the marble.

A ſimilar diminution of the reflective power, with the angle of incidence, is obſerved in tranſparent bodies, by the ſame author. The following Table gives the reſults with water and plate-glaſs.

Angle of Incidence.	The Quantity of Light reflected, the whole being 1000.	
	From Water.	From Plate-Glaſs.
$\frac{1}{2}^{\circ}$	721	
1	692	
$1\frac{1}{2}$	669	
2	639	
$2\frac{1}{2}$	614	584
5	501	543

Angle of Incidence	The Quantity of Light reflected, the whole being 1000.	
	From Water.	From Plate-Glaſs.
7°½	409	474
10	333	412
12½	271	356
15	211	299
17½	178	
20	145	222
25	97	157
30	65	112
40	34	57
50	22	34
60	19	27
70	18	25
80	18	25
90	18	25

The reflections in this inſtance are partly made from the upper, and the reſt from the under ſurface. The remainder of the thouſand parts are tranſmitted, with the exception of a few, which are in all probability extinguiſhed.

That, under certain circumſtances, the rays of light are extinguiſhed, even in tranſparent bodies, is rendered highly probable by the above inquirer.

Light becomes ſo far extinct, by paſſing through 679 feet of ſea-water, as to render it opaque ; and a length of ſeven feet of water has been found to intercept one-half of the light which enters it.

M. Bouguer tells us, that if our atmoſphere were 518,385 toiſes in height, we ſhould have no light from the ſun, even in his meridian ſplendour. It has been eſtimated, that of the horizontal ſun-beams paſſing through about 200 miles of air, one two-thouſandth part only reaches us.

In all the inſtances in which light is extinguiſhed, it will doubtleſs be ſo found that a certain quantity of heat will be generated. Sir Iſaac Newton ſeems perfectly aware of this fact. In his time, however, heat was ſuppoſed to ariſe from motion, and hence he concluded that the light, when it was neither reflected nor tranſmitted, ſo acted upon the body it entered, as to put its particles into a vibratory motion, in which he believed the heat to conſiſt.

Dr. s'Graveſande aſſerts, a lucid body to be, that which emits, or gives fire a motion in right lines ; and makes the difference between light and heat to conſiſt in this, that to produce the former, the fiery particles muſt enter the eye in a rectilinear motion, which is not required in the latter : on the contrary, an irregular motion ſeems more proper for it, as appears from the rays coming directly from the ſun to the tops of mountains, which have not near that effect with thoſe in the valley, agitated with an irregular motion, by ſeveral reflections.

Whether or not there be always light, where there is fire, has been diſputed among authors ; as alſo, whether or not there be any luminous body without heat ; heat being conſidered by them as a motion that may be infinitely diminiſhed, and light a matter that may be infinitely rare ; to which we may add, that no heat is ſenſible to us, unleſs it be more intenſe than that of our organs of ſenſe. M. De Luc, in his Lettres Phyſiques et Morales, &c. 1780, obſerves, that the rays of the ſun, though not warm in themſelves, occaſion heat, by giving activity to a ſubſtance, which reſides in all bodies, and conſtitutes a part of their maſs, and which in certain circumſtances is capable of producing heat : and that in conſequence of this influence, this ſubſtance becomes an elaſtic or igneous fluid. (See HEAT.) Caloric, however, is now conſidered material, and a diſtinct fluid from that of light.

Solar heat is at preſent accounted for in a different way to that of conſidering the heat as extinguiſhed light. Dr. Herſchel has, from a ſeries of experiments, of which we ſhall ſoon give an account, concluded, that the rays of caloric, or rays ſolely producing heat, are emitted from the ſun, as well as from terreſtrial bodies, affording light and heat : while the rays of light, or ſuch as are eſſential to viſion and colour, have not the property of producing heat. How far this concluſion is warranted, we ſhall have occaſion hereafter to conſider.

Beſides the properties of light to be reflected and tranſmitted, and that of being abſorbed and extinguiſhed, we are preſented with curious phenomena, ariſing from the attraction between this ſubſtance and other matter, which is the cauſe of the refraction and inflection of light. When a ray of light enters any tranſparent medium, in a direction perpendicular to the ſurface of the ſame, the ray will maintain its courſe in the ſame direction ; but if the ray of light make any angle leſs than a right angle with the ſurface of the medium, it will not continue in the ſame direction, but will be drawn towards a ſtraight line, perpendicular to the ſame ſurface, and paſſing through the medium at the point where the oblique ray enters. This line, in optical language, is called the perpendicular. The angle which the incident ray makes with the perpendicular is called the angle of *incidence* ; and the angle which the ray makes with the ſame perpendicular, after it enters the medium, is called the angle of *refraction*. In all the degrees of obliquity at which a ray enters any medium, the ſine of the angle of incidence has the ſame ratio to the ſine of the angle of refraction.

The refracting power of different tranſparent bodies is not dependent upon one property alone ; it appears, however, to be directly as their denſity, all other things being equal.

Inflammable bodies are found to refract light much more than bodies not inflammable. Sir Iſaac Newton divided diaphanous bodies into two claſſes, each of which refract light as their denſity. The firſt conſiſted of the inflammable, in which it was much more than according to the ratio of their denſity.

The other claſs, which were not inflammable, appeared to obey the ſame law as to denſity, with the exception of the diamond and water. The former of theſe refracted in the compound ratio of inflammability and denſity ; and although it was then not known to be inflammable, Newton ſtrongly ſuſpected it to be entirely an inflammable body ; and that water which appeared to have an intermediate power between the two claſſes, he ſuppoſed, was partly inflammable.

These prophetic obſervations have been verified in the diſcovery of the diamond being pure carbon, and in the decompoſition of water.

The late diſcoveries of Mr. Davy render it very probable that all compound bodies are compoſed of inflammable matter and oxygen. Hence it would ſeem, that the refractive power of bodies is leſs in proportion to the oxygen they contain. Sir Iſaac Newton ſuſpected that refraction was cauſed by inflammable matter alone, from which it would follow, that all diaphanous bodies contained inflammable matter. This, in all probability, is the caſe with the exception of oxygen. It has, however, been proved by M. Biot, that the refractive power of oxygen, although leſs than any ſubſtance in proportion to its denſity, is nevertheleſs appreciable. The ſame philoſopher alſo aſcertained that hydrogen refracts light in a ratio, independent of its denſity, higher than any other ſubſtance.

From the above facts we may, with ſome certainty, conclude, that the refractive power of bodies, or, in other words, their attraction for light, is in the compound ratio of their inflammability and denſity.

Light is not only attracted in paſſing through different media, conſtituting refraction, but it is attracted towards the ſides of bodies by which it paſſes, and is then ſaid to be inflected. When a beam of light is let through a ſmall hole into a dark room, the rays are found to be drawn towards the ſides of the hole, by which means they acquire a certain degree of divergence. In conſequence of this change in the direction of the rays, the ſhadows of hairs, and other ſlender ſubſtances held in the beam of light coming through the aperture, are found to become enlarged in proportion to the diſtance of the place on which the ſhadow is caſt. See INFLECTION.

From this circumſtance ſir Iſaac Newton concluded, that the rays of light muſt have paſſed as they are repreſented in *Plate* IX. *Optics*, *fig.* 8. in which X repreſents a ſection of the hair, and A D, B E, &c. rays of light paſſing by at different diſtances, and then falling upon the wall Q Q. Since, when the paper which receives the rays is at a great diſtance from the hair, the ſhadow is broad, it muſt follow, as he obſerves, that the hair acts upon the rays of light at ſome conſiderable diſtance from it; the action being ſtrongeſt on thoſe rays which are at the leaſt diſtance, and growing weaker and weaker on thoſe which are farther off, as is repreſented in the figure; and from hence it comes to paſs, that the ſhadow of the hair is much broader in proportion to the diſtance of the paper from the hair, when it is nearer than when it is at a great diſtance. It is of no moment, whether the hair be ſurrounded with air, or with any other pellucid ſubſtance. The ſhadows of ſcratches made in poliſhed plates of glaſs, and the veins in the glaſs, caſt the like broad ſhadows; ſo that the breadth of ſhadow muſt proceed from ſome other cauſe than the refraction of the air.

The ſhadows of all bodies, metals, ſtones, glaſs, wood, horn, &c. in this light, were bordered with three parallel fringes, or bands of coloured light, whereof that which was contiguous to the ſhadow was the broadeſt and moſt luminous, while that which was the moſt remote was the narroweſt, and ſo faint, as not eaſily to be viſible. The firſt or innermoſt fringe was violet, and deep blue next the ſhadow, light blue, green, and yellow in the middle, and red without. The ſecond fringe was almoſt contiguous to the firſt, and the third to the ſecond; and both were blue within, and yellow and red without; but their colours were very faint, eſpecially thoſe of the third. The colours, therefore, proceeded in the following order from the ſhadow: violet, indigo, pale blue, green, yellow, red; blue, yellow, red; pale blue, pale yellow, and red. The ſhadows made by ſcratches and bubbles in poliſhed plates of glaſs, were bordered with the like fringes of coloured light. He alſo obſerves, that by looking on the ſun through a feather, or black ribbon, held cloſe to the eye, ſeveral rainbows will appear, the ſhadows which the fibres or threads caſt on the retina being bordered with the like fringes of colours.

From comparing other experiments, in which a ray of light was made to paſs through a hole into a darkened chamber, and then through a hole in a paſte-board, firſt by the edge of a ſingle knife, and then by the edges of two knives placed parallel to one another, ſir Iſaac Newton concluded, that the light of the firſt fringe paſſed by the edge of the knife at a diſtance greater than the eight hundredth part of an inch, that the light of the ſecond fringe paſſed by the edge of the knife at a greater diſtance than the light of the firſt fringe, and that of the third at a greater diſtance than that of the ſecond; and that the light, of which the ſtreams, obſerved in theſe experiments, conſiſted, paſſed by the edges of the knives at leſs diſtances than that of any of the fringes.

In another experiment, he placed at the hole a priſm to refract the light, and to form, on the oppoſite wall, the coloured image of the ſun; and he found that the ſhadows of all bodies, held in the coloured light between the priſm and the wall, were bordered with fringes, of the colour of that light in which they were held; and comparing the fringes made in the ſeveral coloured lights, he found, that thoſe made in the red light were the largeſt, thoſe made in the violet the leaſt, and thoſe made in the green were of a middle ſize. Whence he inferred, that the rays which made the fringes in the red light, paſſed by the hair at a greater diſtance than thoſe which made the like fringes in the violet; ſo that the hair, in cauſing theſe fringes, acted alike upon the red light, or leaſt refrangible rays, at a greater diſtance, and upon the violet or moſt refrangible rays at a leſs diſtance, and thereby occaſioned fringes of different ſizes, without any change in the colour of any ſort of light. It may, therefore, be concluded, that when the hair in the firſt obſervation was held in the white beams of the ſun's light, and caſt a ſhadow, which was bordered with three fringes of coloured light, thoſe colours aroſe not from any new modifications impreſſed upon the rays of light by the hair, but only from the various inflections, whereby the ſeveral ſorts of rays were ſeparated from one another, which, before ſeparation, by the mixture of all their colours, compoſed the white beam of the ſun's light; but when ſeparated compoſed lights of the ſeveral colours which they are originally diſpoſed to exhibit. But for a fuller account of the author's curious experiments, and the concluſions drawn from them with regard to the inflection of light, we muſt refer to his well known treatiſe on Optics, p. 293. &c.

This action of bodies on light is found to exert itſelf at a ſenſible diſtance, though it always increaſes as the diſtance is diminiſhed; as appears very ſenſibly in the paſſage of a ray between the edges of two thin planes at different apertures; in which there is ſomething very peculiar; the attraction of one edge being increaſed as the other is brought nearer it. The rays of light, in their paſſage out of glaſs into vacuum, are not only inflected towards the glaſs, but, if they fall too obliquely, they will revert back again to the glaſs, and be totally reflected.

The cauſe of which reflection cannot be attributed to any reſiſtance of the vacuum, but muſt be entirely owing to ſome force or power in the glaſs, which attracts or draws back the rays as they are paſſing into the vacuum. And this appears farther from hence, that if you wet the poſterior ſurface of the glaſs with water, oil, honey, or a ſolution of quickſilver, then the rays which would otherwiſe have been reflected, will paſs into and through that liquor; which ſhews that the rays are not reflected till they come to the poſterior ſurface of the glaſs, nor even till they begin to go out of it; for if at their going out, they fall into any of the foreſaid mediums, they will not then be reflected, but perſiſt in their former courſe, the attraction of the glaſs being in this caſe counterbalanced by that of the liquor.

Experiments, ſimilar to thoſe of ſir Iſaac Newton on inflected light, were proſecuted by M. Maraldi, whoſe obſervations chiefly reſpect the inflection of light towards other bodies, whereby their ſhadows are partially illuminated. Ac. Paris, 1723. M. p. 159. For an abſtract, ſee Prieſtley's Hiſtory, &c. of Light, &c. p. 521, &c. M. Mairan, without attempting the diſcovery of new facts, endeavoured to explain the old ones, by the hypotheſis of an atmoſphere ſurrounding all bodies; and conſequently making two reflections and refractions of light that impinges upon them, one at the ſurface of the atmoſphere, and the other at that of the body itſelf. This atmoſphere he ſuppoſed to be of a variable denſity, and refractive power, like the air. M. du Tour ſucceeded Mairan, and imagined, that he could account for all the phenomena by the help of an atmoſphere of an uniform denſity, and of a leſs refractive power than the air, ſurrounding all bodies. Du Tour varied the Newtonian experiments, and diſcovered in the colours produced by the inflection of light more than three fringes, which he exhibited diſtinctly in the following manner. He took a circular board, A B E D (*Plate* IX. *Optics, fig.* 9) thirteen inches in diameter, the ſurface of which was black, except at the edge, where there was a ring of white paper, about three lines broad, in order to trace the circumference of a circle, divided into 360 degrees, beginning at the point A, and reckoning 180 degrees on each hand to the point E; B and D being each of them placed at 90 degrees. A ſlip of parchment three inches broad, and diſpoſed in the form of a hoop, was faſtened round the board, and pierced at the point E with a ſquare hole, each ſide being four or five lines, in order to introduce a ray of the ſun's light. Laſtly, in the centre of the board C, and perpendicular to it, he fixed a pin, about one-third of a line in diameter.

This hoop being ſo diſpoſed, that a ray of light entering the dark chamber, through a vertical cleft of two lines and a half in length, and about as wide as the diameter of the pin, went through the hole at E, and paſſing parallel to the plane of the board, projected the image of the ſun and ſhadow of the pin at A.

In theſe circumſtances he obſerved, 1ſt, that quite round the concave ſurface of this hoop, there was a multitude of coloured ſtreaks; but that the ſpace *m* A *n*, of about eighteen degrees, the middle of which was occupied by the image of the ſun, was covered with a faint light only.

2. The order of the colours in theſe ſtreaks was generally ſuch, that the moſt refrangible rays were the neareſt to the incident ray E C A; ſo that, beginning from the point A, the violet was the firſt, and the red the laſt colour in each of the ſtreaks. In ſome of them, however, the colours were diſpoſed in a contrary order.

3. The image of the ſun, projected on each ſide of the point A, was divided by the ſhadow of the pin, which was bordered by two luminous ſtreaks.

4. The coloured ſtreaks were narrower in ſome parts of the hoop than others, and generally decreaſed in breadth in receding from the point A.

5. Among theſe coloured ſtreaks, there were ſometimes others which were white, a line, or a line and a half in breadth, which were always bordered on both ſides by a ſtreak of orange colour, at leaſt when the light of the ſun was intenſe, and the chamber ſufficiently dark.

From this experiment he thought it was evident, that the rays which paſſed beyond the pin were not the only ones that were decompoſed; for that thoſe which are reflected back from the pin were decompoſed alſo: from which he concluded that they muſt have undergone ſome refraction. He alſo thought that thoſe which went beyond the pin ſuffered a reflection, ſo that they were all affected in a ſimilar manner.

In order to account for theſe facts, our author deſcribes the progreſs of a ray of light through an uniform atmoſphere which he ſuppoſes to ſurround the pin, and ſhews that the differently refrangible rays will be ſeparated at their emergence from it; but he refers to ſome experiments and obſervations in a future memoir, to demonſtrate that all the coloured ſtreaks are produced by rays that are both reflected and refracted. Memoires Preſentés, vol. v. p. 636. 641.

From other obſervations, M. Du Tour concludes, that the refracting atmoſpheres, ſurrounding all kinds of bodies, are of the ſame ſize; for when he placed a great variety of ſubſtances, and of different ſizes alſo, he always found the coloured ſtreaks of the ſame dimenſions. He alſo obſerves, that this hypotheſis contradicts an obſervation of ſir Iſaac Newton, *viz.* that thoſe rays which paſs the neareſt to any body are moſt inflected. Mem. de Mathem. and de Phyſ. vol. v. p. 650, &c. or Prieſtley, ubi ſupra, p. 531, &c.

M. Le Cat found that, in ſome caſes, objects appear magnified by means of the inflection of light. Looking at a diſtant ſteeple, when a wire of leſs diameter than the pupil of his eye was held pretty near to it, and drawing it ſeveral times betwixt his eye and that object, he was ſurpriſed to find that, every time the wire paſſed before his pupil, the ſteeple ſeemed to change its place, and ſome hills beyond the ſteeple ſeemed to have the ſame motion, juſt as if a lens had been drawn betwixt his eye and them. This diſcovery led him to ſeveral others depending upon the inflection of the rays of light. Thus, he magnified ſmall objects, as the head of a pin, by looking at them through a ſmall hole in a card; ſo that the rays which formed the image, muſt neceſſarily paſs ſo near the circumference of the hole, as to be attracted by it: he alſo exhibited other appearances of a ſimilar nature. Traité des Sens, p. 299, &c. Prieſtley, ubi ſupra, p. 537, &c.

Several coincident facts induced ſir Iſaac Newton to believe that reflection, refraction, and inflection reſulted from the ſame cauſe, namely, attraction. Of the two latter of theſe properties reſulting from this cauſe there can be little doubt; but the laws by which the firſt is governed appears to depend rather upon the repulſion than the attraction of the medium. The greateſt myſtery attending reflection, is in the circumſtance of the under ſurface reflecting light equally with the upper ſurface. This part certainly goes far to prove, that the reflection of light is not to be explained by conſidering the reflecting ſurface as a hard ſubſtance, from which the elaſtic particles of light are repelled, particularly ſince the reflection from the under ſurface of any medium is in the inverſe ratio of the denſity of the medium, beyond the reflecting ſurface, and is greateſt when the ſurface is bounded by a vacuum.

Although ſir Iſaac Newton does not attempt to explain the reflection from the upper ſurface by the attraction of the medium, he ſeems to be of opinion, that the light reflected from the under ſurface is attracted by the ſame medium in a contrary direction.

Hence he concludes, that this reflection is leſs as the denſity of the under medium is greater, the attraction of the firſt medium being counteracted by that of the ſecond.

This explanation does not appear ſatisfactory. If the reflection of the rays from the under ſurface depended upon the attraction of the ſame medium, it would not produce the ſame phenomena which reſult from the reflection at the upper ſurface, and which is clearly cauſed by ſomething like repulſion.

When a ray of light falls upon any reflecting ſurface, we cannot for a moment ſuppoſe that any attraction of the medium could cauſe it to be reflected, ſince the effect produced can ariſe only from a repellent force, exerted in a direction perpendicularly from the ſurface of the body. And that the elaſtic force exiſting between the body and the light is ſo perfect, as to make the angle of reflection equal to the angle of incidence. Newton very properly argued, that the reflection could not take place from the particles of light ſtriking the hard parts of bodies, on account of the numerous interſtices exiſting between their molecules; on the contrary, he ſuppoſed the light which ſtruck the ſolid parts became extinguiſhed.

It may here be obſerved, that it is equally difficult to explain the action of one ſolid body upon another, as it may eaſily be proved that they do not come into abſolute contact in any inſtance.

When we attempt to unite the ſurfaces of fractured bodies, we cannot, in moſt inſtances, bring the parts within the ſphere of attraction; and even where this can be effected, as in two bright ſurfaces of lead, it may be proved that the parts do not touch.

It ſeems difficult to conceive how an atmoſphere of hydrogen ſhould by its preſſure ſupport a column of mercury, by the mere action of the ſolid parts of the two ſurfaces, ſince every particle of hydrogen would be required to act upon 2700 particles of mercury.

We may, without much gratuity, conſider all ſolid bodies as compounded of two ſpecies of matter; the one poſſeſſing ſo great an attraction as to bring the particles into abſolute contact, and the other ſo completely repellent of itſelf, as to be infinitely diſſipated, if it were not for its attraction for matter with which it combined. The former of theſe properties is peculiar to all ponderable matter, the latter to the repellent matter denominated light and caloric, and perhaps electricity and magnetiſm. Daily experience ſhews, that the conſtitution of ſolid and liquid bodies is dependent upon a certain quantity of caloric, oppoſed to the oppoſite and contending force of the attraction of the particles of the ſolid body, by which alſo their volumes and relative gravities are governed. Hence we may expect, that when the attraction of the body for caloric is greater than the repellent force of the caloric, the body will poſſeſs what is called a greater capacity for heat, and the reverſe of this will take place from a contrary change.

Conceiving the above to be the caſe, it will be eaſy to infer, that the ſurfaces of bodies muſt be ſurrounded by atmoſpheres of caloric, and it doubtleſs is by theſe atmoſpheres that we are to account for the difficulty of bringing two ſurfaces together, and by which we may alſo explain the action of the hydrogenous atmoſphere upon the mercury. May not we, therefore, draw this general concluſion, that the particles of all ſolid matter can never be brought into contact, either in their internal arrangement or on the ſurfaces; and that the repulſion exiſting between the particles of bodies, whether in the ſame or in two different bodies, is ſolely to be attributed to the repulſion between the particles of caloric? And may we not further conclude, that the particles of bodies, in all ſituations, and under all circumſtances, are conſtantly exerting an attractive force tending to their ultimate contact? If it ſhould be admitted that caloric is the cauſe of repulſion, elaſticity muſt be therefore dependent upon its preſence, acting in a contrary direction to the attractive force. Hence it would be very abſurd to ſay that caloric itſelf ſhould be elaſtic, becauſe this property depends upon two forces. When caloric, therefore, is reflected from the ſurface of a body, we are to attribute its return to the repulſion between itſelf and the caloric of the body, the ſolid matter having nothing to do with the reflection. The rays of caloric, paſſing from one body to another, may, from what has been obſerved, be cauſed by the joint action of two forces. The one ariſing from the repulſion of the particles of caloric for each other at the heated body, and the other from the ſoliciting force of the attraction between the caloric and the receiving body. When, however, the repulſion between the radiant caloric and the caloric of the receiving body increaſes in a greater ratio than their attraction, the radiant caloric will be reflected. A contrary effect would cauſe them to be abſorbed.

When the direction of the radiant caloric is perpendicular to the receiving ſurface, its projectile force conſpires in the greateſt degree with the attraction of the body, and leſs of courſe in proportion to its obliquity. Does not this agree with the eſtabliſhed fact, that the reflection of both light and heat is inverſely as the angle of obliquity the ray makes with the ſurface.

Light and caloric, ſo far as their reflection is concerned, are ſo ſimilar, that we may with great propriety apply the ſame reaſoning to the reflection of light, and the ſame abſurdity would ariſe in conſidering light as conſiſting of elaſtic particles, becauſe this would imply the exiſtence of attractive matter in its compoſition. When, therefore, light is reflected, we are to conſider with ſir Iſaac Newton, that no action takes place between the particles of light and the ſolid matter to produce the effect; but, agreeably to our hypotheſis, we muſt conclude that the reflection is cauſed by the repulſion between the particles of light and the caloric of the body.

If the reflection is cauſed by the calorific atmoſphere on the ſurface of the body, we may perceive an eaſy way of explaining why the reflection of light is confined to the ſurface of bodies, and why the under ſurface ſhould reflect as much as the upper one.

This hypotheſis does not diſagree with the fact, of the reflection being, like the refraction, as the denſity of the medium, becauſe the increaſe of denſity will be attended with increaſe of attraction between the particles, and it will be evident, that the denſity of the calorific atmoſphere will be in the ſame proportion, therefore reflection will be as the denſity.

What we obſerved reſpecting the obliquity of the rays of caloric, will hold good with reſpect to light. When the obliquity of rays of light, which fall upon tranſparent bodies is ſuch, that the repulſion between the light and the caloric of the body is greater than the projectile force of the ray added to the attraction, the medium of the angle of obliquity is called the angle of total reflection. When the reflection is from the under ſurface, the attraction of the medium

medium conſpires with the repulſion between the light and the caloric atmoſphere to cauſe total reflection, and the angle of total reflection ought to be rather greater at the under than the upper ſurface, which has been ſaid to be the caſe; at leaſt it has been obſerved by Bouguer, that more light is reflected from the internal than the external ſurface. The additional force given by the attraction of the medium to cauſe the internal reflection, will be counteracted by any other medium beyond this ſurface, and this accounts for the tranſmiſſion under ſuch circumſtances. Agreeably to the eſtabliſhed notion, therefore, we hold, that refraction and inflection are cauſed by the attraction exiſting between the light and the body. But it is more conſiſtent with our views, to conſider reflection and tranſmiſſion as being cauſed by the repulſion exiſting between the particles of light, and between light and the calorific atmoſphere of the body, modified and altered under certain circumſtances, by the attraction between light and the medium.

Were we only acquainted with the fact, that light was attracted by ponderable matter, we ſhould, from our knowledge of gravity, conclude that the refraction would be as the denſity of the medium; and we are not ſo much ſurpriſed at the circumſtance of light being more attracted by inflammable than other bodies, when we recollect the great quantity of light and heat furniſhed by thoſe bodies, when they combine with oxygen; and at the ſame time remember that the attraction of one body for another is as the quantity with which it can combine.

Some very curious facts relative to the properties of light have lately been diſcovered by M. Malus. (See Memoires de la Société d'Arcueil, vol. ii. p. 143.) It appears from the reſearches of this philoſopher, that light is changed in its properties by particular reflection. If, ſays he, we take two plates of glaſs, and let two of their ſurfaces make an angle of 70° 50′; then imagine a line which ſhall biſect this angle. Any ray of light falling upon one of theſe ſurfaces, in a direction parallel to the above biſecting line, will be reflected to the other. The light, however, is ſo changed in its properties by the firſt reflection, as to be completely unſuſceptible of being reflected from the ſecond ſurface; but the whole of it will be tranſmitted. This new property of light has been applied, with ſome ſucceſs, to explain the myſterious phenomenon of double images formed by the Iceland cryſtal, calcareous ſpar, &c. If it be aſked, how it happens, ſince we aſcribe the reflection of the rays to the action of the whole ſurface of the body without contact, that all the rays are not reflected from every ſurface; but while ſome are reflected, others paſs through, and are refracted? The anſwer given by ſir Iſaac Newton is as follows: —Every ray of light, in its paſſage through any refracting ſurface, is put into a certain tranſient conſtitution or ſtate, which in the progreſs of the ray returns at equal intervals, and diſpoſes the ray at every return to be eaſily tranſmitted through the next refracting ſurface, and between the returns to be eaſily reflected by it; which alternation of reflection and tranſmiſſion appears to be propagated from every ſurface and to all diſtances. What kind of action or diſpoſition this is, and whether it conſiſts in a circulating or vibrating motion of the ray, or the medium, or ſomewhat elſe, he does not inquire; but allows thoſe who are fond of hypotheſes to ſuppoſe, that the rays of light, by impinging on any reflecting or refracting ſurface, excite vibrations in the reflecting or refracting medium, and by that means agitate the ſolid parts of the body. Theſe vibrations, thus propagated in the medium, move faſter than the rays, ſo as to overtake them; and when any ray is in that part of the vibration which conſpires with its motion, its velocity is increaſed, ſo that it eaſily breaks through a refracting ſurface; but when it is in a contrary part of the vibration, which impedes its motion, it is eaſily reflected; and conſequently, that every ray is ſucceſſively diſpoſed to be eaſily reflected, or tranſmitted by every vibration which overtakes it. The returns of which diſpoſition of any ray to be reflected, he calls *fits of eaſy reflection;* and thoſe of its diſpoſition to be tranſmitted, he calls *fits of eaſy tranſmiſſion;* and the ſpace between the returns, *the intervals of the fits*. The reaſon, then, why the ſurfaces of all thick tranſparent bodies reflect part of the light incident on them, and refract the reſt, is that ſome rays in their incidence are in fits of eaſy reflection, and others of eaſy tranſmiſſion. See REFLECTION, REFRACTION, and OPTICS.

Having given ſome idea of the nature of light in general, we ſhall next point out the different ſources of light; and under each of theſe heads, detail its more particular properties as a chemical agent, and its connection with the matter of heat.

Solar Light.—We have already ſtated the immenſe velocity with which light is emitted from the ſun's body; and it will be eaſy to conceive that it cannot ſuffer any change in velocity or direction, till it meets with ſome ponderable matter. In approaching any planetary body, ſuch as our earth, we have reaſon to believe that they are mutually attracted. Rays falling perpendicularly upon the atmoſphere are equally attracted on every ſide, and come in a ſtraight line to the earth; while thoſe rays which fall obliquely are bent out of their original direction; and ſince the atmoſphere is not of uniform denſity, ſuch oblique rays will come to the earth in curved lines. If our atmoſphere were of uniform denſity, the refraction would not be altered; but the oblique rays falling upon its ſurface, would be reflected in a very great degree; a circumſtance which would deprive us of much of the ſun's light. No doubt a great quantity of light becomes extinguiſhed in its paſſage through the aerial medium, as we may juſtly learn from the difference of intenſity in the light, at different altitudes of the ſun; but how much muſt this loſs of light appear, when we recur to the ſtatement already made, namely, that the whole effect of the ſun's light would be loſt by paſſing through 679 feet of ſea-water, and that the ſame effect would take place by its paſſage through 3,110,310 feet of air.

The following is a table from M. Bouguer, ſhewing the intenſity of the ſun's light, at different altitudes, and the thickneſs of air it has to penetrate at each angle.

Sun's Altitude.	Thickneſs of Air in Toiſes.	Intenſity of Light, the whole being 10,000.
90°	3911	8123
80	3971	8098
70	4162	8016
66 11′	4295	7968
65	4315	7951
60	4516	7866
55	4776	7759
50	5104	7624

Sun's Altitude.	Thickneſs of Air in Toiſes.	Intenſity of Light, the whole being 10,000.
45°	5530	7454
40	6086	7237
35	6813	6963
30	7784	6613
25	9191	6136
20	11341	5474
19 16′	11744	5358
19	11890	5316
18	12515	5143
17	13220	4954
16	14000	4753
15	14880	4535
14	15880	4301
13	17012	4050
12	18344	3773
11	19908	3472
10	21745	3149
9	23975	2797
8	26672	2423
7	29996	2031
6	34300	1616
5	39893	1201
4	47480	802
3	58182	454
2	74429	192
1	100930	47
0	138823	6

The property of light to be refracted had been known long before the time of Newton; but this philoſopher was the firſt who diſcovered that the light of a ſun-beam was not refracted uniformly. If light were uniformly refracted, the rays which enter any plane ſurface would retain their relative inclination to each other, while they paſs through the diaphanous medium; and the ſame after their emergence, if the ſurface were a plain. Sir Iſaac Newton, however, has proved, by a ſeries of elegant experiments, ſtrengthened by able reaſoning, that the different parts of a ſolar beam are not refracted in the ſame degree. He cauſed a beam of light to paſs through a ſmall hole in the window-ſhutter of a dark room, making the pencil of rays to fall upon one ſide of a triangular priſm. Theſe rays were ſo refracted as to come out at another ſide of the priſm. Theſe emergent rays, however, were not parallel as they entered the other ſide; but each made a certain angle with the other, in conſequence of ſome being more bent or refracted than the other. The image, or ſpectrum, formed by theſe rays upon a ſheet of white paper, inſtead of being round, which would have reſulted from uniform refraction, was of an oblong ſhape Thoſe rays which had been the leaſt refracted occupied one end of the ſpectrum; and thoſe moſt refracted, the other. The former tinged the paper of a red colour, the latter a violet colour; the intermediate rays exhibiting different colours, which were in the following order: red, orange, yellow, green, blue, indigo, and violet.

In order to ſhew that each of theſe rays had ſpecific properties, not depending upon the medium they paſſed through, he cauſed them to paſs through a ſecond priſm, ſometimes together, and ſometimes ſeparately; but he always found them to retain their original properties.

By means of two contiguous ſpectrums, he cauſed a ray of one colour in the one to unite with a different colour in the other, and produced different compound colours. The yellow of one with the red of the other produced orange, which had the appearance of the primitive orange ray, and differed from it only in being decompoſable into its original elements.

He aſcertained by direct experiment, that thoſe rays which were moſt refrangible were alſo moſt reflexible. In conſequence of this property, he could reflect the different coloured rays ſeparately. He cauſed the light to fall upon a priſm, ſo laid upon a ſimilar priſm as to conſtitute a parallelopiped, ſo that the rays were parallel at their emergence; but upon turning the two priſms round their common centre, the light became reflected from the upper contiguous ſurface, and all the rays in their turns arrived at the angle of total reflection. But he obſerved that thoſe which had been moſt refracted were firſt reflected; the leaſt refrangible being the laſt.

Theſe valuable facts were uſed by this able philoſopher to explain the colours of natural bodies. He has ſhewn that colour is not a ſpecific property of bodies, but is cauſed by the different rays of light being reflected from the ſurface of the body; the reſt of the rays paſſing into, or through the body. Since the time of this philoſopher, it has been objected, that the ſeven colours above mentioned are not primitive. It ſeems very obvious that there can be only three primitive colours, namely, red, yellow, and blue; ſince all the colours can be made by means of theſe. It has lately been advanced by Prieur, that the primitive colours are violet, green, and red: that the yellow is formed with red and green, the latter being in exceſs; and that when the red is in exceſs, they form orange; the green and violet form blue.

The colours excited by the different refrangible rays do not appear to determine what are the primitive colours, ſince we find that different rays are capable of producing the ſame colour, as a mixture of the yellow with the red produces orange. And it muſt be admitted, that the violet rays excite, in ſome degree, the idea of red along with the blue; as in the green, the yellow and blue may be diſcerned, but none of the red.

When the different coloured rays are mixed together, either by recompoſition, or by getting each colour from a ſeparate ſpectrum, the reſult will be white light. Hence ſir Iſaac Newton concluded, that when the rays are promiſcuouſly reflected from any ſurface it will appear white. It was found by ſir Iſaac Newton, and has ſince been confirmed by the experiments of Dr. Herſchel, that the different coloured rays have not by any means the ſame illuminating power. The violet rays appear to have the leaſt luminous effect, the indigo more, the blue a little more, the green very great, between the green and the yellow the greateſt of all, the yellow the ſame as the green, and the red leſs than the yellow. When the ſolar rays are paſſed through a convex lens, or reflected from a concave, a very intenſe heat is produced by the concentration of the rays. Count Rumford has ſhewn, that when the rays of the ſun are made to paſs through a certain aperture, and fall upon any ſubſtance to be heated, while the ſame area of light is made to paſs through a lens, in the focus of which the ſame quantity of matter is to be heated, they become heated in the ſame time to the ſame degree. Nothing is better known, in ſhort, than that the rays of the ſun are capable of exciting ſenſible heat. Newton, and the philoſophers of his age, accounted for heat by the motion excited in the parts of the body by the agitating power of the abſorbed light. Melville ſuppoſed that the heat was expelled from the terreſtrial matter by the light. At preſent, it is generally admitted, on the ſtrength of ſome valuable experiments made by Dr. Herſchel, that the rays of light and caloric are ſeparately emitted from the ſun, the luminous rays producing light, and the calorific, heat.

This philoſopher introduced a beam of light into a dark room, which was decompoſed by a priſm, and then expoſed a very ſenſible thermometer to all the rays in ſucceſſion, and obſerved the heights to which it roſe in a given time. He thus determined, that the heating power of the red to that of the green rays was 2¾ to 1, and 3½ to 1 in red to violet.

On repeating theſe experiments, he found that the greateſt quantity of calorific rays were even beyond the coloured ſpectrum at about ½ an inch from the commencement of the red rays. At a greater diſtance from this point it began to diminiſh, but was very perceptible even at the diſtance of 1½ inch.

It will appear from what has been ſtated, that theſe calorific rays are leſs refrangible than the rays of light; hence the calorific focus will fall beyond that of the luminous. Dr. Herſchel made an experiment to verify this inference, but did not come at any thing very concluſive. He afterwards made experiments to collect theſe inviſible calorific rays, and cauſed them to act independently of the light, by which he concludes, that they are ſufficient to account for all the effects produced by the ſolar rays in exciting heat; that they are capable of paſſing through glaſs, and of being refracted and reflected, after they have been finally detached from the ſolar beam.

If we are to conſider theſe inviſible rays as being truly the ſame with artificial heat, emanated from terreſtrial bodies, under the temperature of 800° of Fahrenheit, ſome of the experiments of Dr. Herſchel are ſtrongly at variance with ſome of the experiments of Mr. Leſley, detailed in his work, entitled "An Enquiry into the Nature of Heat," eſpecially ſo far as relates to the tranſmiſſion of heat through tranſparent bodies. It appears from the facts given by Mr. Leſley, that the heat of 212° of Fahrenheit is not tranſmitted by glaſs in the radiant form, but is firſt abſorbed by the glaſs, and radiated afreſh from its oppoſite ſurface. He was led to this concluſion by the fact, that more heat paſſed through white paper than the glaſs. And what ſtill more confirms this idea, he found equally as much heat paſſed through two plates of tin, one ſide of each being blacked, and the other poliſhed. When the bright ſides were placed together, and the black outwards, it tranſmitted as much as the glaſs; but when the black ſides were together, and the bright ſides outward, there was no perceptible quantity paſſed through.

That culinary heat does not paſs directly through glaſs, may be tried by holding a pane of glaſs before a heated body, and alternately holding the hand on each ſide the glaſs. After ſome time, however, the glaſs gives heat to the hand, proving that the heat has been tranſmitted; but this will be found to reſult from a ſecond radiation, and would have been more abundant, if a plate of metal, painted black, had been in the place of the glaſs.

The heat from the ſun's rays is not ſo affected. It requires no perceptible time to paſs through ſeveral thick priſms of glaſs, and when we hold a convex lens in the ſun's beams, we have inſtantaneous heat produced upon any opaque body in its focus.

We have not yet ſufficient ground to eſtabliſh the identity of light and heat; but if Dr. Herſchel's experiments be correct, we muſt either conclude that the ſolar calorific rays are of a different nature from the inviſible rays, or that ſolar light is converted into caloric from heated bodies. The ſame philoſopher, however, has made the ſame experiments with inviſible culinary heat, and with ſimilar reſults. How ſhall we reconcile the ſeeming contradictions? Dr. Herſchel uſed two thermometers, one of which was his ſtandard. Mr. Leſley uſed the differential thermometer, an elegant inſtrument, invented by himſelf. Dr. Herſchel began his experiments with a red-hot cylinder, and continued them till it became inviſibly cold. Mr. Leſley uſed a canniſter filled with boiling water. A more particular ſet of experiments is ſtill wanting to clear up this myſterious ſubject.

Dr. Herſchel has alſo given us ſome uſeful experimental facts on the relative quantities of light and heat tranſmitted by different ſubſtances. The following Table ſhews the quantity of light and heat, ſtopped by colourleſs and tranſparent ſolid ſubſtances.

Table I.

Subſtances.	Stops of 1000 Parts	
	Heat.	Light.
Blueiſh white glaſs - -	250	80
White flint ditto - -	91	34
Green crown ditto - -	259	203
Coach ditto - - -	214	168
Iceland cryſtal - - -	244	150
Talc - - -	139	90
Calcinable talc - -	184	288

Table II.

Shewing the quantity of light and heat ſtopped by coloured ſubſtances.

Subſtances.	Stops out of 1000.	
	Heat.	Light.
Very dark red glaſs - -	800	999 $\frac{1}{10}$
Dark red - - -	666	999 $\frac{1}{10}$
Orange - - -	614	779
Yellow - - -	333	819
Pale green - - -	633	535
Dark ditto - - -	849	949

Subſtances.	Stops out of 1000.	
	Heat.	Light.
Blueiſh ditto	768	769
Pale blue	812	684
Dark ditto	362	801
Indigo	633	999 $\frac{1}{10}$
Pale indigo	532	778
Purple	583	993
Violet	489	955

Table III.

Shewing the ſtopping property of what Dr. Herſchel calls ſcattering ſubſtances.

Subſtances.	Stops out of 1000.	
	Heat.	Light.
Rough crown glaſs	464	854
Rough coach ditto	571	879
Doubly-rough	667	932
Second doubly rough	735	946
The two firſt together	698	969
The two next together	800	979
The four firſt together	854	995
Olive colour burnt in	839	984
Calcined talc	867	996
White paper	850	994
White linen	910	952
White Perſian	700	916
Black muſlin	714	937

Table IV.

Shewing the ſtoppage out of 1000 of the priſmatic red rays, and the inviſible rays.

Subſtances.	Rays.	
	Red.	Inviſible.
Blueiſh white glaſs	375	000
Flint glaſs	143	71
Crown glaſs	294	000
Coach glaſs	200	182
Iceland cryſtal	250	143
Calcinable talc	433	——
Dark red glaſs	692	250
Orange	500	000
Yellow	417	273
Pale green	588	200
Dark green	786	375
Blueiſh green	462	500
Pale blue	700	800
Dark blue	71	750
Indigo	367	167
Pale indigo	313	222
Purple	444	250
Violet	400	273
Crown glaſs, one ſide rough	389	250
Coach glaſs, ditto	500	600
Crown glaſs, both ſides rough	471	500
Coach glaſs, ditto	833	600
Calcined talc	737	714

Table V.

Shewing the ſtoppage of rays of flame, fire, and inviſible rays from a ſtove.

Subſtances.	Rays.		
	Flame.	Fire.	Inviſible.
Blueiſh white glaſs	625	750	700
Flint glaſs	595	750	533
Crown glaſs	636	722	783
Coach glaſs	458	714	625
Iceland cryſtal	510	756	726
Talc	375	713	615
Very dark red glaſs	636	613	——
Dark red	526	573	630
Orange	560	643	524
Yellow	523	685	531
Pale green	500	688	632
Dark green	739	745	700
Blueiſh green	652	696	556
Pale blue	609	676	548
Dark blue	619	704	632
Indigo	679	721	659
Pale indigo	571	655	700
Purple	520	679	730
Violet	500	615	684
Crown glaſs, one ſide rough	741	723	775
Coach glaſs, ditto	667	758	741
Crown glaſs, both ſides rough	615	791	833
Coach glaſs, ditto	680	854	769
The two laſt but two, together	720	849	——
The two laſt together	667	897	——
The four laſt together	870	902	——
Olive colour, burnt in glaſs	792	849	636
White paper	792	912	535
White linen	690	910	457
White Perſian	593	829	——
Black muſlin	565	706	——

The experiments in the firſt, ſecond, and third tables, were made by letting the ſun's rays act directly upon one thermometer, while the ſame light acted upon another after paſſing the different ſubſtances. The numbers in the tables are the ratios of the differences of the degrees of each, after being acted upon for a given time. Table IV. was made in the ſame way, the red rays and the inviſible rays being each ſeparated by the priſm, making two ſets of experiments. In each of theſe, the red, or the inviſible, acted on one thermometer, and on the other through each of the ſubſtances.

Table V. is formed from three ſets of experiments, made at different times, by cauſing, in the firſt, the rays of the flame of a candle to act upon one thermometer directly, and upon the other through the ſubſtances. In the ſecond ſet the rays of a common fire were uſed; and in the third, the inviſible rays of an iron ſtove. See Phil. Tranſ. for 1800.

An abundance of uſeful knowledge is to be derived from theſe reſearches, which may be of the utmoſt importance to ſociety, as well as in giving aid to different branches of ſcience.

In delicate experiments of this kind, the thermometer ſeems to be the moſt important of the apparatus. The ſmallneſs of the ſcale, and the want of ſenſibility in thoſe uſed by our ingenious experimenter, were certainly very objectionable, when compared with the differential thermometer of Leſley. A repetition of theſe experiments, under ſuch an advantage, is highly to be recommended. We have already pointed out ſome contradictions between theſe and Leſley's experiments.

By comparing the effect of the ſubſtances upon the ſolar inviſible rays in Table IV., and upon the inviſible rays from the iron ſtove in Table V., we are led to ſome very ſingular concluſions. It appears, for inſtance, that flint-glaſs ſtops none of the inviſible rays of the ſpectrum, although the ſame ſubſtance ſtops 143 out of 1000 of the red rays, 91 of 1000 of direct ſolar heat, 34 of the direct light. Hence it would ſeem that calorific rays mixed with the luminous, muſt conſtitute the 91 of 1000, ſince all the inviſible rays paſs through. We muſt from theſe data conclude, that either the light of the ſolar ſpectrum produces heat, or that the calorific part in the coloured rays is of a different nature from the inviſible calorific rays. If the latter be admitted, we have as much reaſon to conſider the ſolar beam as conſiſting of different kinds of heat, as well as of light.

Theſe anomalies are ſtill increaſed, when we turn to Table V., where we find that the ſame flint-glaſs ſtops out of 1000 rays 730 inviſible rays from a ſtove, which would ſeem to eſtabliſh that this calorific matter is ſtill different from both the viſible and inviſible caloric of the ſun; and in the experiments of Mr. Leſley, caloric appears to poſſeſs ſtill very different properties.

We here ſee ſo much myſtery and contradiction, that we muſt wait for more particular reſearch. It is unlike the ſimplicity of nature; the fault muſt, therefore, reſt with the philoſophers.

Sir Iſaac Newton, on finding ſo many different ſpecies of light, was unwilling to make ſo many fluids, but ſuppoſed they differed in the ſize of their particles; the largeſt being the leaſt refrangible, and the ſmalleſt the moſt. The ſame thing would take place from the ſame particles moving with different velocities; the moſt refrangible moving with the leaſt, and the leaſt refrangible with the greateſt velocity.

We have already ſtated a fact diſcovered recently by Malus, that light acquires new properties by a peculiar reflection. Does it then appear impoſſible that it ſhould not be changed in paſſing through diaphanous media? May not that which moves with the greateſt velocity have a greater portion converted into heat; or, in other words, may not this converſion be as the velocity? This idea is ſtrengthened, from the circumſtance of calorific rays being found throughout the ſpectrum. The greateſt objections raiſed to this idea of light and heat being excited by the ſame rays moving with different velocities, are founded on the facts of combined light in phoſphoreſcent bodies, and in the chemical effects which were thought to be peculiar to light. In our next ſubject, however, we ſhall ſhew that all the chemical effects producible by light can be produced by heat.

Beſides the properties of the ſolar beams to produce heat and light, we find it to have other properties equally important to the animated world. This is moſt conſpicuous in the economy of vegetables. It has been many times proved, that vegetables, growing without light, would not, in the firſt place, have more tendency to grow upwards than in any other direction. This ariſes from an evident attraction exiſting between light and living vegetables. This fact is familiar to thoſe who have placed trees in windows. It is obſervable, that they always lean towards the light. The ſame effect would doubtleſs take place, if one ſide of a vegetable were ſhaded in the open air. The attraction of light is probably not the ſame for different vegetables; by which we may account for the different forms of trees. This is rendered plauſible, when we contraſt the ſpreading branches of the oak with the towering branches of the poplar.

Experience has long ago eſtabliſhed, that vegetables become deſtitute of ſmell and colour, and loſe much of their combuſtibility, by growing in the dark. We find in Dr. Black's lectures, an account given by the celebrated Dr. Robinſon of Edinburgh In the drain of a coal-work under ground, he accidentally laid his hand upon a very luxuriant plant, with large indented foliage, and perfectly white. He had not ſeen any thing like it, nor could any one inform him what it was. He had the plant with a ſod brought into the open air in the light. In a little time the leaves withered, and ſoon after new leaves began to ſpring up, of a green colour, and of a different ſhape from that of the old ones. On rubbing one of the leaves between his fingers, he found that it had the ſmell of common tanſy, and ultimately proved to be that plant, which had been ſo changed by growing in the dark. Indeed it was recollected that ſome ſoil had been taken into the drain from a neighbouring garden, ſome time before it was found ſo altered.

This effect of light is not leſs conſpicuous in the growth of celery. By covering it with earth, the light is ſhut out, which would very ſoon turn it green, and make its flavour ſo ſtrong as to render it unfit to be eaten, at the ſame time that it would render it more fibrous and tenacious.

From the circumſtance of light giving odour and inflammability to vegetables, and ſince theſe properties are moſt common to bodies containing hydrogen, it would appear that light was eſſential to the production of hydrogen, perhaps by expelling oxygen; and hence it would alſo appear that hydrogen is neceſſary to the colour of vegetables. It has been aſſerted by Humboldt, that he found vegetables growing in the dark mine, having their natural colour, but theſe plants were inveloped by hydrogen.

Light is found to produce various chemical changes upon bodies. When the oxyd of ſilver is precipitated from nitric acid by muriatic acid, the inſoluble muriat is at firſt white, and if kept in the dark at the common temperature, would doubtleſs remain ſo for an indefinite length of time. If, however, it be expoſed to the light for a little time, it begins to aſſume a purple colour, and ultimately becomes black. This effect takes place more rapidly according to the intenſity of the light. Hence it has been propoſed to meaſure the intenſity of light by the time of its changing. An inſtrument has been invented for this purpoſe by Mr. Leſley. See PHOTOMETER.

The general effect of light, as a chemical agent, appears to conſiſt in diſengaging the oxygen, or an acid from bodies which it effects, no doubt, by leſſening the affinity of the baſe for oxygen, or the ſaline baſe for the acid. Hence, we find light is capable of decompoſing thoſe oxyds and ſalts, in which the oxygen or acid is held by a weak affinity. It therefore detaches oxygen from the oxyds of gold, platina, ſilver, and the peroxyd of lead: alſo from nitric and liquid oxymuriatic acid. Dr. Herſchel, in his experiments upon light, finding that the ſolar ſpectrum had different illuminating powers in different parts, conjectured that the power of the ſun's light to effect chemical changes, might principally belong to ſome particular part of the ſpectrum, and it appears that this ingenious hint has been confirmed by experiments made by Dr. Woollaſton, and alſo by Ritter. It appears that the inviſible rays have no action upon the muriat of ſilver, the red rays a little more, and ſo on, increaſing to the utmoſt boundary of the violet ray; but the maximum of effect was found at ſome diſtance beyond the violet. It appears, therefore, from this curious fact, that the ſolar beam conſiſts of rays which have three diſtinct effects, one producing light, another heat, and a third producing neither, but which effect the greateſt chemical changes in the leaſt time.

Some experiments lately made by Guy Luſſac and Thenard, and detailed in their work entitled "Recherches Phyſiques-Chimiques," vol. ii. p. 186, go far to prove that the chemical changes produced by the ſolar rays are not dependent upon any ſpecific property of light, as they have produced ſimilar effects by heat alone. Dry oxymuriatic acid gas was not decompoſed by light nor heat. Liquid oxymuriatic acid was decompoſed by a light not ſtrong, and by a heat equal to obſcure red. Nitric acid by the ſame heat. Oxymuriatic acid gas mixed with hydrogen by light, and by heat equal to 125° to 160° centigrade. The ſame was decompoſed ſlowly by diffuſe light, but ſcarcely any at leſs than 120° centigrade. The firſt oxyd of mercury was converted into the ſecond oxyd, and running mercury by diffuſe light; and the ſame by heat. The peroxyd of lead was changed into the red oxyd, oxygen gas being diſengaged by a vivid light; and the ſame was produced by a gentle heat. The oxyds of ſilver and platina were decompoſed by light and by a gentle heat.

They next expoſed vegetable colours to the action of light as well as heat.

A vegetable roſe-colour from ſaffron became white in a ſhort time by light; and the ſame by expoſure for an hour to 160° cent.

Log-wood dye was changed to dark red by light, and by expoſure 1½ hour to 180° cent.

Brazil-wood dye became white by light, and by 180° of heat, for two hours.

The orange colour of Indian ſaffron became a dull red by light. The ſame was produced by 200° of heat, for an hour and a half.

Yellow colour, from woad, was changed to ochre colour by light, and by 210 of heat applied for two hours and a half.

In all the effects of light we have hitherto enumerated, although we have ſhewn that a mutual attraction exiſts between light and other matter, we have not adverted to its remaining in bodies from which it may be eliminated without change. Several bodies appear, however, to poſſeſs the property in a remarkable degree. Indeed, according to experiments of father Beccaria, almoſt any ſubſtance expoſed to the light of the ſun for a certain time, appeared luminous when brought into a dark room. This he found to be the caſe, when he made his own hand the ſubject of experiment. This property is ſoon gone in moſt bodies; but is reſtored by freſh expoſure to light. The ſubſtance moſt remarkable for retaining this quality is Canton's phoſphorus, which conſiſts of ſulphur and lime. It is prepared by ſtratifying oyſter-ſhells with ſulphur in a crucible, and expoſing them to the heat of a briſk common fire. The lime of the ſhells becomes impregnated with the ſulphur, and they are then broken to pieces, and kept for uſe in a ſtopped phial. This ſubſtance has the property of ſhining in the dark, after expoſure to the ſun's light, for a ſhort time. Its brightneſs is ſuch, as to point out the hour of the night. If it be kept in the dark, however, for a certain length of time, it becomes leſs bright, and ultimately loſes its ſhining property; which it re-acquires by expoſure to the light. This light is not dependent upon any combuſtion, ſince it poſſeſſes this property without oxygen, and is not increaſed by its preſence. Heat cauſes it to ſhine brighter; but it gives out its light ſooner, which is only reſtored by new light.

Canton, the ingenious diſcoverer of this ſubſtance, introduced equal quantities of it into two glaſs globes, and expoſed them to the ſun equally, to give them their greateſt luminous power. They were then taken into a dark room, when they were equally luminous. One of them was now placed in boiling water, by which means it became much brighter, but it ceaſed to be luminous in ten minutes; while the other continued to ſhine for two hours after. After the latter, however, had ceaſed to ſhine, it became luminous by the application of heat. It appears, by the account of this author, when it had ceaſed to ſhine at one temperature, it always gave out light in a greater, even to the point of ignition; but never after at the ſame, or a lower temperature, till it had been expoſed anew to the ſun's light.

Theſe curious facts, on a firſt view, ſeem to prove that the light of this ſubſtance is derived from the ſun's rays, which enters into combination with it, and is eliminated in the dark. This ſuppoſition, however, is rendered improbable by other facts. When it has ceaſed to ſhine, its property is reſtored by any of the coloured rays of the ſolar ſpectrum. It ought, therefore, to emit that particular light only to which it has been expoſed, but contrary to this, under all circumſtances, it gives out the ſame coloured light, which is generally white.

It ſeems more agreeable to the phenomena to ſuppoſe, that the influence of the light upon this ſubſtance conſiſts in exciting ſome chemical action in the body, which cannot be produced by heat, or, perhaps, the phenomena may be electrical, ſince we find that the electric ſpark, as well as light, is capable of giving it its luminous property.

A great variety of ſubſtances have the property of giving out light by different treatment, ſome by heat, others by rubbing, and by percuſſion. Moſt of the earthy ſalts have the property of ſhining in the dark, by being laid upon an iron plate, heated a little ſhort of ignition. Fluat of lime is by far the moſt brilliant by this treatment. The ſame is viſible, though in a leſs degree, in all the carbonats of lime, and in carbonats and ſulphat of barytes, and alſo carbonat of ſtrontian.

Several of the gems have the property of ſhining by rubbing. Quartz pebbles, rubbed briſkly together, in the dark, give brilliant flaſhes, accompanied by a peculiar odour not unlike that produced by the wheels of a carriage grinding upon ſtones. The tourmalin alſo gives out light by rubbing. The ſhining property of this claſs of bodies is the ſame in vacuo, and any of the gaſes. The cauſe of theſe appearances is not even gueſſed at: they do not acquire theſe properties from the ſun's light, like the phoſphorus of Canton.

We are in poſſeſſion of a number of curious facts relative to phoſphoreſcence of animal and vegetable ſubſtances. Canton has furniſhed a number of intereſting experiments upon fiſh and the fleſh of animals: and the ſubject has ſince been inveſtigated and extended by Dr. Hulme. The fleſh of animals, particularly veal, at a certain period after death, begins to be luminous, and continues ſo for ſome time. The light is extinguiſhed when the meat has arrived at a certain ſtate of putrefaction. This property, however, is more conſpicuous in fiſh, and ſea-fiſh more than that of freſh-water. A ſeries of experiments is given by Dr. Hulme in the Philoſophical Tranſactions for 1800, page 161.

He generally took about four drachms of the ſubſtance of different kinds of fiſh. This he put into a three-ounce phial, to which he introduced two drachms of ſulphat of magneſia, diſſolved in two ounces of cold ſpring-water, but occaſionally he uſed other ſalts.

Two drachms of the fleſh of the herring were put into the ſolution of ſulphat of magneſia. On the ſecond evening he perceived a ring of light round the top of the liquid, but it was dark below. On ſhaking the phial, the whole became beautifully luminous, and remained in that ſtate. On the third night the light had again riſen to the top; but the ring was not ſo bright as on the preceding night, nor was it ſo bright after ſhaking as on the firſt occaſion. In another experiment, the light diſappeared entirely on the third night. The ſame experiment was made with ſea-water. On the ſecond night the liquid was dark; on the third lucid; on the fourth very luminous; on the fifth it began to decline; on the ſixth it became leſs; and on the ſeventh quite gone. At this period, neither the fiſh nor the liquid had any ſmell of putreſcence. The ſame took place in a ſecond experiment. In another experiment, he uſed four drachms of the roe of the herring, two drachms of ſulphat of magneſia, and two ounces of water, as before. On the ſecond night, on ſhaking the phial, the liquid was luminous; it remained ſo on the third and fourth; and on the fifth was extinct. In the ſame experiment, with ſulphat of ſoda, the effect was leſs, but it was greater with ſea-water. Similar appearances took place by a ſimilar treatment of the mackarel.

He next ſuſpended in a room the herring and the mackarel. On the ſecond night the ſkinny ſide became luminous; on the third night both ſides of the whole were exceedingly luminous. Dr. Hulme obſerves, that the ſoft roe of both theſe fiſh afforded the moſt light. At the time theſe fiſh became very luminous, Dr. Hulme ſcraped off ſome of the luminous matter, which he named herring's light, or mackarel light. This ſubſtance he introduced to different ſolutions of ſalts.

The ſolutions uſed were ſulphats of magneſia and ſoda; muriat and phoſphat of ſoda; nitrat of potaſh; Rochelle ſalt; tartrat of ſoda; and ſea-water. He alſo uſed ſolutions of honey and ſugar: the quantity of water in each was two ounces: the quantity of each ſubſtance diſſolved in the ſame was two drachms, with the exception of the nitre, and muriat of ſoda, the former being half a drachm, and the latter a drachm.

The herring or mackarel light being introduced to the ſolution of ſulphat of magneſia, rendered the whole maſs of liquid very luminous, and continued for 24 hours. All the above ſolutions became luminous by adding the ſame lucid matter. The phoſphat and muriat of ſoda appear to have been better than the reſt. The light with ſea-water was more permanent, being luminous for ſeveral days. After the above luminous matter had ceaſed to ſhine, the light was in ſome degree revived by motion. What is very remarkable in theſe experiments, is the circumſtance, that when the ſolutions were made ſtronger to a certain extent, the light became ſuddenly extinguiſhed, but was always reſtored by dilution with water.

The light is alſo extinguiſhed by water, lime-water, water impregnated with carbonic acid, or with ſulphuretted hydrogen, alcohol, alkalies, and acids.

In all the above experiments the light is not attended with the leaſt elevation of temperature.

By expoſing this luminous matter to a certain degree of cold the light is extinguiſhed; but is reſtored with the return of temperature. A moderate heat cauſes it to be more bright; but the heat of boiling water entirely extinguiſhes it, and deſtroys the property. According to another ſet of experiments by Dr. Hulme, in the Phil. Tranſ. for 1801, page 483, it appears, that theſe ſubſtances do not ſhine brighter in oxygen than atmoſpheric air. In nitrogen gas they do not begin to ſhine; although, after the ſhining has commenced, they continue to ſhine in this gas for a limited time: the preſence of oxygen appears to be eſſential in firſt producing this property. Dr. Hulme found, that when two herrings were expoſed, with their ſides touching, the unexpoſed parts remained dark: he found the effect produced by covering any part with ſtrong brown paper.

In hydrogen gas the freſh fiſh begins to ſhine; and, if begun, it is very ſoon extinguiſhed: it recovers its property, however, by re-expoſure to the air of the atmoſphere. By repeated and alternate expoſure to theſe gaſes, the light is loſt and regained a number of times. This light is alſo extinguiſhed by nitrous, carbonic acid, and ſulphuretted hydrogen gaſes. This phoſphoreſcence is extinguiſhed in vacuo; but is reſtored by letting in the air. The glow-worm and rotten wood were found to poſſeſs ſimilar properties: they were ſimilarly acted upon by the different gaſes, by cold, and by moderate heat. The light of the ſhining matter from the fiſh was extinguiſhed by a heat from 96° to 100° of Fahrenheit: the temperature of 110° impaired, but did not extinguiſh the rotten wood: the temperature of 114° increaſed the brilliancy of the glow-worm; but the temperature of 212° extinguiſhed both.

It appears that rotten wood, like the fiſh, does not give out light till it has been expoſed for ſome time to the air: it retains its luminous property immerſed in ſpring-water, or diſtilled-water, and alſo in linſeed oil; it is, however, extinguiſhed by acids, by alcohol, and, perhaps, by alkalies. The luminous matter of the glow-worm is a liquid ſecreted and retained in the lower part of the abdomen. If the fluid be ſqueezed out, it ſtill retains its ſhining property, and may be ſpread upon the palm of the hand; but it ſoon in this ſtate diſappears.

This property is obſerved in ſome other inſects, particularly the lantern-fly of the Weſt Indies.

The light of a great number of theſe artificial and natural pyrophori does not appear to depend in the leaſt upon the preſence of oxygen. Of this kind are phoſphorus of Canton, the different earthy ſalts which ſhine by the application of heat, and ſome other minerals which ſhine by friction and attrition. Thoſe of which we have laſt treated require the preſence of oxygen, at leaſt to acquire the property of ſhining. This circumſtance renders the ſuppoſition of Dr. Hulme rather improbable, namely, that the light is a component part of the body from which it is illuminated. The only thing which the facts above given can be allowed to have eſtabliſhed, is that, during a certain ſtate of the animal ſubſtance, between death and actual putrefaction, ſome proceſs is carried on in the preſence of oxygen, by which light is evolved; and that during the time the ſubſtance is in vacuo, or in ſome gas which is deſtitute of oxygen, this proceſs is ſuſpended, and by the preſence of other ſubſtances totally ſtopped. The fact of its continuing to ſhine in nitrogen, might ariſe from the preſence of a ſmall portion of oxygen. It appears, from the circumſtance of its ſhining in atmoſpheric air, as much as in oxygen, that very little oxygen is neceſſary. Forſter aſſerts that the glow-worm ſhines brighter in oxygen, but the oxygen does not appear perceptibly impaired. This ſhews, that although oxygen is neceſſary, the quantity required is very ſmall;

It has been too common for chemiſts to draw the following concluſion, that when light, or light and heat together, are evolved, that it muſt either have ariſen from combuſtion, or that the light is a component part of the body from which it is diſengaged. As, for inſtance, becauſe Canton's phoſphorus ſhines without the preſence of oxygen, the light is called light of combination; and Dr. Hulme has, with leſs foundation, drawn the ſame concluſion. Inſtead of ſaying that light and heat are products of combination, from the union of oxygen with inflammable matter, we ſhould ſay that it is the reſult of rapid chemical combination, when the bodies have great affinity for each other.

We have ſeveral facts which confirm this idea. When ſtrong mineral acids combine with pure potaſh, lime, or magneſia, much heat and ſome light are emitted. The ſame thing is alſo obſerved in ſlacking of lime. In an experiment, made by a ſociety of chemiſts, it appears, that when a mixture of ſulphur and copper filings is expoſed to a red heat, in a glaſs tube, the oxygen being excluded, the two ſubſtances ſuddenly combine, attended with the diſengagement of light. In thoſe chemical changes where heat and light are diſengaged, the following law will obtain. The change of temperature will be as the difference between the ſpecific heat of the compound body, and half the ſum of the ſpecific heat of the bodies before combination; while the intenſity of the light and heat will be inverſely as the time in which this change has been taking place.

We ſhall here leave the ſubject of phoſphoreſcent light, to give ſome account of that produced by combuſtion; in treating which, we ſhall find our progreſs much facilitated, by conſidering combuſtion as dependent on the above law, rather than upon the laws of combuſtion, as laid down by Lavoiſier, who was of opinion, that the light and heat furniſhed by combuſtion were entirely derived from the oxygen. If, as we have ſuppoſed, the quantity of heat be greater, as the ſpecific heat of the reſulting compound is leſs than the mean of the bodies before combination, we ought to have heat evolved whenever ſuch change can be proved; and by aſcertaining, before hand, the ſpecific heat of the compound, and of the elements, the quantity of heat may be known. Experience has already given great ſtrength to this notion. The intenſity of the light and heat, however, during theſe changes, will not depend upon the abſolute quantity evolved, but upon the rapidity of the evolution; and, if we are not greatly deceived, the quantity of light will always be as the rapidity of combuſtion. In the ſlow combuſtion of hydrogen gas, the light is not great, but the whole heat is greater than that afforded by any other combuſtible body. On the other hand, the abſolute quantity of heat afforded by the combuſtion of phoſphorus, is much leſs than that evolved by burning an equal weight of hydrogen; but the quantity of light given by the former, much exceeds that of the latter. The intenſity of light, however, will alſo be inverſely as the ſpace which it occupies, and hence it will be as the ſpecific gravity of the combuſtible body. We may therefore conclude, that the quantity of light afforded by combuſtion will be as the rapidity of combuſtion, which will be as the affinity of the body for oxygen, as the denſity of the burning body, and inverſely as the coheſion of the body. The difference of coheſion between charcoal and the diamond accounts for the relative combuſtibility of theſe two bodies. For this reaſon, ſoft iron wire ought to afford more vivid combuſtion in oxygen than ſteel wire.

In order to obtain a relative idea of the value of different combuſtible bodies, uſed for procuring artificial light, we ſhall detail ſome ingenious experiments made by Dr. Henry, and publiſhed in Nicholſon's Journal, vol. xi. p. 65.

Dr. Henry, with a view to aſcertain the relative value of the combuſtible gaſes, made ſome trials with hydrogen, carburetted hydrogen, and carbonic oxyd. Theſe he found did but afford a very inferior light, compared with the ſplendid light given by the gas afforded by the deſtructive diſtillation of pit-coal, which is equal to the light given by the fineſt ſpermaceti oil. The following table points out the reſult of his experiments, and clearly ſhews the cauſe of the ſuperior property of coal gas to produce light.

Kind of Gas.	Meaſures of oxygen gas required to ſaturate one hundred meaſures of each.	Meaſures of carbonic acid produced.
Pure hydrogen	50 to 54	None
Gas from moiſt coal	60	35
Do. Wood (oak)	54	33
Do. dried peat	68	43
Do. from cannel coal	170	100
Do. Lamp oil	190	124
Do. Wax	220	137
Pure olefiant gas	284	179

The firſt column contains the different gaſes, 100 meaſures of each being uſed in each experiment. The ſecond, the meaſures of oxygen which were conſumed, while each of the 100 meaſures were burning. The third, the quantity in meaſures of carbonic acid, which reſulted from the combuſtion. It is a fact, already aſcertained, that every meaſure of carbonic acid gas has reſulted from a meaſure of oxygen; conſequently, the quantity of oxygen conſumed in its formation is equal in meaſure to the numbers in the third column; the exceſs of oxygen, therefore, appearing in the ſecond. By ſubtracting the number in the third from that in the ſecond, it will give the quantity of oxygen which has combined with the hydrogen in each of the gaſes. This exceſs of oxygen, in the ſecond column, will combine with two meaſures of hydrogen, to form water. In order to form ſome idea of the relative value of theſe combuſtible gaſes, we will compare the firſt, which is pure hydrogen, and the laſt, or the pure olefiant gas, which has the greateſt efficacy in producing light. The 50 meaſures of oxygen in the firſt combine with 100 of hydrogen, and ſince no carbonic acid is produced, this is the whole effect. In the laſt experiment, 179 of carbonic acid is formed at the expence of 179 meaſures of oxygen, and about $\frac{5}{7}$ths its weight of carbon, which would alone have furniſhed conſiderable light. Since, however, 284 meaſures of oxygen are expended, we have $284 - 179 = 105$ meaſures of oxygen, which would require 200 meaſures of hydrogen. If, therefore, hydrogen and carbon were equally efficacious as combuſtible bodies in producing light, the quantity of light in one, to that in the other, would be as $210 + \frac{5}{7} \times 179 : 100$, or as 25 to 1 nearly. The ratio of the ſpecific gravities of theſe gaſes is as 90 to 8 nearly; therefore, multiplying theſe ratios, we get 270 to 8, or 34 to 1 nearly, for the relative intenſity of the light of each.

Theſe different gaſes are here ſuppoſed by Dr. Henry to be mixtures of ſeveral gaſes, the compoſition of which is known, and all conſiſting of different proportions of hydrogen and carbon, with the exception of the carbonic oxyd, which contains oxygen. Now, ſetting aſide the latter gas, which being partly ſaturated, the reſt will be in their effect to produce light, as the quantity of carbon they contain; not that carbon is more effective than hydrogen, but becauſe the ſpecific gravity of the gas is increaſed by the carbon. Since, therefore, the olefiant gas contains the moſt, and is of the greateſt ſpecific gravity in conſequence, thoſe gaſes which contain the greateſt quantity of olefiant gas, muſt be the beſt for producing light by combuſtion. Now, it may be ſeen in the table, that the gaſes obtained from lamp oil and wax are the next to the olefiant gas in their effect of giving light; and hence we may conclude that thoſe gaſes contain a large proportion of olefiant gas, and of courſe ſeem well fitted for producing artificial light. If we may judge by analogy, we may expect that the ſpermaceti fat will ſtand as high as the oil, and the beſt tallow may, perhaps, be the next in order. During the burning of theſe ſubſtances, the vapour which, when kindled, conſtitutes the flame, may conſiſt of a great proportion of the olefiant gas. In the burning of all fatty ſubſtances, however, there is a great redundancy of carbon, which flies off with the gaſeous products in the form of ſmoke, and which is burnt in the Argand lamp. The above facts will furniſh an elegant and ſimple method of appretiating the relative value of the different combuſtible bodies to produce light. See Gas-lights, Lamp, and Combustion.

The light which is furniſhed by combuſtion, and commonly called artificial light, is conſidered by moſt philoſophers as being a component part of the bodies employed in the combuſtion. Even in the ſimple proceſs of heating a body red-hot, it is ſaid that the body at that temperature begins to give out light. It is rather curious, that all bodies ſhould give out light at the ſame temperature, which is ſaid to be about 800° Fah. It would appear, from a fact given by the late Mr. Wedgewood, that the emanating medium is heat or light, according to the denſity of the body from which it is emanated. The heated air is ſo hot, as to make a thin ſlip of gold appear red-hot, although the aerial medium did not become luminous. Terreſtrial light, as it appears to poſſeſs moſt of the properties of ſolar light, like it, can be tranſmitted and refracted by tranſparent bodies, and it ſtrictly reſembles it in being reflected by the ſame bodies. It is ſaid, however, to contain a different proportion of the coloured rays from that of ſolar light, being defective in the blue, and redundant in the red rays.

Doctor Herſchel has made a number of experiments upon terreſtrial heat, in order to compare it with the heat furniſhed by the ſun; but he ſeems to have taken it for granted, that the ſolar light and the artificial do not differ, although his experiments prove, that terreſtrial heat and ſolar heat differ eſſentially. Artificial heat does not paſs through glaſs, while the ſolar calorific rays paſs eaſily through the ſubſtance of a priſm, and afterwards through a convex lens.

It has been found that artificial light has ſome chemical properties. The Abbé Teſſier found that the green colour of vegetables is produced by the light of a lamp. This fact has been confirmed by Decandolle.

Light, *for the Properties of reflected*, ſee Reflection, Mirror, &c.

Light, *for the Properties, &c. of refracted*, ſee Refraction, Lens, &c.

Light, *for the Doctrine of the Colours of*, ſee Colour, Refraction, and Refrangibility.

Light, *for the Manner in which it affects our Senſes, and how it contributes to Viſion*, ſee Vision.

Light *from Diamonds and other Bodies*. See Light, *ſupra*, Diamond, Electricity, and Phosphorus.

Light, *Exhibition of, by living Animals*. This ſingular property belongs only to creatures of a ſimple ſtructure. It appears to reſide only in certain ſpecies of the four laſt claſſes as eſtabliſhed by modern naturaliſts, *viz. molluſca*, *inſects*, *worms*, and *zoophytes*.

The *molluſca* and *worms* contain each but a ſingle ſpecies, which has been aſcertained to ſhew light; for the account of certain ſpecies of *lepas*, *murex*, and *chama* yielding light, does not ſeem to reſt upon any good authority, and the ſtories told by Brugueire and by Flaugergues of *earth-worms* being luminous, are improbable in themſelves, even if they were not contrary to common obſervation. See Journal d'Hiſtoire Naturelle, tom. ii., and Journal de Phyſique, tom. xvi.

The examples of luminous ſpecies are more numerous amongſt *inſects* than in any other claſs. They are to be found in the following genera; *elater*, *lampyris*, *fulgora*, *pauſus*, *ſcolopendra*, *cancer*, *lynceus*, and *limulus*.

There are alſo many luminous *zoophytes*, particularly in the genus *Meduſa*, and in the new genus *Beroe*.

Some writers have attributed the property of ſhining while alive to certain *fiſhes*; but, as it would appear, upon very queſtionable grounds. In a voyage from France to Cayenne, Mr. Bajon ſaw in the ſea a number of luminous points which ſhone when ſtruck, and another appearance of pale flames, about three feet below the ſurface of the water. He likewiſe obſerved in the migration of the *dorado* and other fiſhes, that their bodies were ſtudded with ſimilar luminous points. Upon examination he diſcovered thoſe to be minute ſpheres which adhered to the ſurface of the fiſh. Theſe were moſt probably the ſmall ſpecies of luminous *meduſa*. We ſhall hereafter notice that Bajon's obſervations therefore ſhewed no property of ſhining in the fiſh themſelves.

Godeheu de Riville ſtates in a paper he ſent to the Academy of Sciences, that he found in the *Scomber pelamis*, on opening it alive, an oil which was extremely luminous. It ſhould be obſerved, that Riville was prepoſſeſſed with the opinion of all the luminous appearances of the ſea being occaſioned by a peculiar oily fluid: other parts of his Memoir ſhew inaccuracy of information; and it may be added, that if the oil of fiſhes were uſually luminous, as ſuppoſed by Riville, it would be a fact very generally known.

We ſhall now proceed to conſider the luminous property in thoſe animals which have been aſcertained to poſſeſs it. Afterwards we ſhall deſcribe the peculiar organs from which the light is known in certain ſpecies to emanate: and laſtly, we ſhall examine the opinions that have been entertained reſpecting the nature and origin of animal light.

The ſpecies of *Pholas*, deſcribed by Pliny under the name of *Dactylus*, has long been known to poſſeſs remarkable powers of evolving light. It is recorded by Pliny, that every part of this animal's ſubſtance is charged with a fluid, which, like liquid phoſphorus, renders any object luminous with which it comes into contact.

Reaumur has confirmed the obſervations of Pliny; he found alſo that the water contained in the ſhell of the *dactylus*, and other fluids in which the animal might be immerſed, acquired the property of ſhining, and after touching the creature, the hands communicated to common water a milky or pale phoſphoric appearance. Reaumur obſerved that the light was moſt vivid when the *dactylus* was freſh; it afterwards gradually declined until it became extinct. He dried the entire animal, which deprived it of all power of ſhining, but this was reſtored in a weaker degree even after four or five days, by moiſtening it either with freſh or ſalt water. So far from the proceſs of diſſolution being at all neceſſary to the luminous appearance of the *dactylus*, Reaumur found that it was deſtroyed by putting putrid individuals amongſt thoſe which had been recently taken. Mem. de l'Acad. des Sc. de Paris, 1712.

There are three luminous ſpecies of *elater;* the *noctilucus*, *phoſphoreus*, and *ignitus*. The firſt of theſe ſhines ſo brilliantly, that before the arrival of the Spaniards in South America, it is ſaid many tribes of Indians uſed no other light for tranſacting their ordinary buſineſs; and at preſent the women wear the inſect at night as an ornament in their head-dreſs. Dr. Patrick Brown, in his Hiſtory of Jamaica, ſays, the *elater noctilucus* is ſeldom met with during the day, it being then torpid; it flies by night, at which time it emits an unſteady light, having alternate moments of darkneſs. He obſerved, alſo, that the extinction of the light depended upon the will of the animal.

It is well known, that in the *elaters* the light proceeds from the ſmooth yellow ſpots ſituated upon the corcelet; but Dr. Brown ſeems to think that all the internal ſubſtance is equally luminous, and that the yellow ſpots appear ſo in a greater degree than the other parts, in conſequence of the tranſparency of the ſhell at theſe places favouring the tranſmiſſion of the light. He ſays, in forcing the rings that cover the different parts of the body a little aſunder, you may obſerve the ſame light to iſſue from all the entrails indiſcriminately. The internal parts of inſects are ſo tranſparent, and would permit ſo much light to paſs through them from the proper organs, that Brown might readily have taken up the above opinion without its being well founded. Thus we have obſerved, on opening the *glow-worm* at the back in the dark, that the light ſhone through all the inteſtinal parts.

There is ſome obſcurity in the accounts of naturaliſts with reſpect to the *elater phoſphoreus*. Degeer diſtinguiſhes it from the *noctilucus*, on account of the yellow ſpots being viſible on both the upper and lower ſides of the corcelet; but we have found that this is to be obſerved in the latter ſpecies alſo. The principal, and perhaps the only real diſtinction of the *phoſphoreus*, is its ſmaller ſize than the *noctilucus*.

The *elater ignitus* of Fabricius is conſiderably ſmaller than the preceding ſpecies, and is ſufficiently characteriſed by having the margins of the corcelet yellow, in place of the two yellow ſpots.

The genus *Lampyris* contains many ſpecies which emit light; of theſe we may mention the *L. noctiluca*, or *common glow-worm; L. ſplendidula*, of which Degeer conſiders the *noctiluca* as a variety; the *L. ignita*, *L. phoſphorea*, *L. nitidula*, *L. lucida*, *L. italica*, *L. japonica*, and *L. penſylvanica*, which laſt appears to be the *Pyralis minor* of Brown. Probably other ſpecies of *lampyris* might be enumerated amongſt thoſe that have the property of ſhining; but as the light of all the *lampyrides* appears to be produced nearly in the ſame manner, it is not ſo neceſſary to our purpoſe, to fix with preciſion the number of the luminous ſpecies.

The *lampyrides*, like the *elaters*, have the power of regulating at pleaſure the degree of their light, or of ſuſpending it altogether. The colour of the light depends upon its ſtrength; when very weak it is of a faint emerald colour, and in its moſt vivid ſtate it is a bright yellow or orange colour.

The *glow-worms* of this country are only luminous in the ſeaſon for procreation, which laſts during the ſummer months; when the females are impregnated, and have depoſited their eggs, they ſhine no longer. This circumſtance has authoriſed the common opinion, that the exhibition of light is made for the purpoſe of guiding or inviting the male inſect.

The *glow-worms* moſt frequently aſſemble in numbers upon dry banks, or under hedges on the ſides of unfrequented roads; they are rarely ſeen on public roads or in fields. They do not diſplay their light upon all nights alike; ſcarcely one of them will be ſeen for ſeveral nights together, and then, as it were by common conſent, they appear with great ſplendour for a few nights, after which they again retire. Their diſappearance probably depends upon their meeting with the male inſect, for we have not obſerved that the ſtate of the weather has any influence upon them. They commonly begin to ſhine before it is quite dark, and extinguiſh their light ſome time before the approach of day. It is remarkable with what regularity their inſtinct guides them in this particular; we have kept them the whole day in darkneſs, without their ſhewing any deſire to move or expoſe their light, yet in the evening, although purpoſely placed near burning candles, they crawled about and ſhone with brilliancy.

The light of the glow-worm is always moſt vivid when the creature is in motion; it may alſo be excited or encreaſed by turning the inſect on its back, or otherwiſe teazing it. But the luminous appearance is interrupted at all times by ſhort and irregular periods of either diminiſhed light or total darkneſs; uſually, however, there are two ſmall ſpots on the laſt ring of the abdomen, which retain their light whilſt the other luminous rings ceaſe to ſhine.

The *lampyris italica* has been obſerved, like the *noctiluca*, to have the power of modifying its light; it is, however, rendered more brilliant at each motion of its wings. Mem. de l'Acad. des Sc. 1766.

The *pyralis minor* of Brown exhibits a vacillating light; ſometimes ſtronger, ſometimes weaker, and at times dying wholly away. The light is always renewed in a few ſeconds, the obſcure intervals being of ſhorter continuance than the moments of illumination, which the creature ſeems able to command at pleaſure. Every part of the abdomen appears to yield light in this inſect, which is ſtronger and more conſtant than what is emitted by the *elater noctilucus*. Brown's Hiſtory of Jamaica.

It has been aſſerted, that the larva and chryſalis of the *lampyrides* are luminous. Degeer mentions, that the larva of the *lampyris italica* has been miſtaken by Linnæus for the perfect female inſect.

M. Gueneau de Montbiellard not only ſtates the larva and chryſalis of the glow-worm to be phoſphoreſcent, but that the eggs alſo for two, three, five, or more days after they are expelled from the female, emit light without intermiſſion or decreaſe, and that for an equal time their light declines until it becomes extinct. He obſerves, that it is not neceſſary for the eggs to be fecundated, but thoſe which ſhone longeſt produced the larvæ. In one inſtance he did not find the eggs to be luminous; on another occaſion, ſome eggs, which were laid on the 12th of June, ſhewed a degree of light, even on the 28th of July. Memoire ſur la Lampyre. Acad. de Dijon.

We have very frequently had great numbers of the eggs of the glow-worm in our poſſeſſion, but we never ſaw them in a luminous ſtate, except upon one occaſion, when they ſhone unremittingly for ſeveral days together, as deſcribed by Montbiellard; the fact is, therefore, the more remarkable, on account of the rarity of its occurrence.

Beſides the ſpecies of *fulgora*, in which the luminous faculty has been noticed, there are probably ſeveral others, if we may judge by analogy of ſtructure, that alſo poſſeſs it. The individuals moſt diſtinguiſhed for this property, are the *lanternaria*, *candelaria*, and *pyrorhynchus*.

The *fulgora lanternaria* diſplays a very brilliant ſparkling light, which is only ſeen during the night when the inſect is in motion. Madam Merian having once collected a number of this ſpecies, ſhe encloſed them in a box, without being aware of their luminous property. Being one night attracted by the noiſe that proceeded from the box, ſhe opened it, and, to her great ſurpriſe, found every inſect in motion, and yielding a ſtrong light. Merian Surin.

Cuvier ſeems to entertain ſome doubts of the luminous property of the *lanternaria*. He ſays, in his Tableau Elementaire de l'Hiſtoire Naturelle, ſome voyagers have aſſerted, that the projection from the head of the inſect emits a vivid light, but it appears, at leaſt, that this does not exiſt at all times.

The *fulgora candelaria* has been obſerved to throw out flaſhes of light, which are ſucceeded by moments of obſcurity.

The *fulgora pyrorhynchus* has been reported to ſhed a radiant light.

With reſpect to the luminous property of the other *fulgora*, we are not in poſſeſſion of any particulars.

The *pauſus ſpherocerus* has been diſcovered to yield light by Dr. Afzelius. On going to look at his ſpecimen one evening, he ſays, he happened to ſtand between the light and the box in which it was contained, ſo that his ſhadow fell upon the inſect; he obſerved, to his great aſtoniſhment, the globes of the antennæ, like two lanterns, ſpreading a dim phoſphoric light. He examined the inſect ſeveral times during that night, when the ſame appearance ſtill preſented itſelf; he was, however, diſappointed in not having the opportunity of making further obſervations upon the animal, as it was ſo much exhauſted it died before morning, and he was not able to procure another ſpecimen. Linnæan Tranſactions, vol. iv.

The *ſcolopendra electrica* is an inſect frequently found in this country, but is not obſerved to be luminous at all times. Degeer ſaid he never ſaw it emit light, which was probably owing to the animal being only luminous under particular circumſtances. It would appear that this ſpecies is incapable of ſhining unleſs after expoſure to ſolar light. In ſeveral experiments that were made upon the *ſcolopendra electrica*, it was found, that the creature could not be excited to ſhine after it had remained all day in a dark ſituation, but a ſhort expoſure to the light appeared to be ſufficient to reſtore the luminous property.

The light produced by the *ſcolopendra electrica* has a dull phoſphoric appearance; it is a momentary emanation, which only takes place when the creature is diſturbed or preſſed.

The *ſcolopendra phoſphorea* is but imperfectly known; in the edition of the Syſtema Naturæ, publiſhed in 1767, Linnæus ſtates, that this inſect is an inhabitant of Aſia; that it yields, during the night, a light reſembling that of the *glow-worm*, and that it is caught by falling from the ſky on ſhips in the Indian and Æthiopian ſeas, 100 miles from the continent. Linnæus quotes as his authority, Car. Gueſt. Ekeberg, who, he ſays, ſaw, deſcribed, and delineated the animal.

Ekeberg was a Swede, and the captain of an Eaſt Indiaman. He made fourteen voyages, but, as far as we can learn, never publiſhed his diſcovery of the *ſcolopendra phoſphorea*, and as we have no ſubſequent accounts of this inſect by other voyagers, its real characters, and perhaps exiſtence, muſt remain doubtful.

The *cancer fulgens* was diſcovered by ſir Joſeph Banks, during his firſt voyage with captain Cook, in the paſſage from Madeira to Rio de Janeiro. He obſerved, that its whole body was illuminated, and produced very vivid flaſhes of light. Phil. Tranſ. 1810, part ii.

Hablitzl relates, that a cable being on one occaſion drawn up from the ſea, it was found to exhibit light, and, upon cloſer inſpection, it was perceived to be covered with the *cancer pulex*. Hablitzl ap. Pall. n. nord. Beytr. 4. p. 396.

Thules and Bernard, of the academy of Verſailles, alſo reported, that they met with the *cancer pulex* entirely luminous.

In different ſyſtems of natural hiſtory, the property of ſhining is attributed to this ſpecies of cancer, probably only on the above authorities. The accuracy of the aſſertion might perhaps be ſtill called in queſtion, as the *cancer pulex* being frequently under our eyes, its luminous property, if it exiſted, could hardly eſcape more general obſervation.

In 1754, Godeheu de Riville diſcovered a luminous teſtaceous inſect on the coaſt of Malabar, which appears to belong to that diviſion of the Linnæan genus, *monoculus*, called by Muller *lynceus*.

Riville, perceiving the ſea around his ſhip to emit a very brilliant light, procured ſome of the water and ſtrained it; after which it ceaſed to ſhine, but the cloth was covered with luminous ſpecks, that reſembled in form and magnitude the ova of fiſh; on being examined in the light with a magnifying glaſs, they were diſcovered to have an internal motion; ſome that were ſet at liberty in the water were ſeen to ſwim with great rapidity like water fleas. Riville ſeized one of theſe with a pair of forceps, which cauſed it to ſhed a luminous liquor of a blue colour, that illuminated the water to the diſtance of two or three lines.

Some of theſe animals were put into freſh water, which they ſurvived only a few ſeconds, and deſcended, ſtruggling, to the bottom of the veſſel; many of them rendered much luminous fluid while dying.

Riville deſcribes this creature as being encloſed in a ſhell reſembling an almond, ſplit along the ſide, and notched at the upper end, which is ſo tranſparent that all the internal parts are ſeen through it. The inſect has four jointed antennæ, furniſhed at their extremities with long ſetæ. There are two feet armed with hooks; and below theſe, a thick foot terminating in ſeveral claws. The viſcera are contained in a round ſac; and at the lower part of the ſhell there is found a number of azure-coloured globules, which Riville conſidered as reſervoirs of the luminous fluid, becauſe they became of a dull yellow colour when the animal was about to die: but they are more probably the ova, which are alſo viſible in this ſituation in other teſtaceous inſects.

The luminous liquor ſhed by the animal does not, Riville ſays, mix with water, but floats on the ſurface like globules of oil. By ſtraining ſome water from which the animals had been removed, ſimilar globules were left in a diſtinct form upon the cloth. From theſe circumſtances, he was diſpoſed to believe that the globules he ſaw were really of an oily nature: which opinion he was in a great meaſure induced to adopt, from a preconceived theory, that all the luminous appearances of animals depend upon the occaſional preſence of an oily fluid. Memoire ſur la Mer lumineuſe. Mem. Etrang. de l'Acad. des Scien. tom. iii.

A few years ago, captain Horſburg preſented ſir Joſeph Banks with ſome notes on the luminous appearance of the ſea, and a drawing of a phoſphoreſcent marine inſect, which have been publiſhed in a paper of Mr. Macartney's communicated to the Royal Society in 1810.

Captain Horſburg remarks, that the luminous ſtate of the ſea between the tropics is generally accompanied with the appearance of a great number of marine animals, of various kinds, upon the ſurface of the water; to many of which he does not, however, attribute the property of ſhining. At other times, when the water which gave out light was examined, it appeared only to contain ſmall particles of a duſky ſtraw colour, which diſſolved under the ſlighteſt touch of the finger.

Captain Horſburg likewiſe obſerves, that in Bombay, during the hot weather in the months of May and June, he has frequently ſeen the edges of the ſea much illuminated by minute ſparkling points. Theſe, whilſt in the water, always avoided ſeizure, by moving away from the hand, ſo that it was with difficulty he procured any of them. Upon two occaſions he ſucceeded in detecting the animals that cauſed the light of the ſea. At ſun-riſe, on April 12th, 1798, in the Arabian ſea, he perceived ſeveral luminous ſpots in the water, which conceiving to be animals, he went in the boat, and with ſome difficulty caught one. This inſect, he ſays, reſembled the wood-louſe in appearance, and was about one-third of an inch in length. When viewed with the microſcope, it ſeemed to be formed by ſections of a thin cruſtaceous nature. During the time any fluid remained in the animal, it ſhone brilliantly like the fire-fly.

In the month of June of the ſame year, he picked up an inſect on a ſandy beach, which gave light. This was alſo covered with a thin ſhell, but was of a different ſhape and a larger ſize than the animal taken in the Arabian ſea.

Mr. Macartney entertains no doubt that both theſe inſects were monoculi. The firſt he refers to the genus *Limulus* of Müller, and gives it the ſpecific name of *Noctilucus*. See Phil. Tranſact. 1810, part ii.

The light of the ſea has been moſt frequently aſcribed to the preſence of a minute ſpecies of worm, the *nereis noctiluca* of Linnæus, even by thoſe who did not pretend to have ſeen the animal.

This creature was firſt deſcribed under the name of *luccioletta marina*, in a ſmall pamphlet publiſhed by Dr. Vianelli at Venice, in 1749. He found about thirty of them on the leaf of an alga, taken up from the lake of Chioggia. By ſhaking the leaf, he ſucceeded in procuring one of theſe on a piece of white paper. To the naked eye it appeared, in form and magnitude, like the half of the hair of the eye-lid. It had a yellow colour, and was formed of very tender ſubſtance. When it was examined under the microſcope, he diſcovered that it had the figure of a worm, and conſiſted of joints or ſegments. It had two antennæ; a number of ſetaceous proceſſes along each ſide of the body, which he conſidered as fins; and under theſe, other twiſted proceſſes analogous to feet. Nuove Scoperte Intorno le Luci notturne dell' Acqua marina fatte da Gueſeppe Vianelli.

Vianelli's obſervations were repeated ſoon after by Griſelini. He procured ſome of theſe animals upon the ſea-weed, on which they are uſually found; and having placed one of them in ſome water, between two concave glaſſes, he ſubjected it to microſcopic examination with the higheſt magnifying powers: by which means, all the parts of the worm were very evident. He deſcribes the head as having two ſhort antennæ, and a horn-ſhaped proceſs between theſe, and two dark coloured eyes. The lateral proceſſes, he ſays, form tranſparent caſes, which terminate in a denticulated manner, and contain each a tuft of hair. The other proceſſes are alſo tranſparent, extenſile, and ſometimes entwined together.

He obſerved that the light is ſhed at all ſeaſons, but is moſt ſtriking and moſt frequently ſeen in ſummer. When the wind is about to change from the S.E. into the E., the light is increaſed; and in the dark winter nights which ſucceed a warm ſun, the luminous appearance is produced as in ſummer.

Griſelini further mentions the ſhining of another marine inſect, which appears to be the *monoculus* diſcovered by Riville. Obſervations de François Griſelini ſur la Scolopendre marine luiſante, Veniſe 1750.

The ſame animal has likewiſe been deſcribed and figured by Adler, under the name of the *nereis phoſphorans*. His deſcription coincides with that of Griſelini. He ſtates that this ſpecies is found in the African and Indian oceans, but that it is rarely met with in the Northern ſeas. Amœnitates Academicæ Carol. Linne.

The *nereis noctiluca* was ſeen by the abbé Nollet, M. Rigaud, and Fougeroux de Bondaroy. The latter, however, deſcribes it to be the ſize of the *head* of a ſmall pin. He ſays it increaſes, diminiſhes, or extinguiſhes its light at pleaſure, which commonly iſſues from the poſterior part of the body; but when fully illuminated, the head only is opaque. The colour of the light is blueiſh. When ſqueezed, it ſheds a train of luminous fluid; which appearance is alſo ſeen, in a degree, when it is agitated in the water. He mentions having obſerved two ſizes of the animal, but cannot determine whether theſe are different ages, ſexes, or ſpecies. Mem. de l'Acad. des Scien. 1767.

The abbé Dicquemare ſtates, that he ſaw the luminous animals diſcovered by Vianelli; that he exhibited them to his pupils during his lectures, and delineated them at the ſame time. Theſe drawings he ſent to Rigaud, who returned for anſwer, that the deſigns were preciſely the ſame of thoſe which he had himſelf executed. Journal de Phyſique, tom. vi.

Spallanzani alſo aſſerted that he had ſeen the *nereis noctiluca*.

After ſuch a ſtriking concurrence of teſtimony, we cannot preſume to doubt the exiſtence of this ſpecies of luminous animal: but we are led to think that it never viſits the coaſts of this country; as in numerous examinations we have made of ſea-water in a luminous ſtate, we have not met with it. Judging from our own experience, and comparing it with the obſervations of others, we are led to conclude that the *nereis noctiluca* is, generally ſpeaking, a rare ſpecies, and that the light of the ſea is moſt frequently occaſioned by *meduſæ*.

The largeſt and moſt ſplendid of the luminous *meduſæ* is the *pellucens*, which was diſcovered by ſir Joſeph Banks, in the firſt voyage of captain Cook. It was taken up from the ſea, at the ſame time with the *cancer fulgens* already mentioned, in the paſſage from Madeira to Rio de Janeiro. This ſpecies meaſures ſix inches acroſs the crown or umbella, which is marked by a number of opaque lines that paſs off from the centre to the circumference. The edge of the umbella is divided into a number of lobules, which ſucceed each other, one large and two ſmall ones alternately. From within the margin of the umbella there is ſuſpended a number of long cord-ſhaped tentacula. The central part of the animal is opaque, and furniſhes four thick irregularly ſhaped proceſſes, which hang down in the midſt of the tentacula.

The *meduſa pellucens* throws out flaſhes of light during its contractions, which are ſo vivid as to affect the ſight of the beholders. When the water in which theſe animals, and ſome of the *cancer fulgens*, were contained, was emptied out of a bucket, it appeared like a ſtream of fire, or fuſed gold. Phil. Tranſ. 1810, part ii.

The *meduſa noctiluca* is deſcribed by Forſkal, as meaſuring about three inches in diameter, and about one and a half inch in depth. Its ſurface is convex, of a reddiſh glaſs colour, with brown ſpots. The margin is notched into 16 lobules.

The central part, containing the viſcera, hangs down for ſome way, and is ſurrounded by eight ſomewhat broad tentacula. Forſkal, Deſcriptiones Animalium.

This ſpecies is reported to be extremely luminous, particularly round the margin.

Forſkal has deſcribed alſo a ſpecies of luminous animal under the name of meduſa denſa. It appears to be a beroe, and correſponds moſt nearly with the meduſa pileus of Gmelin.

A luminous ſpecies of meduſa was diſcovered by Spallanzani in the ſtrait of Meſſina. Its form is convex, with a fimbriated margin. There are four thick tentacula, and eight which are long and ſlender. Theſe are each hollow. In the concavity of the umbella there are four ſmall groups of long thin bodies, entwined together like inteſtines, and adhering to an entangled maſs of ſmall tubes of a ſilver colour, that are extremely tranſparent and elaſtic. At the internal edge of the cavity of the umbella there is a thin muſcular lamina. The purſe communicates with four lateral orifices, and has an aperture beſides. Spallanzani repreſents this ſpecies as being exceedingly luminous. He ſays it ſhines like a torch, and is viſible 35 feet below the ſurface of the water. The light is variable; ſometimes it continues for a quarter or half an hour, or longer; at others it becomes ſuddenly extinct, and re-appears after a conſiderable interval. He ſuppoſes that the ceſſation of the light depends upon the animal being at perfect reſt. Memoria ſopra le meduſe foſforiche. Mem. della Soc. Ital. tomo vii. and Spallanzani's Travels in the Two Sicilies.

Spallanzani further ſtates, that he diſcovered in that part of the ſea next the eaſtern coaſt of Genoa, in addition to the nereis noctiluca, five other ſpecies of *ſea glow-worms,* as he calls them, two of which he met with again in returning from Meſſina to Lipari. He propoſed to give a deſcription of theſe animals in his Voyage to Conſtantinople, which book, as far as we can learn, was never publiſhed. We muſt, however, confeſs, that Spallanzani's known fondneſs for the wonderful, would lead us to receive theſe diſcoveries with ſome degree of diſtruſt, particularly as they have not been confirmed by the obſervations of others.

One of the moſt brilliant of the whole tribe of luminous creatures has been lately diſcovered by Mr. Peron in the Atlantic ocean. Moſt naturaliſts would, from the general appearance and ſtructure of the animal, conſider it as a ſpecies of *beroe,* but Peron has created a new genus, of which this is the only ſpecies yet diſcovered, and which he calls the *Pyreſoma atlanticum.* The animal has an elongated and nearly cylindrical figure, truncated at one extremity, and rather conical at the other. The body is hollow, and does not contain any organ, except a very delicate net-work of veſſels, which is ſpread over the internal ſurface of the cavity. The circular aperture, or mouth, is ſurrounded internally by a number of tubercles. The external ſurface is ſtudded with ſome thick elongated tubercles, and others of a ſmaller ſize. They are the principal ſeat of the light, and ſhine like poliſhed diamonds. The interior of the ſubſtance of the body contains a number of ſmall elongated glands, which are alſo more luminous than the tranſparent part.

The colour of this animal when at reſt, or after death, is an opalein yellow mixed with a diſagreeable green; but during the contractions of its body, the creature appears, as it were, to kindle, and becomes inſtantly of the red colour of fuſed iron; it afterwards paſſes through different tints, as aurora, orange, green, and azure blue, according to the ſtrength of its illumination.

The *pyreſoma,* when at the ſame depth in the ſea, gives the appearance of a red-hot bullet, but when floating on the ſurface of the waves, reſembles a cylinder of incandeſcent iron. It was obſerved to perform regular and alternate motions of contraction and dilatation. The light is evolved during the contractile motions, and theſe may be excited irregularly, by touching the animal, or merely by agitating the water in which it is contained. The *pyreſoma,* like all the other luminous marine animals, exhibits no light after death.

Mr. Peron only met with this ſpecies in a certain latitude, and obſerves that the molluſca and zoophytes, which are found at great depths in the ſea, or at great diſtances from any ſhore, always inhabit particular regions of the ocean, out of which they are very rarely met with. Annales du Muſeum d'Hiſtoire Naturelle. Mem. par Peron. 24 Cahier.

The *pennatula phoſphorea* is well known to exhibit light, which, Dr. Shaw ſtates in his Hiſtory of Algiers, is ſo ſtrong, that it directs the fiſhermen in their occupation.

The luminous effect is confined to the plumule of the *pennatula,* or that part which is inhabited by the polyps. Spallanzani, in a letter to Bonnet, ſtates that the light is only emitted when the *ſea pin* is in motion, and that there is a mucous luminous ſubſtance furniſhed by the polyps, which is ſoluble in water, and becomes mixed with the ſea-water, that is admitted into the pin by means of a hole ſituated at the extremity of its ſtalk. (Mem. Soc. Ital. tomo ii.) Other ſpecies of pennatula are ſaid to be luminous, particularly the *griſea, argentea,* and *grandis.* The light exhibited by the laſt is reported to be an aſh colour.

In a paper upon luminous animals communicated by Mr. Macartney to the Royal Society in 1810, he gives an account of three ſpecies he diſcovered on our own coaſts. One is a *beroe* not deſcribed by authors. Another agrees ſo nearly with the *meduſa hemiſpherica,* that he conceives it to be the ſame, or at leaſt a variety of it. The third is a minute ſpecies of *meduſa,* which he believes to be the luminous animal ſo often ſeen by navigators, although it has never been diſtinctly examined or deſcribed.

Mr. Macartney firſt met with theſe animals in the month of October 1804, at Herne bay, a ſmall watering place upon the northern coaſt of Kent. Having obſerved the ſea to be extremely luminous for ſeveral nights, he had a conſiderable quantity of the water taken up. When perfectly at reſt, no light was emitted, but on the ſlighteſt agitation of the veſſel in which the water was contained, a brilliant ſcintillation was perceived, particularly towards the ſurface; and when the veſſel was ſuddenly ſtruck, a flaſh of light iſſued from the top of the water, in conſequence of ſo many points ſhining at the ſame moment. When any of theſe ſparkling points were removed from the water, they no longer yielded any light. They were ſo tranſparent, that in the air they appeared like globules of water. They were more minute than the head of the ſmalleſt pin. Upon the ſlighteſt touch, they broke and vaniſhed from the ſight. Having ſtrained a quantity of the luminous water, a great number of theſe tranſparent corpuſcles were obtained upon the cloth, and the water which had been ſtrained, did not afterwards exhibit the leaſt light. He then put ſome ſea-water that had been rendered particularly clear, by repeated filtrations, into a large glaſs, and having floated in it a fine cloth, on which he had previouſly collected a number of luminous points, ſeveral of them were liberated, and became diſtinctly viſible in their natural element, by placing the glaſs before a piece of dark coloured paper. They were obſerved to have a tendency to come to the ſurface of the water, and after the glaſs was ſet by for ſome time, they were found congregated together, and when thus collected in a body, they had a duſky ſtraw colour, although individually they were ſo tranſparent, as to be perfectly inviſible, except under particular circumſtances. Their ſubſtance was indeed ſo extremely tender and delicate, that they did not become opaque in diſtilled vinegar or alcohol, until immerſed in theſe liquors for a conſiderable time.

On examining theſe minute globules with the microſcope, he found that they were not quite perfect ſpheres, but had an irregular depreſſion on one ſide, which was formed of an opaque ſubſtance, that projected a little way inwards, producing ſuch an appearance as would ariſe from tying the neck of a round bag, and turning it into the body.

The motions of theſe creatures in the water were ſlow and graceful, and not accompanied by any viſible contraction of their bodies. After death they always ſubſided to the bottom of the veſſel.

From the ſparkling light afforded by this ſpecies, he has given it the name of *meduſa ſcintillans*.

The night following that, on which he diſcovered the preceding animal, he caught the two other luminous ſpecies. One of theſe he has called *beroe fulgens*.

This moſt elegant creature is of a colour changing between purple, violet, and pale blue; the body is truncated before, and pointed behind; but the form is difficult to aſſign, as it is varied by partial contractions, at the animal's pleaſure. He has repreſented the two extremes of form that this creature aſſumes: the firſt is ſomewhat that of a cucumber, which, as being the one it takes when at reſt, ſhould perhaps be conſidered as its proper ſhape: the other reſembles a pear, and is the figure it has in the moſt contracted ſtate. The body is hollow, or forms internally an infundibular cavity, which has a wide opening before, and appears alſo to have a ſmall aperture, poſteriorly through which it diſcharges its excrement. The poſterior two-thirds of the body are ornamented with eight longitudinal ciliated ribs, the proceſſes of which are kept in ſuch a rapid rotatory motion, while the animal is ſwimming, that they appear like the continual paſſage of a fluid along the ribs. The ciliated ribs have been deſcribed by profeſſor Mitchell, as arteries, in a luminous beroe, which probably was no other than the ſpecies we are now ſpeaking of.

When the beroe fulgens ſwam gently near the ſurface of the water, its whole body became occaſionally illuminated in a ſlight degree; during its contractions, a ſtronger light iſſued from the ribs, and when a ſudden ſhock was communicated to the water, in which ſeveral of theſe animals were placed, a vivid flaſh was thrown out. When the body was broken, the fragments continued luminous for ſome ſeconds, and being rubbed on the hand, left a light like that of phoſphorus; this however, as well as every other mode of emitting light, ceaſed after the death of the animal.

The *hemiſpherical ſpecies* of *meduſa* had a very faint purple colour. The largeſt individuals meaſured about three quarters of an inch in diameter. The margin of the umbella was undivided, and ſurrounded internally by a row of pale brown ſpots, and numerous ſmall twiſted tentacula: four opaque lines croſſed in an arched manner from the circumference, towards the centre of the animal; an opaque irregular-ſhaped proceſs hung down from the middle of the umbella; when this part was examined with a lens of high powers, it was diſcovered to be incloſed in a ſheath in which it moved, and that the extremity of the proceſs was divided into four tentacula, covered with little cups or ſuckers, like thoſe on the tentacula of the cuttle fiſh.

This ſpecies of *meduſa* bears a ſtriking reſemblance to the figures of the *meduſa hemiſpherica*, publiſhed by Gronovius and Muller; indeed it differs as little from theſe figures, as they do from each other. Its luminous property, however, was not obſerved by theſe naturaliſts, which is the more extraordinary, as Muller examined it at night, and ſays it is ſo tranſparent, that it can only be ſeen with the light of a lamp. If it ſhould be ſtill conſidered as a diſtinct ſpecies, or as a variety of the *hemiſpherica*, Mr. Macartney propoſes to call it the *meduſa lucida*.

In this ſpecies, the central part and the ſpot round the margin, are commonly ſeen to ſhine on lifting the animal out of the water into the air, preſenting the appearance of an illuminated wheel, and when it is expoſed to the uſual percuſſion of the water, the tranſparent parts of its body are alone luminous.

In the month of September 1805, Mr. Macartney had again frequent opportunities of witneſſing the luminous appearance of the ſea at Herne bay, and of making obſervations upon the animals which occaſion it. He found that they always retreated from the ſurface of the water, as ſoon as the moon roſe, and that expoſure to the day light took away their property of ſhining, which was revived by placing them for ſome time in a dark ſituation.

In that ſeaſon he had two opportunities of ſeeing an extended illumination of the ſea, produced by the above animals. The firſt night he ſaw this ſingular phenomenon was extremely dark, many of the *meduſa ſcintillans*, and *meduſa hemiſpherica* had been obſerved at low water, but on the return of the tide they had ſuddenly diſappeared. On looking towards the ſea, he was aſtoniſhed to perceive a flaſh of light, about ſix yards broad, extend from the ſhore, for apparently the diſtance of a mile and a half along the ſurface of the water. The ſecond time that he ſaw this ſort of light proceed from the ſea, it did not take the ſame form, but was diffuſed over the ſurface of the waves next the ſhore, and was ſo ſtrong, that he could for the moment diſtinctly ſee his ſervant, who ſtood at a little diſtance from him; who alſo perceived it, and called out to him at the inſtant. On both theſe occaſions the flaſh was viſible for about four or five ſeconds, and although he watched for a conſiderable time, it was not repeated.

A diffuſed luminous appearance of the ſea, in ſome reſpects different from this, has been deſcribed by ſeveral navigators.

Godeheu de Riville ſaw the ſea aſſume the appearance of a plain of ſnow on the coaſt of Malabar. Mem. Etrang. de l'Acad des Sc. tom. iii.

Captain Newland, in a paper publiſhed in the Journal de Phyſique, ſtates that he has ſeen the ſea appear like milk for a few nights. Cook and Perouſe alſo obſerved it to be a ſtraw colour.

Father Bourzes, in his voyage to India in 1704, ſaw what he called luminous vortices in the ſea, which he ſaid appeared and diſappeared ſuddenly at certain periods, like flaſhes of lightning.

Captain Horſburg, in the notes he gave to ſir Joſeph Banks, ſays there is a peculiar phenomenon ſometimes ſeen within a few degrees diſtance of the coaſt of Malabar, during the rainy monſoon, which he had an opportunity of obſerving. At midnight the weather was cloudy, and the ſea was particularly dark, when ſuddenly it changed to a white flaming colour all around. This bore no reſemblance to the ſparkling or glowing appearance he had obſerved on other occaſions in ſeas near the equator, but was a regular white colour, like milk, and did not continue more than ten minutes. A ſimilar phenomenon, he ſays, is frequently ſeen in the Banda ſea, and is very alarming to thoſe who have never perceived or heard of ſuch an appearance before.

This ſingular phenomenon appears to be explained by ſome obſervations communicated to Mr. Macartney by Mr. Langſtaff. In going from New Holland to China, about half an hour after ſunſet, every perſon on board was aſtoniſhed by a milky appearance of the ſea: the ſhip ſeemed to be ſurrounded by ice covered with ſnow. Some of the company ſuppoſed they were in ſoundings, and that a coral bottom gave this curious reflection, but on ſounding with 70 fathoms of line no bottom was met with. A bucket of water being hauled up, Mr. Langſtaff examined it in the dark, and diſcovered a great number of globular bodies, each about the ſize of a pin's head, linked together. The chains thus formed did not exceed three inches in length, and emitted a pale phoſphoric light. By introducing his hand into the water, Mr Langſtaff raiſed upon it ſeveral chains of the luminous globules, which were ſeparated by opening the fingers, but readily re-united on being brought again into contact, like globules of quickſilver. The globules were ſo tranſparent, that they could not be perceived when the hand was taken into the light.

This extraordinary appearance of the ſea was viſible for two nights. As ſoon as the moon exerted her influence, the ſea changed to its natural dark colour, and exhibited diſtinct glittering points, as at other times.

This account of Mr. Langſtaff is very important, as it proves that the diffuſed light of the ſea is produced by an aſſemblage of minute *meduſæ* on the ſurface of the water.

In June 1806, at Margate, Mr. Macartney collected a great number of the ſmall *luminous meduſæ.* A bucket of the water being ſet by for ſome time, the animals ſought the ſurface, and kept up a continual ſparkling, which was occaſioned by the motions of individuals, as the water was perfectly at reſt. A ſmall quantity of the luminous water was put into a glaſs jar, and on ſtanding ſome time, the *meduſæ* collected at the top of the jar, and formed a gelatinous maſs, one inch and a half thick, and of a reddiſh or mud colour, leaving the water underneath perfectly clear.

In order to aſcertain if theſe animals would materially alter their ſize, or aſſume the figure of any other known ſpecies of *meduſa*, Mr. Macartney kept them alive for 25 days, by carefully changing the water in which they were placed; during which time, although they appeared as vigorous as when firſt taken, their form was not in the ſlighteſt degree altered, and their ſize but little increaſed. This experiment confirmed his opinion of their being a diſtinct ſpecies, as the young *actiniæ* and *meduſæ* exhibit the form of the parent in a much ſhorter period than the above.

In September 1806, he took at Sandgate alſo a number of the *beroe fulgens:* they were of various dimenſions, from the full ſize down to that of the *meduſa ſcintillans:* they could, however, be clearly diſtinguiſhed from the latter ſpecies by their figure.

In April 1809, Mr. Macartney caught a number of the *beroe fulgens* in the ſea at Haſtings; they were of various ſizes, from about the half of an inch in length, to the bulk of the head of a large pin. Many of them adhered together in the ſea; ſome of the larger ſort were covered with ſmall ones, which fell off when the animals were handled, and by a perſon unaccuſtomed to obſerve theſe creatures, would have been taken for a phoſphoric ſubſtance. On putting a number of them into a glaſs, containing clear ſea-water, they ſtill ſhewed a diſpoſition to congregate upon the ſurface. It was obſerved that when they adhered together, they ſhewed no contractile motion in any part of their body, which explains the cauſe of the pale or white colour of the diffuſed light of the ocean. The flaſhes of light which Mr. Macartney ſaw come from the ſea at Herne bay, were probably produced by a ſudden and general effort of the *meduſæ* to ſeparate from each other, and deſcend in the water.

The *meduſa ſcintillans* almoſt conſtantly exiſts in the different branches of Milford haven that are called pills. Mr. Macartney ſometimes found theſe animals collected in ſuch vaſt numbers in thoſe ſituations, that they bore a conſiderable proportion to the volume of the water in which they were contained: thus, from a gallon of ſea-water in a luminous ſtate, he ſtrained above a pint of theſe *meduſæ*. The ſea under ſuch circumſtances yields more ſupport in ſwimming, and the water taſtes more diſagreeably than uſual; probably the difference of denſity, that has been remarked at different times in the water of the ſea, may be referred to this cauſe.

Mr. Macartney concludes that the *meduſa ſcintillans* is the uſual cauſe of the luminous appearance of the ſea, not only around this country, but in other latitudes. Beſides the places already mentioned, he has found this ſpecies on different parts of the coaſts of Suſſex, at Tenby, and in the bays of Dublin and Carlingford in Ireland. Many writers, he obſerves, have miſtaken this ſpecies of *meduſa* for the *nereis noctiluca*, and ſome navigators have actually deſcribed the *meduſa ſcintillans* without being aware of its nature. Mr. Bajon, during his voyage from France to Cayenne, collected many luminous points in the ſea, which he ſays, when examined by a lens, were found to be minute ſpheres. They diſappeared in the air. Dr. Le Roy, in ſailing from Naples to France, obſerved the ſparkling appearance of the ſea which is uſually produced by the *meduſa ſcintillans*. By filtering the water, he ſeparated luminous particles from it, which he preſerved in ſpirits of wine: they were, he ſays, like the head of a pin, and did not at all reſemble the *nereis noctiluca*, deſcribed by Vianelli; their colour approached a yellow-brown, and their ſubſtance was extremely tender and fragile. Notwithſtanding this ſtriking reſemblance to the *meduſa ſcintillans*, Le Roy, in conſequence of a preconceived theory, did not ſuppoſe what he ſaw, were animals, but particles of an oily or bituminous nature. Obſerv. ſur un lumiere produite par l Eau de la Mer. Mem. Etrang. des Sc.

The minute globules ſeen by Mr. Langſtaff in the Indian ocean, in all probability, were the ſcintillating ſpecies of *meduſa;* on his ſeeing ſome of theſe animals that had been preſerved in ſpirits, he entertained the ſame opinion.

Profeſſor Mitchell, of New York, found the luminous appearance on the coaſt of America, to be occaſioned by minute animals, that, from his deſcription, plainly belonged to this ſpecies of *meduſa*, notwithſtanding which, he ſuppoſed them to be a number of the *nereis noctiluca*. Phil. Mag. vol. x. p. 20.

The *luminous animalcule*, diſcovered by Forſter off the Cape of Good Hope, in his voyage round the world, bears ſo ſtrong a reſemblance to the *meduſa ſcintillans*, that there is every reaſon for believing them the ſame. He deſcribes his animalcule as being a little gelatinous globule, leſs than the head of a pin; tranſparent, but a little browniſh in its colour; and of ſo ſoft a texture, that it was deſtroyed by the ſlighteſt touch. On being highly magnified, he perceived on one ſide a depreſſion, in which there was a tube that paſſed into the body, and communicated with four or five inteſtinal ſacs.

Many writers have aſcribed the light of the ſea to other cauſes than luminous animals. Martin ſuppoſes it to be occaſioned by putrefaction: Silberſchlag believed it to be phoſphoric: profeſſor J. Mayer conjectured, that the ſurface of the ſea imbibed light, which it afterwards diſcharged. Bajon and Gentil thought the light of the ſea was electric, becauſe it was excited by friction. Forſter conceived that it was ſometimes electric, ſometimes cauſed from putrefaction, and at others by the preſence of living animals. Fougeroux de Bondaroy believed that it came ſometimes from electric fires, but more frequently from the putrefaction of marine animals and plants.

It is unneceſſary to enter into a diſcuſſion of the above opinions: their authors have not attempted to ſupport them by any argument or experiments; they merely gave them as ſpeculations. It is ſufficient to ſtate, that they are contradicted by all the beſt obſervations upon the ſubject.

The only animals which are known to poſſeſs diſtinct organs for the production of light are, the luminous ſpecies of *lampyris*, *elater*, *fulgora*, and *pauſus*. Of theſe Mr. Macartney has given the following deſcription.

The light of the *lampyrides* is known to proceed from ſome of the laſt rings of the abdomen, which, when not illuminated, are of a pale yellow colour. Upon the internal ſurface of theſe rings, there is ſpread a layer of a peculiar ſoft yellow ſubſtance, which has been compared to paſte, but by examination with a lens, I found it to be organized like the common interſtitial ſubſtance of the inſect's body, except that it is of a cloſer texture, and a paler yellow colour. This ſubſtance does not entirely cover the inner ſurface of the rings, being more or leſs deficient along their edges, where it preſents an irregular waving outline. I have obſerved in the glow-worm, that it is abſorbed, and its place ſupplied by common interſtitial ſubſtance, after the ſeaſon for giving light is paſt.

The ſegments of the abdomen, behind which this peculiar ſubſtance is ſituated, are thin and tranſparent, in order to expoſe the internal illumination.

The number of luminous rings varies in different ſpecies of *lampyris*, and, as it would ſeem, at different periods in the ſame individual.

Beſides the luminous ſubſtance above deſcribed, I have diſcovered in the *common glow-worm*, on the inner ſide of the laſt abdominal ring, two bodies, which to the naked eye appear more minute than the head of the ſmalleſt pin. They are lodged in two ſlight depreſſions, formed in the ſhell of the ring, which is at theſe points particularly tranſparent. On examining theſe bodies under the microſcope, I found that they were ſacs containing a ſoft yellow ſubſtance, of a more cloſe and homogeneous texture, than that which lines the inner ſurface of the rings. The membrane forming the ſacs appeared to be of two layers, each of which is compoſed by a tranſparent ſilvery fibre, in the ſame manner as the internal membrane of the reſpiratory tubes of inſects, except that, in this caſe, the fibre paſſes in a ſpiral, inſtead of a circular direction. This membrane, although ſo delicately conſtructed, is ſo elaſtic as to preſerve its form after the ſac is ruptured, and the contents diſcharged.

The light that proceeds from theſe ſacs is leſs under the controul of the inſect, than that of the luminous ſubſtance ſpread on the rings: it is rarely ever entirely extinguiſhed in the ſeaſon that the glow-worm gives light, even during the day; and when all the other rings are dark, theſe ſacs often ſhine brightly.

The circumſtance of there being points, which give a more permanent light than the other parts of the luminous rings of the abdomen, has been noticed before by the Comte G. de Razoumouſki. He ſtates the number of theſe luminous points to vary from two to five. Mem de la Soc. de Lauſanne, tom. ii.

I muſt however remark, that I never ſaw more than two of theſe luminous points, which were always upon the laſt ring of the body, and that the figures which accompany the memoir of the Comte de Razoumouſki, bear ſcarcely any reſemblance to the inſect they are intended to repreſent, from which we may fairly ſuſpect him of inaccuracy in other particulars.

As far as my obſervation has extended, the ſmall ſacs of luminous ſubſtances are not found in any ſpecies of *lampyris*, except the *glow-worm* of this country. Thunburg mentions that the *lampyris japonica* has two veſicles on the tail, which afford light.

The organs for the production of light in the genus *elater* are ſituated in the corcelet; theſe likewiſe conſiſt of a peculiar yellow ſubſtance, placed behind tranſparent parts of the ſhell, which ſuffer the natural colour of this ſubſtance to be ſeen through them in the day, and when illuminated, give paſſage to the light.

On diſſecting the organs of light in the *elater noctilucus*, I found that there is a ſoft yellow ſubſtance, of an oval figure, lodged in the concavity of the yellow ſpots of the corcelet, which parts are particularly thin and tranſparent in this ſpecies. This ſubſtance is ſo remarkably cloſe in its ſtructure, that at firſt view it appears like an inorganic maſs, but with a lens it is readily perceived to be compoſed of a great number of very minute parts or lobules cloſely preſſed together. Around theſe oval maſſes, the interſtitial ſubſtance of the corcelet is arranged in a radiated manner, and the portion of the ſhell that immediately covers the irradiated ſubſtance is in a certain degree tranſparent, but leſs ſo than that which lies over the oval maſſes; it is therefore probable, that the interſtitial ſubſtance in this ſituation may be endowed with the property of ſhining. A faſciculus of the muſcles of the corcelet ariſes in the interior of the oval maſſes of the luminous ſubſtance, but not apparently with any deſign, as it contributes, with the adjacent faſciculi, to move the anterior feet.

In the *elater ignitus*, the maſſes of luminous ſubſtance are extremely irregular in their figure: they are ſituated nearly at the poſterior angles of the corcelet, and are more looſe in their texture than the oval maſſes of the *noctilucus*, reſembling rather, in compoſition, the interſtitial ſubſtance which ſurrounds theſe maſſes in that ſpecies. The ſhell of the corcelet is ſomewhat thinner, and more tranſparent along both ſides of the margin, than at other places, but it is not, as in the *noctilucus*, elevated, and peculiarly clear and thin immediately over the ſeat of the luminous organ; conſequently, the light emitted by the *elater ignitus* cannot be very brilliant.

I have not been able to procure any ſpecimen of the *elater phoſphorea*, but from the accounts of naturaliſts, it appears to reſemble in every reſpect the *elater noctilucus*.

I have had an opportunity of examining, preſerved in a moiſt way, two ſpecies of *fulgora*, the *candelaria* and *lanternaria*. The light in this genus has been obſerved to iſſue from the remarkable proboſcis on the fore part of the head. This part has always been deſcribed by authors as hollow or empty, which I have found to be perfectly correct; and what is more extraordinary, that the cavity communicates freely with the external air, by means of a chink or narrow aperture, placed on each ſide of the root of the proboſcis. This projection is covered internally by a membrane, between which and the horny part or ſhell, there appears to be interpoſed a pale reddiſh coloured ſoft ſubſtance, that is arranged in the *candelaria* in broad lines or ſtripes; but it is ſo thin, that I could not diſtinctly examine its ſtructure, or abſolutely determine, whether it ſhould be conſidered as a ſubſtance intended to furniſh the light of theſe inſects, or the pigment upon which the colour of the proboſcis depends.

The globes of the antennæ conſtitute the organs of light in the *pauſus ſpherocerus*. Dr. Afzelius, who diſcovered the luminous property in this ſpecies, compares them to lanterns ſpreading a dim phoſphoric light. (Linn. Tranſ. vol. iv.) The rarity of the inſect put it out of my power to examine its ſtructure, but from the form and ſituation of its organs of light, it is moſt probable they are conſtructed like thoſe of the *fulgoræ*.

It has been conjectured by Carradori and others, that the *lampyrides* were enabled to moderate or extinguiſh their light, by retracting the luminous ſubſtance under a membrane; but neither in them, nor any of the other luminous inſects, have I found an apparatus of this ſort. The ſubſtance furniſhing the light, is uniformly applied to correſponding tranſparent parts of the ſhell of the inſect from whence it is not moved; indeed a membrane, if it did exiſt, would have but little effect in obſcuring the light, and never could ſerve to extinguiſh it. The regulation of the kind and degree of the luminous appearance, does not depend upon any viſible mechaniſm, but, like the production of the light itſelf, is accompliſhed by ſome inſcrutable change in the luminous matter, which in ſome animals is a ſimple operation of organic life, and in others is ſubject to the will.

It is worthy of remark, that in all the diſſections I have made of luminous inſects, I did not find that the organs of light were better, or differently ſupplied with either nerves or air tubes, than the other parts of the body. The power of emitting light likewiſe exiſts in many creatures which want nerves, a circumſtance ſtrongly marking a difference between animal light and animal electricity. Phil. Tranſ. 1810, part ii.

With the exception of the animals above-mentioned, the exhibition of light depends upon the preſence of a fluid matter.

In the *pholas dactylus*, the luminous fluid is particularly evident, and in vaſt quantity.

The ſhining of the *ſcolopendra electrica* is obſerved to be accompanied by the appearance of an effuſion of a luminous fluid upon the ſurface of the animal, more particularly about the head, which may be received upon the hand, or other bodies brought into contact with the inſect at the moment, and theſe exhibit a phoſphoric light for a few ſeconds afterwards. This fluid, however, it is impoſſible to diſcover in the form of moiſture, even upon the cleareſt glaſs, although examined immediately with the moſt ſcrupulous attention by a lens: it muſt therefore be extremely attenuated.

The ſame appearance has been obſerved during the illumination of the *nereis noctiluca* by Fougeroux de Bondaroy. Mem. de l'Acad. des Sc. 1767.

The animal diſcovered by Riville ſhed a blue liquor, which illuminated the water for a diſtance of two or three lines. Mem. Etrang. de l'Acad des Sc. tom. iii.

Spallanzani relates, that the *meduſa* which he examined, communicated the property of ſhining to water, milk, and other fluids, on being rubbed or ſqueezed in them. Spallanzani's Travels in the Two Sicilies, vol. iv.

The luminous fluid is in ſome inſtances confined to particular parts of the body, and in others is diffuſed throughout the whole ſubſtance of the animal.

In the *ſcolopendra electrica*, it appears to reſide immediately under the integuments. In the *lynceus* diſcovered by Riville, it is contained in the ovary. Mr. Macartney believes that every part of the body of the *meduſæ* is furniſhed with this fluid, as there is no part that is not ſeen illuminated under different circumſtances, but Spallanzani affirms that it is only found in the large tentacula, the edges of the umbella, and the purſe or central maſs; which he proved, he ſays, by detaching theſe parts ſucceſſively, when they ſhone vividly, while the reſt of the body neither gave light nor communicated any luminous appearance to water. Memoria ſopra le meduſe foſforiche. Mem. della Soc. Ital. tom. vii.

Spallanzani diſcovered a mucous luminous fluid in the plumule of the *pennatula phoſphorea*. Mem della Soc. Ital. tom. ii.

The phenomenon of animal light has been attempted to be explained in different ways. By many perſons it was formerly aſcribed to a putrefactive proceſs, but ſince the modern theories of combuſtion became known, it has been generally believed to depend upon an actual inflammation of the luminous ſubſtance, ſimilar to the ſlow combuſtion of phoſphorus. Others have accounted for the luminous effect, by ſuppoſing the matter of light to be accumulated, and rendered latent under particular circumſtances, and afterwards evolved in a ſenſible form.

The opinion of the light of living animals being the conſequence of putrefaction, is evidently abſurd, and contradictory to all obſervation on the ſubject. It has been proved by the experiments of Dr. Hulme and others, that even the luminous appearances of dead animals are exhibited only during the firſt ſtages of the diſſolution of the body, and that no light is emitted after putrefaction has really commenced.

Spallanzani, who was the moſt ſtrenuous advocate for the phoſphoreſcent nature of animal light, ſtated that glow-worms ſhone more brilliantly when put into oxygen gas; that their light gradually diſappeared in hydrogen or in azotic gas, and was inſtantly extinguiſhed in fixed air; that it was alſo loſt by cold, and revived by the application of a warm temperature. He conjectured that the luminous matter of theſe inſects was compoſed of hydrogen and carbonated hydrogen gas.

Forſter relates, in the Lichtenberg Magazine for 1783, that on putting a *lampyris ſplendidula* into oxygen gas, it gave as much light as four of the ſame ſpecies in common air.

Carradori has made ſome experiments upon the *lucciole*, (*lampyris italica*) which led him to deny its phoſphoreſcence. He found that the luminous portion of the belly of the inſect ſhone in vacuum, in oil, in water, and different liquids, and under different circumſtances, where it was excluded from all communication with oxygen gas. He accounts for the reſult of Forſter's experiment, by ſuppoſing, that the worm ſhone more vividly, becauſe it was more animated in oxygen gas than in common air.

Carradori adopts on this ſubject the doctrine of Brugnatelli, and aſcribes the luminous appearances of animals to the condenſation and extrication of light in particular organs, which had previouſly exiſted in combination with the ſubſtance of their bodies. He ſuppoſes the light to be originally derived from the food, or the atmoſpheric air taken into the body; in ſhort, that certain animals have the peculiar property of gradually imbibing light from foreign bodies, and of afterwards ſecreting it in a ſenſible form. Annal di Chimica. tom. xiii. 1797.

The following experiments, which were lately made upon this ſubject by Mr. Macartney, would lead to different concluſions than thoſe of the preceding authors.

Experiment 1.—A *glow-worm* was put into a glaſs of water, in which it lived nearly two hours, and continued to emit light as uſual, until it died, when the luminous appearance entirely ceaſed.

Experiment 2.—The luminous ſubſtance was extracted from the before-mentioned *glow-worm*, and from others killed in different ways, but it afforded no light.

Experiment 3.—The ſacs containing the luminous matter were cut from the bellies of *living glow-worms*, and ſhone uninterruptedly for ſeveral hours in the atmoſphere, and after their light became extinct, it was revived by being moiſtened with water; ſome of theſe were put into water in the firſt inſtance, in which they continued to ſhine unremittingly for forty-eight hours.

Experiment 4.—The luminous ſubſtance of a *glow-worm* was expoſed to a degree of heat which would have been ſufficient to inflame phoſphorus, without increaſing the brilliancy of its light; and farther, it could not be made to burn by being applied to a red-hot iron, or to the flame of a candle.

Experiment 5.—A delicate thermometer was introduced amongſt ſome living *glow-worms*, during the time they gave out much light: the temperature of the room being 69°, the inſtrument roſe to 75°, 76°, and 77°, according to circumſtances, as the warmth was reflected from the hand, or diſſipated by the worm crawling over cold ſubſtances. The luminous portion of the tail, when very brilliant, appeared to raiſe the thermometer more quickly than the other parts of the body; but it was not invariably the caſe. When ſhining ſtrongly, the luminous rings appeared to communicate the ſenſation of warmth to the hand; but this was probably a deception, as the actual degree of heat was not ſufficient for ſuch an effect. It ſhould however be mentioned, that in Templar's obſervations on the *glow-worm*, he ſaid his feelings deceived him, if he did not experience ſome heat from the ſhining of the inſect. Phil. Tranſ. N° 72.

Experiment 6.—To aſcertain how far the evolution of heat, during the ſhining of *glow-worms*, depended upon the life of the animals, the luminous portion of the tail was cut off from ſeveral living worms: if the thermometer was applied to them immediately, it was raiſed by them one or two degrees; but after theſe parts were dead, although they continued to emit light, they produced no effect whatever upon the inſtrument.

Experiment 7.—Some *hemiſpherical meduſæ* were put into a ſpoon, containing a ſmall quantity of ſea-water, and held over a burning candle. As ſoon as the water became heated, the meduſæ appeared like illuminated wheels, the ſpots at the margin and centre alone emitting light; in which manner they ſhone vividly and permanently for about twenty ſeconds, when they ſhrunk and died, after which they were no longer luminous.

Experiment 8.—Some of the ſame ſpecies were put into ſpirits: a ſtrong and unremitting light was inſtantly given out, which iſſued from the central and marginal parts, as in the preceding experiment, and continued until they died.

Experiment 9.—Some of the *ſcintillating* and *hemiſpherical* ſpecies of *meduſa*, contained in a ſmall glaſs jar, were introduced into the receiver of an air-pump, and the air being exhauſted, they ſhone as uſual when ſhaken: if any difference could be perceived, the light was more eaſily excited, and continued longer in vacuum.

Experiment 10.—A *meduſa hemiſpherica* was placed in a ſmall glaſs diſh, containing a quantity of water, merely ſufficient to allow the animal to preſerve its figure: being inſulated, it was electrified, and ſparks drawn from it, which had not the ſlighteſt effect. The experiment was repeated ſeveral times with different individuals, but without exciting the animals to throw out light.

Experiment 11.—Some *hemiſpherical meduſæ* were placed in contact with the two ends of an interrupted chain, and ſlight electric ſhocks paſſed through them. During the very moment of their receiving the ſhock, no light was viſible; but immediately afterwards the *meduſæ* ſhone like illuminated wheels, which appearance remained for ſome ſeconds. Upon the cloſeſt inſpection with a magnifying glaſs, no contractile motion could be perceived to accompany the exhibition of the light. The application of electricity, in this inſtance, ſeems to have acted merely as a ſtrong mechanic ſhock.

It ſeems proved by the foregoing experiments, that ſo far from the luminous ſubſtance being of a phoſphoreſcent nature, it ſometimes ſhews the ſtrongeſt and moſt conſtant light, when excluded from oxygen gas; that it, in no circumſtances, undergoes any proceſs like combuſtion, but is actually incapable of being inflamed; that the increaſe of heat, during the ſhining of *glow-worms*, is an accompaniment, and not an effect of the phenomenon, and depends upon the excited ſtate of the inſect; and, laſtly, that heat and electricity increaſe the exhibition of light, merely by operating like other ſtimuli upon the vital properties of the animal. Phil. Tranſ. 1810, part ii.

In addition to theſe opinions, we may mention that profeſſor Davy has found that the light of the *glow-worm* is not rendered more brilliant in oxygen, or in oxygenated muriatic gas, than in common air; and that it is not ſenſibly diminiſhed in hydrogen gas.

We may further add, that Spallanzani's experiments of diffuſing the luminous liquor of the *meduſa* in water, milk, and other fluids, are in direct contradiction of his own theory, as is alſo the extinction of the light of theſe mixtures by the application of a high degree of heat.

If the light emitted by animals were derived from their food, or the air they reſpire, as ſuppoſed by Carradori, the phenomenon ſhould be increaſed or diminiſhed, according to the quantity of food or air that the creatures conſume. But we do not find this to be the caſe; for in thoſe ſituations where they are ſometimes found to be moſt luminous, they are deprived, in a great meaſure, of theſe aſſumed ſources of their light.

In fact, the luminous exhibitions of living animals are not only independent of all foreign light, but are frequently deſtroyed by the latter. The ſhining of the *meduſæ* was always found by Mr. Macartney to ceaſe upon the riſing of the moon, or at the approach of day; and when out of the ſea, he never could excite them to throw out light until they had been kept for ſome time in the dark: all the luminous inſects likewiſe ſecrete themſelves as much as poſſible during the day-time, and go abroad only at night. It is true that the *ſcolopendra electrica* will not ſhine, unleſs it has been previouſly expoſed to ſolar light; but it is to be obſerved that it ſhone as brilliantly and as frequently, after being kept a ſhort time in a light ſituation, as when left uncovered the whole day. The circumſtance of the *ſcolopendra* requiring expoſure previous to its giving out light, is very unaccountable, as the inſect, when left to itſelf, always ſeeks as much as poſſible concealment during the day: indeed it is the opinion of ſome naturaliſts, that it is killed by the light of the ſun.

We ſhall terminate this article with the following concluſions, drawn by Mr. Macartney from his own obſervations, and from a careful review of all that had been written on the ſubject.

The property of emitting light is confined to animals of the ſimpleſt organization, the greater number of which are inhabitants of the ſea. The luminous property is not conſtant, but in general exiſts only at certain periods, and in particular ſtates of the animal's body. The power of ſhewing light reſides in a peculiar ſubſtance or fluid, which is ſometimes ſituated in a particular organ, and at others diffuſed throughout the animal's body. The light is differently regulated, when the luminous matter exiſts in the living body, and when it is abſtracted from it. In the firſt caſe, it is intermitting, or alternated with periods of darkneſs; is commonly produced or increaſed by a muſcular effort; and is ſometimes abſolutely dependent upon the will of the animal. In the ſecond caſe, the luminous appearance is uſually permanent until it becomes extinct, after which it may be reſtored directly by friction, concuſſion, and the application of warmth; which laſt cauſes operate on the luminous matter (while in the living body) only indirectly, by exciting the animal. The luminous matter, in all ſituations, ſo far from poſſeſſing phoſphoric properties, is incombuſtible, and loſes the quality of emitting light, by being dried, or much heated. The exhibition of light, however long it may be continued, cauſes no diminution of the bulk of the luminous matter. It does not require the preſence of pure air, and is not extinguiſhed by other gaſes.

The luminous appearance of living animals is not exhauſted by long continuance, or frequent repetitions, nor accumulated by expoſure to natural light: it is, therefore, not dependent upon any foreign ſource, but inheres as a property, in a peculiarly organized animal ſubſtance or fluid, and is regulated by the ſame laws which govern all the other functions of living beings.

The light of the ſea is always produced by living animals, and moſt frequently by the preſence of the *meduſa ſcintillans*. When great numbers of this ſpecies approach the ſurface, they ſometimes coaleſce together, and cauſe that ſnowy or milky appearance of the ſea, which is ſo alarming to navigators. Theſe animals, when congregated on the ſurface of the water, can produce a flaſh of light, ſomewhat like an electric corruſcation. When the luminous *meduſæ* are very numerous, as frequently happens in confined bays, they form a conſiderable portion of the maſs of the ſea, at which times they render the water heavier, and more nauſeous to the taſte: it is therefore adviſeable to always ſtrain ſea-water before it is drunk.

The luminous property does not appear to have any connection with the economy of the animals that poſſeſs it, except in the flying inſects, which by that means diſcover each other at night, for the purpoſe of ſexual congreſs.

In the plates for illuſtrating the preſent ſubject in this dictionary, the reader will only find figures of thoſe luminous animals which are not generally contained in books on natural hiſtory, or which are neceſſary for the explanation of lately diſcovered facts.

Fig. 1. is the *nereis noctiluca*, diſcovered by Vianelli, of the natural ſize.

Fig. 2. ſhews the ſame animal greatly magnified: *a* is the head, furniſhed with two ſhort antennæ and a horn-like proceſs; *b*, *b*, the two eyes; *c*, *c*, *c*, ſome of the lateral twiſted proceſſes proceeding from the ſegments of the body; *d*, *d*, *d*, ſome of the other lateral proceſſes that contain the tufts.

Fig. 3. is the *cruſtaceous inſect*, diſcovered by Riville: *a* is the tranſparent ſhell, through which the internal parts of the animal are viſible; *b*, the ſac containing the inteſtines; *c*, one of the four-jointed ſetaceous antennæ; *d*, the two feet armed with hooks; *e*, the foot which terminates in claws; *f*, the ova, which Riville miſtook for globules containing a luminous oily fluid.

Fig. 4. exhibits the *cancer fulgens*, diſcovered by ſir Joſeph Banks. It is given of the natural ſize.

Fig. 5. repreſents the *limulus noctilucus*, diſcovered by captain Horſburg, greatly magnified.

Fig. 6. is the *meduſa pellucens*, diſcovered by ſir Joſeph Banks, ſhewn leſs than the natural ſize.

Fig. 7. is the *pyreſoma atlanticum*, lately diſcovered and deſcribed by Peron.

Fig. 8. ſhews the *meduſa lucida*, deſcribed by Mr. Macartney, of the largeſt ſize he met with.

Fig. 9. is the *beroe fulgens*, diſcovered by Mr. Macartney. It is repreſented of the uſual ſize, and in the elongated form the creature aſſumes when in the act of ſwimming. On the poſterior part are ſeen the ciliated ribs, which conſtitute its inſtruments of locomotion.

Fig. 10. ſhews the *meduſa ſcintillans*, diſcovered by Mr. Macartney, as it appears to the naked eye.

Fig. 11. is the ſame highly magnified, by which the opaque parts upon the ſide and in the centre of the animal are made apparent.

Fig. 12. is the animalcule, diſcovered by Mr. Forſter, of the ſize it appears to the naked eye.

Fig. 13. exhibits a microſcopic view of the ſame animalcule.

Fig. 14. is an enlarged view of the inferior ſurface of the abdomen in the *lampyris lucida*, after the integuments had been removed, as delineated by Mr. Macartney: *a*, *a*, *a*, repreſent the three maſſes of luminous ſubſtance, which are applied to the three laſt rings of the abdomen; *b*, *b*, *b*, the arrangement of the cellular or interſtitial ſubſtance on the other abdominal rings, which gives the pale colour to the whole belly of this inſect.

Fig. 15. repreſents the common *glow-worm*, with the lower portion of the back cut away, to expoſe the ſacs of luminous matter in ſitu on the laſt ring of the belly: *a* indicates the ſac of one ſide; the inteſtine is ſeen to lie between them.

Fig. 16. is one of the light ſacs of the *glow-worm*, taken out and prodigiouſly magnified, in order to ſhew its ſtructure, as deſcribed by Mr. Macartney: *a*, the external part of the ſac, which is compoſed of the interweaving of a ſpiral fibre; *b*, the luminous ſubſtance ſeen at one end, when the ſac has been ruptured to expoſe its contents.

Fig. 17. is the *elater noctilucus*, with the ſhell of the corcelet removed on one ſide, by which the organ of light, deſcribed by Mr. Macartney, is uncovered; *a*, the yellow tranſparent ſpot of the corcelet; *b*, the oval maſs of luminous ſubſtance ſurrounded by an irradiation of the interſtitial ſubſtance; *c*, the ends of the muſcles which are on the inſide of the corcelet.

Fig. 18. ſhews the luminous apparatus of the *elater noctilucus*, conſiderably magnified: *a*, the radiated appearance of the interſtitial ſubſtance around the oval maſs of luminous ſubſtance: this maſs is ſeen to conſiſt of a number of ſmaller parts; *b* ſhews the arrangement of the interſtitial ſubſtance, when it paſſes down between the muſcles; *c*, the ends of the muſcles of the back; *d*, the ſhell of the corcelet.

Fig. 19. is the *elater ignitus*: *a* indicates the yellow part of the corcelet; *b* ſhews the ſmall maſs of luminous ſubſtance in this ſpecies, the ſhell being removed.

Light is alſo uſed to ſignify the diſpoſition of objects with regard to the receiving of light.

Thus we ſay, a painting is ſeen in its proper light, when its ſituation, with regard to the light, is the ſame with that for which it was painted.

Light, in *Agriculture* and *Gardening*. Experience has ſhewn its infinite ſervice to the growth of vegetables, contributing exceedingly to facilitate their vegetation, and increaſe their perfection and duration ; as it is obvious moſt plants are conſiderably more proſperous, and attain their perfection in a free expoſure, fully open to the light and air, than in ſhady places ; the ſame is obſerved of fruits. Thoſe growing in a ſituation full to the light of the ſun, are in general more large and fair, ripening ſooner, and more perfectly, as to beauty and richneſs of flavour, than ſuch as grow in the ſhade : theſe reaſons ſhould therefore determine us to cultivate moſt of the principal plants and fruits in ſituations open as much as poſſible to the full light and influence of the ſun ; though upon particular occaſions, and in the heat of ſummer, ſhady places may be neceſſary for ſome ſorts of plants, though not where ſhaded and darkened by ſpreading trees, &c. but a border open above to the full light, and only ſhaded from the immediate rays of the ſun. For the general crops, a perfectly open, ſunny, light ſituation, free from the ſhade of ſpreading trees, is always the moſt proper

And its utility is very evident, from plants growing in garden-frames, green-houſes, &c. in winter ; when, in time of ſevere weather, covers or ſhutters have been continued long over the glaſſes, ſo as to exclude the rays of light, they become ſickly, grow pale, and aſſume an unhealthy appearance for a long time ; the leaves often decaying or dropping off ; and frequently, when the covers are continued very long without the admiſſion of light, the whole plant in many ſorts gradually dwindles and periſhes. Great attention is of courſe requiſite in this caſe, when, from the ſeverity of the weather, the uſe of other covers beſides the glaſſes is neceſſary, to take every opportunity of a favourable day, or even an hour or two of a day, to admit the light as fully as poſſible. The ſame is alſo the caſe with plants in early hot-beds, ſuch as cucumbers, melons, &c. which, early in the year, require a covering of mats over the glaſſes every night ; as when theſe additional covers are applied too ſoon in the afternoon, and continued late in the morning, ſo as to keep the plants long in darkneſs, it is highly diſadvantageous to their growth, cauſing them to grow weak, pale, and ſickly.

As light is, therefore, ſo beneficial to plants in general, it ſhould be increaſed as much as poſſible to thoſe in frames, green-houſes, ſtoves, &c. In theſe ſituations it may be uſeful to paint the inſide of all ſuch departments white, to reflect the rays of light as much as poſſible, and particularly in the nights, and in the day time, when the ſeverity of the ſeaſon requires covers or ſhutters to be placed over the glaſſes or other conveniences where plants are kept.

The author of Phytologia remarks, that the conteſt for light, as well as for air, which is ſo viſible in the growth of vegetables, ſhews the former to be of great conſequence to their exiſtence, as well as the latter. Thus many flowers follow the ſun during the courſe of the day, by the nutation of the ſtalks, not by the rotation of them, as obſerved in the ſun-flower by Dr. Hales ; and the leaves of all plants endeavour to turn their upper ſurface to the light, which is their reſpiratory organ, or lungs. The great uſe of all plants turning the upper ſurfaces of their leaves to the light is thus, he thinks, intelligible ; the water perſpired from thoſe ſurfaces is, he conceives, hyper-oxygenated ; and, as it eſcapes from the ſharp edges of the mouths of the perſpiring veſſels, when acted upon by the ſun's light, gives out oxygen ; which oxygen, thus liberated from the perſpired water, and added to that of the common atmoſphere, preſents to the reſpiratory terminations of the pulmonary arteries on the upper ſurfaces of leaves an atmoſphere more replete with vital air. This neceſſity of light to the reſpiration of vegetables is ſo great, that there is reaſon to believe that many plants do not reſpire during the night, but exiſt in a torpid ſtate, like the winter ſleeping inſects. Thus the mimoſa, ſenſitive-plant, and many others, cloſe the upper ſurfaces of their oppoſite leaves together during the night, and thus preclude them both from the air and light ; and the internal ſurfaces of innumerable flowers, which are their reſpiratory organs, are cloſed during the night, and thus unexpoſed both to light and air. It is, however, obſerved, that the *fungi*, which are termed vegetables, becauſe they are fixed to the earth, or to the ſtones, trees, or timber, where they are found, can exiſt without light or much air ; as appears in the truffle, which never appears above ground, and by other fungi, which grow in dark cellars ; and in eſculent muſhrooms, which are cultivated beneath beds of ſtraw. The etiolation, or blanching of vegetables, depends upon the keeping of the light from them.

It is further noticed that the element of light, as well as that of heat, is neceſſary to vegetation. In this climate they both ſeem, in general, to be injurious only by their defect, and ſeldom by their exceſs. But as light acts as a ſtimulus on the more irritative or ſenſitive parts of plants, which appears by the expanſion of many flowers, and of ſome leaves, when the ſun ſhines on them ; and by the nutation of the whole flower, as of the ſun-flower (helianthus), and by the bending of the ſummits of all plants confined in houſes towards the light ; there may be diſeaſes owing to the exceſs of this ſtimulus, which have not been attended to ; to prevent which the flowers of *tragopogon* ſalſafi, and of other plants, cloſe about noon. Other unobſerved diſeaſes may be owing to a defect of the ſtimulus of light ; as a *mimoſa*, ſenſitive plant, which had been confined in a dark room, did not open its foliage, though late in the day, till many minutes after it was expoſed to the light. The exceſs of light has not, however, been obſerved to be attended by vegetable diſeaſes in theſe more northern latitudes ſo much as in others.

Light, in the *Manege*. A horſe is ſaid to be light, in French *un cheval leger*, that is, a ſwift, nimble runner. We likewiſe call a horſe light that is well made, though he is neither ſwift nor active : for in this laſt expreſſion we conſider only the ſhape and make of a horſe, without regard to his qualities.

Light upon the hand ; a horſe is ſaid to be ſuch, that has a good tractable mouth, and does not reſt too heavy upon the bit.

A coach-horſe is ſaid to be light, when he ſtirs nimbly, and dreads the whip ; or when he has a light trot.

Light-*bellied*. A horſe is thus called that commonly has flat, narrow, contracted ſides, which make the flank turn up like that of a grey-hound.

Light-*hand*. See Hand.

Light, in *Painting*, refers only to thoſe effects which light (properly ſo called) produces upon the ſurfaces of natural objects ; as exhibited by its reflection from them to the eye of an obſerver.

With regard to that art, light may be conſidered in two diſtinct points of view ; *viz.* as to the natural and the artificial effects ariſing from it. The former is ſimply the effect produced upon the objects in a picture, by the direction in which it is introduced ; which being once choſen, becomes a poſitive rule ; and from which no variation can be allowed. The latter is ideal, and requires only to be probable or poſſible. It relates to the quantity of light employed to illuſtrate the character of a ſubject, and depends entirely upon the taſte of the artiſt ; who, by the uſe of ideal ſhadows and fictitious lights, may effect a diminution or augmentation to any proportion he pleaſes. Theſe, together with light and dark colours, form the baſis of chiaro-ſcuro; one of the grand fundamental principles of painting, of which we have already treated under the article Clair-obscure.

As light, when acting upon ſubſtantial forms, is always accompanied by ſhadow, and as they are neceſſary adjuncts to each other, we ſhall here unite them, and treat of them together. It is by the contraſt of each to the other, that the effect of either is produced by colours; and however paradoxical it may appear, it is nevertheleſs true, that light in the art of painting is not more neceſſary to produce ſhadow, than ſhade is for the production of light. The colours which give the appearance of the former, obtain that effect only when ſurrounded with darker ones, which conſtitute ſhade; without the latter, they would appear nothing more than an unintereſting maſs of one plain tone, without any degree of the quality which is termed luminous; but contraſted by their oppoſites in tone, they become brilliant; and when form is ſuperadded, obtain the character of light. The ſame, though in the contrary degree, is the effect of dark hues, which, without the contraſt of lighter ones, produce only a heavy, dull, unmeaning maſs, that merits not the appellation of ſhade, till oppoſed by other tones, and rounded into form by the aſſiſtance of light.

The management of light and ſhade is the moſt important of the practical parts of the art; ſince, without the true arrangement of them, vain muſt be every effort of the painter to produce a juſt reſemblance of thoſe things which nature offers to our view, and which are the immediate objects of his ſtudy. Outline is but as the ſection of a body; and colour, a ſimple, unvaried colour added to it, would ſtill in no-wiſe increaſe its value as the repreſentative of a ſubſtance; but let light and ſhade be ſuperadded, and duly diſpoſed, and what was a flat ſurface becomes apparently a rounded one, is relieved from its ground, and appears to ſtart from the canvas.

The ſources of light are in fact but two; *viz.* the ſun and fire: but to the painter a variety of modifications of theſe two take place, and become equally ſeparate ſources, with diſtinct qualities, both as to power and colour. Such, for inſtance, are the moon's reflecting power; that of the atmoſphere when the ſun is hid; and likewiſe the illumination proceeding from a window into a room. The effects produced by each of theſe differ ſo widely from thoſe of the two former, that we may fairly ſay there are five general ſources of light, at leaſt, applicable to the purpoſes of painting. Of that proceeding direct from the ſun in full blaze, it can only be obſerved, that, except for landſcape, its uſe is confined in the art; being too powerful, and producing ſhadows too harſh, for the more intereſting and agreeable ſubjects of fancy or hiſtory. The ſofter illumination reflected from thoſe parts of the atmoſphere oppoſed to the ſun, is uſually and reaſonably preferred; or that which the heavens yield when the ſource of its light is hid in clouds, though not when it is too much loſt in the gloom of tempeſt; for then the lights and ſhadows become too indiſtinct and confuſed. The open light of the air has another character diſtinct from the two juſt mentioned: which is, when the ſun is but faintly obſcured by thick clouds, through which its rays penetrate with diminiſhed luſtre, but ſtill in direct lines. In this caſe the light, though direct and cauſing ſhadows the ſame in form as when its ſource is unobſerved, is yet but weak and ſoft; and the ſhadows it produces being effected by the general light of the atmoſphere, are tender in their outline and tone. When the reflected light proceeding from the northern parts of the atmoſphere is admitted through a window into a room, it aſſumes a mid-way character. For while the light is weaker, and conſequently ſofter than ſun-ſhine; the ſhadows, owing to the ſmallneſs of the aperture, become diſtinct but not harſh; and their diſtinctneſs is heightened by the room wherein is the window, (which may be conſidered as an original ſource,) receiving only a partial quantity of light, and conſequently little or no reflection takes place, except from ſurrounding and contiguous objects upon each other: whereas, when a figure is ſo placed in open air as to receive the light reflected from the ſky, it partakes of it in every direction, and therefore has little or no ſhadow; for there will be few parts where ſome rays of light will not, under ſuch circumſtances, find admiſſion.

When the light proceeds direct from the ſun, it is uſual, though not ſtrictly correct, to conſider its rays as parallel, and conſequently no enlargement or diminution takes place in lengthened ſhadows. But, in reality, its diſtance, which diminiſhes its ſize apparently, added to the effect of perſpective, produces a real variation in ſhadows of objects whoſe magnitude is at all conſiderable. This is always the caſe when the ſource of light is larger or ſmaller than the illumined body. In the former caſe, the ſhadow of a ſuſpended ball would diminiſh to a point; as that of the earth does from the light of the ſun: and in the latter it would dilate as it was extended, and project a ſhadow at a certain diſtance, large in proportion to the comparative ſmallneſs of the luminous body; as of the flame of a candle, for inſtance, compared to a tennis-ball.

Shadows by day-light ſeldom become totally obſcure: an object muſt be placed in a ſituation where it could receive very little indeed of that peculiar illumination, without having ſome reflections falling into its ſhades, and conſequently yielding ſome viſible effect of the forms on which they fell. But by fire and candle-light, owing to the confined iſſue of their rays, forms hid in the ſhadows they project are often totally loſt: nevertheleſs, theſe ſhadows are not blackneſs, but darkneſs, of a colour whoſe hue depends upon that of the larger maſs of ſurrounding bodies. Under many circumſtances they receive reflections, and have a conſequent degree of colour in the bodies that lie within their range.

There are two cauſes which operate to weaken and even deſtroy the force of reflected light. The one is the diſtance at which the reflecting object is ſituated from the luminary; the other, the diſtance of the ſame from the obſerver. When theſe two circumſtances combine, the effect of light and ſhade is very weak.

To comprehend the principle upon which the illumination and conſequent ſhadows of objects are produced, and to imitate them the moſt effectually, the painter muſt recollect, that light, whenceſoever it iſſues, proceeds rectilineally from its ſource to the ſurface which intercepts it; and is reflected in the ſame way, at an equal angle with the plane of that ſurface, but in an inverſe direction. In the language of optics, *the angle of reflection is equal to the angle of incidence.* This is the ſimple but general rule, which is infallibly to guide the artiſt through all the difficulties of light and ſhade in painting: whether ariſing from direct or reflected illumination, this one principle holds equally good in all; but the lines which it forms in the ſhadows, are ſubject to the variations produced by perſpective on all ſolid bodies whereon light can act.

The moſt important application of this rule the artiſt will find to be, in fixing upon the preciſe point where he ſhould diſpoſe of his moſt brilliant hues; or what are technically termed his high lights; which are, in reality, thoſe parts of his objects, where, if the ſurface be a poliſhed one, the image of the luminary is reflected ; and is of courſe that one which, to the eye of an obſerver, is moſt illuminated. Theſe reflections will always be found to take place only on that point from whence a line drawn to the luminary, and another to the eye of the artiſt, form angles equal to each other with the plane of the ſurface of the illuminated object. For though it may not in reality be the preciſe ſpot where the greateſt number of rays of light are intercepted by that body, yet it is effectually ſo to him whoſe eye can only receive thoſe which are thrown off in reflection towards him. It may be obſerved as a conſequence of this rule, that the extreme edge of a rounded body can ſcarcely ever be its brighteſt part ; it will, as it recedes from the obſerver, loſe to him its luſtre, and melt into the ground or object behind it ; or, if relieved by a flat object equally white with itſelf, a dark line will be ſeen to mark its boundary, in whatever ſituation the ſource of light may be, within a right angle with a line drawn from the object to an obſerver ; or ſomewhat beyond that, to nearly 135 degrees.

It is ſcarcely neceſſary here to ſpeak of the refraction of light from its original courſe, when paſſing through various ſubſtances, as glaſs or water ; except to deprecate paying any attention to it in a picture where any eſſential form is broken in upon by it ; or chooſing ſuch ſubjects, where deviation from general rules ſerve rather to confound than to ſatisfy the common underſtanding of mankind. Theſe copying the poſitive truth would create confuſion, it is moſt juſt, at leaſt moſt uſeful, to vary from it : as in painting the portrait of a man with ſpectacles on. What artiſt in his ſenſes, and who had a true perception of the real object of art, would think of painting exactly that which preſents itſelf to his view, a poſitive deformity, eyes miſplaced, and of monſtrous form ; for ſuch they are when ſeen through the glaſſes. Such procedure would totally defeat the object of portraiture ; for it would be hardly poſſible to make a likeneſs of the perſon, with ſuch a variation from the poſitive form of his face.

The direction in which the light falls upon the objects introduced into a picture, and which we propoſed at the beginning of this article as one of the points of view in which to conſider the ſubject, is of very great importance on many accounts, and calls for the moſt attentive conſideration of the artiſt before he begins to colour his picture, and even in the compoſition of his forms. If, without previous attention to this, he proceeds to execute his compoſition, and complete the developement of his ideas, he would be fortunate if he did not find in his progreſs, that the neceſſity he was under of making ſhadows to bring out his forms, very frequently deſtroyed his general ſhapes, which previouſly appeared well when in lines only. A due attention to this, in the firſt inſtance, would frequently ſuggeſt ideas of forms, and aſſiſt him in filling his canvas agreeably, and in expreſſing the character of his ſubjects appropriately. It is, however, utterly impoſſible to give preciſe rules upon this ſubject in hiſtorical paintings, as it depends ſo entirely upon the nature of the ſubjects, and the local ſituations of the actors introduced. One general rule only may be given, *viz.* that the diſpoſition of the figures ſhould be ſuch, with regard to the ſource of light, as to produce ample maſſes of light and ſhadow : either of the one or the other predominant, accordingly as the ſubject is grave or gay. If the ſubject be of one ſingle figure, then it is requiſite (and more eaſily to be managed) that care be taken that the light falls upon it in ſuch a manner as accords with the action, and produces no unpleaſant ſhapes. For great grace may be added to figures by light and ſhade when agreeably diſpoſed ; and on the contrary, an unfortunate diſpoſal of them may diminiſh the effect, if not totally deſtroy the moſt beautifully drawn figure imaginable.

In portraiture, ſomething more preciſe may be ſaid upon this ſubject. Its object is to convey a reſemblance of a perſon in the moſt agreeable manner, generally ſpeaking ; yet therein much muſt remain which the rules cannot attach to, particularly where the object is to convey character ſtrongly, and not merely to render the picture agreeable. In the latter caſe, if a perſon be ſo placed with regard to the window or luminary, that the light falls upon him at an angle of about 45 deg., and the greater part of the face be expoſed to it, the purpoſe will be anſwered. A ſtill more acute angle will give greater relievo, but the effect will not be ſo pleaſing. Whether the face ſhould be turned directly facing the light, or ſo as to receive it partially, muſt entirely depend upon the character of the features. If large, they will bear a full light ; if of a ſmaller and more delicate nature, a little inclination from the light will give more force and variety. But where the object is to convey character ſtrongly, to the diſregard of poſitive beauty, there the character only is the guide, and every angle of illumination, with any turn towards or from it, may effect the object, according to the ſtamp which nature has laid upon the face to be painted.

The angle of 45 deg. or thereabouts, is alſo the beſt for the general illumination of a picture while the artiſt is employed upon it, with ſuch an inclination from the ſource of light, that no reflection of it is preſented to his eye. He will, in this ſituation of his work to the light, be leaſt in his own way, and ſee the whole of it together moſt effectually ; but this is an object of leſſer moment ; a good artiſt need not wait to have his picture preciſely in the very beſt ſituation, to enable him to perform his taſk with pleaſure or effect. Indeed he cannot always have it ſo, particularly when engaged in adorning walls and ceilings, &c.

With regard to the ſecond diviſion of our ſubject, or the quantity of light proper to be introduced into a picture, which is a matter that lies entirely at the diſcretion of the artiſt, we muſt principally refer our readers to what has been ſaid under the articles CLAIR-OBSCURE, and EFFECT, in *Painting* ; more particularly the latter, where we have ſhewn that various maſters have adopted as various quantities, and ſhade them all agreeable. The ſubject, the place, and the time, muſt govern this point, and the taſte of the artiſt muſt lead him to decide the matter for himſelf ; his only guide is, the moſt natural, and at the ſame time the moſt effective, illuſtration of his ſubject.

Another point for conſideration, is the tone of colour which ſhould be given to the light. Of this, alſo, we have treated under the words EFFECT, in *Painting*, and HARMONY in the ſame art, and need only ſtate here, that whatever hue is adopted, the ſame ſhould range through the whole picture, except when two kinds of light are introduced, as day-light and candle-light. In that caſe the former will be of a cold colour ; and in ſituations where ſhadows from the candle fall over parts illumined by the day, thoſe parts, if the object be white, will appear of a light blue, as may be ſeen when candles are lighted and placed on a table-cloth, where rays of twilight can reach. The warm colour thrown off by the flame of the candle, imparts its nature to whatever it illumines, and as it is nearly yellow, it renders white and yellow very nearly alike in hue, and makes green appear blue, and purple nearly ſo. This renders it a difficult matter to paint by candle-light for a day-light exhibition. The artiſt muſt rely very much upon his judgment and previous knowledge of his colours who attempts it, or all the delicate admixture of teints and hues will eſcape him. Rubens has very frequently ſucceeded in the admixture of lights, and in one picture particularly, his beautiful work of "St. Roch interceding for the unhappy Sufferers from the Plague." And Titian has rendered moſt beautifully the effect of three lights, *viz.* thoſe of the day, of fire, and of candle, in his grand work of "The Martyrdom of St. Lawrence;" and has contrived to produce one harmonious tone over the whole, while each part is characteriſtically maintained.

LIGHT, in *Sea Language*, is uſed in contradiſtinction to laden. A ſhip is accordingly called light, either when ſhe has no cargo, or when ſhe is not ſufficiently ballaſted.

LIGHT is alſo uſed for the luminous body that emits it. There are various kinds of lights; *general* lights, as the air; *particular* lights, as a fire, a candle, and even the ſun.

LIGHTS, in *Architecture*, denote doors, windows, and other places, through which the air and light have a paſſage.

In the Pantheon, all the light comes from on high; it has no lights but in the dome.

LIGHTS, in *Gardening*, a term applied to the moveable glazed ſaſhes which cover garden and other frames; and which, according to the number of lights, or ſeparate moveable glaſſes, are denominated one-light, two-light, and three-light frames; theſe being the moſt general different ſizes of this ſort of frame. See FRAME and GARDEN-*Frame*.

LIGHTS, *Feaſt of*. See DEDICATION.

LIGHTS, *Stopping, of a houſe*, is a nuiſance; but ſtopping a proſpect is not, being only matter of delight, not of neceſſity. If a man has a vacant piece of ground, and builds thereupon a houſe, with good lights, which he ſells or lets to another; and afterwards builds upon ground contiguous, or lets the ſame to another perſon, who builds thereupon to the nuiſance of the lights of the firſt houſe; the leſſee of the firſt houſe may have an action of the caſe againſt ſuch builder, &c. And though formerly they were to be lights of an ancient meſſuage, that is now altered.

LIGHT-*horſe*, an ancient term in our Engliſh cuſtoms, ſignifying an ordinary cavalier, or horſeman lightly armed, and ſo as to enter a corps or regiment; in oppoſition to the men at arms, who were heavily accoutred, and armed at all points. See CAVALRY and HORSE.

END OF VOL. XX.

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